UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission file number: 0-19311

BIOGEN INC.

(Exact name of registrant as specified in its charter)

Delaware	**33-0112644**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

225 Binney Street, Cambridge, MA 02142

(617) 679-2000

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol(s)	Name of Each Exchange on Which Registered
Common Stock, $0.0005 par value	**BIIB**	**The Nasdaq Global Select Market**

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes x No o

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes o No x

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes x No o

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes x No o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act. x

Large accelerated filer	x	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. x

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No x

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant (without admitting that any person whose shares are not included in such calculation is an affiliate) computed by reference to the price at which the common stock was last sold as of the last business day of the registrant's most recently completed second fiscal quarter was $29,397,964,818.

As of February 14, 2023, the registrant had 144,485,646 shares of common stock, $0.0005 par value, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive proxy statement for our 2023 Annual Meeting of Stockholders are incorporated by reference into Part III of this report.

BIOGEN INC.
ANNUAL REPORT ON FORM 10-K
For the Year Ended December 31, 2022
TABLE OF CONTENTS

NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements that are being made pursuant to the provisions of the Private Securities Litigation Reform Act of 1995 (the Act) with the intention of obtaining the benefits of the “Safe Harbor” provisions of the Act. These forward-looking statements may be accompanied by such words as “aim,” “anticipate,” “believe,” “could,” “estimate,” “expect,” “forecast,” "goal," “intend,” “may,” “plan,” “potential,” “possible,” “will,” “would” and other words and terms of similar meaning. Reference is made in particular to forward-looking statements regarding:

- the anticipated amount, timing and accounting of revenue; contingent, milestone, royalty and other payments under licensing, collaboration, acquisition or divestiture agreements; tax positions and contingencies; collectability of receivables; pre-approval inventory; cost of sales; research and development costs; compensation and other selling, general and administrative expense; amortization of intangible assets; foreign currency exchange risk; estimated fair value of assets and liabilities; and impairment assessments;
- expectations, plans and prospects relating to sales, pricing, growth, reimbursement and launch of our marketed and pipeline products;
- the potential impact of increased product competition in the markets in which we compete, including increased competition from new originator therapies, generics, prodrugs and biosimilars of existing products and products approved under abbreviated regulatory pathways, including generic or biosimilar versions of our products or competing products;
- patent terms, patent term extensions, patent office actions and expected availability and period of regulatory exclusivity;
- our plans and investments in our portfolio as well as implementation of our corporate strategy;
- the drivers for growing our business, including our plans and intention to commit resources relating to discovery, research and development programs and business development opportunities as well as the potential benefits and results of, and the anticipated completion of, certain business development transactions and cost-reduction measures;
- the expectations, development plans and anticipated timelines, including costs and timing of potential clinical trials, filings and approvals, of our products, drug candidates and pipeline programs, including collaborations with third-parties, as well as the potential therapeutic scope of the development and commercialization of our and our collaborators’ pipeline products;
- the timing, outcome and impact of administrative, regulatory, legal and other proceedings related to our patents and other proprietary and intellectual property rights, tax audits, assessments and settlements, pricing matters, sales and promotional practices, product liability and other matters;
- our ability to finance our operations and business initiatives and obtain funding for such activities;
- adverse safety events involving our marketed products, generic or biosimilar versions of our marketed products or any other products from the same class as one of our products;
- the direct and indirect impact of the COVID-19 pandemic and other global health outbreaks on our business and operations, including sales, expense, reserves and allowances, the supply chain, manufacturing, cyber-attacks or other privacy or data security incidents, research and development costs, clinical trials and employees;
- the current and potential impacts of the conflict in Ukraine, including impacts on our operations, sales and the possible disruptions or delays in our plans to conduct clinical trial activities in affected regions;
- the potential impact of healthcare reform in the United States (U.S.), including the Inflation Reduction Act of 2022 (IRA), and measures being taken worldwide designed to reduce healthcare costs and limit the overall level of government expenditures, including the impact of pricing actions and reduced reimbursement for our products;
- our manufacturing capacity, use of third-party contract manufacturing organizations, plans and timing relating to changes in our manufacturing capabilities, activities in new or existing manufacturing facilities and the expected timeline for the remaining portion of the Solothurn manufacturing facility to begin manufacturing products or product candidates and for the gene therapy manufacturing facility in Research Triangle Park (RTP), NC to be operational;

- the impact of the continued uncertainty of the credit and economic conditions in certain countries and our collection of accounts receivable in such countries;
- lease commitments, purchase obligations and the timing and satisfaction of other contractual obligations; and
- the impact of new laws (including tax), regulatory requirements, judicial decisions and accounting standards.

These forward-looking statements involve risks and uncertainties, including those that are described in *Item 1A. Risk Factors* included in this report and elsewhere in this report, that could cause actual results to differ materially from those reflected in such statements. You should not place undue reliance on these statements. Forward-looking statements speak only as of the date of this report. Except as required by law, we do not undertake any obligation to publicly update any forward-looking statements, whether as a result of new information, future developments or otherwise.

NOTE REGARDING COMPANY AND PRODUCT REFERENCES

References in this report to:

- "Biogen," the "company," "we," "us" and "our" refer to Biogen Inc. and its consolidated subsidiaries; and
- "RITUXAN" refers to both RITUXAN (the trade name for rituximab in the U.S., Canada and Japan) and MabThera (the trade name for rituximab outside the U.S., Canada and Japan).

NOTE REGARDING TRADEMARKS

ADUHELM®, AVONEX®, PLEGRIDY®, RITUXAN®, RITUXAN HYCELA®, SPINRAZA®, TECFIDERA®, TYSABRI® and VUMERITY® are registered trademarks of Biogen.

BENEPALI™, BYOOVIZ™, FLIXABI™, FUMADERM™, IMRALDI™ and Healthy Climate, Healthy Lives™ are trademarks of Biogen.

ACTEMRA®, CIMZIA®, ENBREL®, EYLEA®, FAMPYRA™, GAZYVA®, HUMIRA®, LEQEMBI™, LUCENTIS®, LUNSUMIO™, OCREVUS®, REMICADE® and other trademarks referenced in this report are the property of their respective owners.

PART I

ITEM 1. BUSINESS

Overview

Biogen is a global biopharmaceutical company focused on discovering, developing and delivering innovative therapies for people living with serious and complex diseases worldwide. We have a broad portfolio of medicines to treat multiple sclerosis (MS), have introduced the first approved treatment for spinal muscular atrophy (SMA) and co-developed two treatments to address a defining pathology of Alzheimer's disease. We are focused on advancing our pipeline in neurology, neuropsychiatry, specialized immunology and rare diseases. We support our drug discovery and development efforts through internal research and development programs and external collaborations.

Our marketed products include TECFIDERA, VUMERITY, AVONEX, PLEGRIDY, TYSABRI and FAMPYRA for the treatment of MS; SPINRAZA for the treatment of SMA; ADUHELM for the treatment of Alzheimer's disease; and FUMADERM for the treatment of severe plaque psoriasis. We also collaborate with Eisai Co., Ltd. (Eisai) on the commercialization of LEQEMBI for the treatment of Alzheimer's disease, which was granted accelerated approval by the U.S. Food and Drug Administration (FDA) in January 2023. We have certain business and financial rights with respect to RITUXAN for the treatment of non-Hodgkin's lymphoma, chronic lymphocytic leukemia (CLL) and other conditions; RITUXAN HYCELA for the treatment of non-Hodgkin's lymphoma and CLL; GAZYVA for the treatment of CLL and follicular lymphoma; OCREVUS for the treatment of primary progressive MS (PPMS) and relapsing MS (RMS); LUNSUMIO (mosunetuzumab), which was granted accelerated approval in the U.S. during the fourth quarter of 2022 for the treatment of relapsed or refractory follicular lymphoma; glofitamab, an investigational bispecific antibody for the potential treatment of non-Hodgkin's lymphoma; and have the option to add other potential anti-CD20 therapies, pursuant to our collaboration arrangements with Genentech, Inc. (Genentech), a wholly-owned member of the Roche Group.

In addition to continuing to invest in new potential innovation in MS and SMA we are advancing our mid-to-late stage programs including zuranolone for major depressive disorder (MDD) and postpartum depression (PPD), BIIB080 for Alzheimer's disease, tofersen for amyotrophic lateral sclerosis (ALS) and both litifilimab and dapirolizumab pegol for certain forms of lupus.

We also commercialize biosimilars of advanced biologics including BENEPALI, an etanercept biosimilar referencing ENBREL, IMRALDI, an adalimumab biosimilar referencing HUMIRA, and FLIXABI, an infliximab biosimilar referencing REMICADE, in certain countries in Europe, as well as BYOOVIZ, a ranibizumab biosimilar referencing LUCENTIS, in the U.S. We continue to develop potential biosimilar products including BIIB800, a proposed tocilizumab biosimilar referencing ACTEMRA, and SB15, a proposed aflibercept biosimilar referencing EYLEA.

For additional information on our collaboration arrangements, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Key Business Developments

The following is a summary of key developments affecting our business since the beginning of 2022.

For additional information on our collaborative and other relationships discussed below, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Developments in Key Collaborative Relationships

Eisai Collaboration Agreements

LEQEMBI (lecanemab) Collaboration Agreement

In January 2023 we and Eisai announced that the FDA granted accelerated approval of LEQEMBI, an anti-amyloid antibody for the treatment of Alzheimer's disease. Additionally, in January 2023 we and Eisai announced the completed submission of a supplemental Biologics License Application (BLA) to the FDA for traditional approval of LEQEMBI.

In January 2023 the European Medicines Agency (EMA) accepted for review the Marketing Authorization Application (MAA) for lecanemab.

In January 2023 Eisai completed the submission of a MAA to the Pharmaceuticals and Medical Devices Agency (PMDA) in Japan for lecanemab, and was granted Priority Review by the Japanese Ministry of Health, Labor and Welfare.

In December 2022 Eisai initiated a rolling submission of a BLA to the National Medicinal Products Administration (NMPA) of China for the approval of lecanemab.

In March 2022 we extended our supply agreement with Eisai related to LEQEMBI from five years to ten years for the manufacture of LEQEMBI drug substance.

ADUHELM Collaboration Agreement

On March 14, 2022, we amended our ADUHELM Collaboration Agreement with Eisai. As of the amendment date, we have sole decision making and commercialization rights worldwide on ADUHELM, and beginning January 1, 2023, Eisai receives only a tiered royalty based on net sales of ADUHELM, and no longer participates in sharing ADUHELM's global profits and losses. Eisai's share of development, commercialization and manufacturing expense was limited to $335.0 million for the period from January 1, 2022 to December 31, 2022, which was achieved as of December 31, 2022. Once this limit was achieved, we became responsible for all ADUHELM related costs.

For additional information on our collaboration arrangements with Eisai, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Zuranolone (BIIB125)

In June 2022 we and our collaboration partner Sage Therapeutics, Inc. (Sage) announced that the Phase 3 SKYLARK study of zuranolone, for the potential treatment of MDD and PPD, met its primary and all key secondary endpoints.

In December 2022 we and Sage completed the rolling submission of a New Drug Application (NDA) to the FDA for the approval of zuranolone for the potential treatment of MDD and PPD. This submission completes the NDA filing initiated earlier in 2022.

In February 2023 the FDA accepted the NDA and granted Priority Review for zuranolone, with a Prescription Drug User Fee Act (PDUFA) action date of August 5, 2023.

For additional information on our collaboration arrangement with Sage, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Genentech

LUNSUMIO (mosunetuzumab)

In January 2022 we exercised our option with Genentech to participate in the joint development and commercialization of LUNSUMIO (mosunetuzumab), a bispecific antibody for the treatment of relapsed or refractory follicular lymphoma. In connection with this exercise, we recorded a $30.0 million option exercise fee payable to Genentech in December 2021.

In December 2022 Genentech announced that the FDA granted accelerated approval of LUNSUMIO, which was also approved by the European Commission (EC) in June 2022.

Glofitamab

In December 2022 we reached an agreement with Genentech related to the commercialization and sharing of economics for glofitamab, an investigational T-cell engaging bispecific antibody targeting CD20 and CD3 for the potential treatment of B-cell non-Hodgkin's lymphoma.

For additional information on our collaboration arrangements with Genentech, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Other Collaborative Relationships

Alcyone Therapeutics

In December 2022 we entered into a license and collaboration agreement with Alcyone Therapeutics (Alcyone) to jointly develop the ThecaFlex DRx™ System, an implantable medical device intended for subcutaneous delivery of antisense oligonucleotide (ASO) therapies with a goal of improving the patient treatment experience and accessibility for people suffering from neurological disorders, such as SMA and ALS. Under the terms of this collaboration, we and Alcyone will jointly develop the ThecaFlex DRx™ System and Alcyone will be solely responsible for its manufacture and commercialization. In connection with this transaction, we made an upfront payment of $10.0 million to Alcyone.

Corporate Matters

Samsung Bioepis - Biogen's Joint Venture with Samsung BioLogics

In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics Co., Ltd. (Samsung BioLogics). Under the terms of this transaction, we received approximately $1.0 billion in cash at closing and expect to receive approximately $1.3 billion in cash to be deferred over two payments of approximately $812.5 million due at the first anniversary and approximately $437.5 million due at the second anniversary of the closing of this transaction.

As part of this transaction, we are also eligible to receive up to an additional $50.0 million upon the achievement of certain commercial milestones. Our policy for contingent payments of this nature is to recognize the payments in the period that they become realizable, which is generally the same period in which the payments are earned.

For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions,* to our consolidated financial statements included in this report.

2022 Cost Saving Initiatives

In December 2021 and May 2022 we announced our plans to implement a series of cost-reduction measures that when completed we expect may yield approximately $1.0 billion in expense savings. These savings are being achieved through a number of initiatives, including reductions to our workforce, the substantial elimination of our commercial ADUHELM infrastructure, the consolidation of certain real estate locations and operating efficiency gains across our selling, general and administrative and research and development functions.

Under these initiatives, we estimate we will incur total restructuring charges of approximately $131.0 million, primarily related to severance. These amounts were substantially incurred during 2022. As of December 31, 2022, approximately $35.9 million remained in our restructuring reserve and payments are expected to be made through 2026.

For additional information on our 2022 cost saving initiatives, please read *Note 4, Restructuring*, to our consolidated financial statements included in this report.

125 Broadway Sale and Leaseback Transaction

In September 2022 we completed the sale of our building and land parcel located at 125 Broadway, Cambridge, MA (125 Broadway) for an aggregate sales price of approximately $603.0 million, which is inclusive of a $10.8 million tenant allowance. Simultaneously, with the close of this transaction we leased back the building for a term of approximately 5.5 years.

For additional information on our 125 Broadway sale and leaseback transaction, please read *Note 11, Property, Plant and Equipment* and *Note 12, Leases*, to our consolidated financial statements included in this report.

Management Changes

- In November 2022 we announced the appointment of Christopher A. Viehbacher as President and Chief Executive Officer.
- In February 2022 we announced the appointment of Nicole Murphy as Executive Vice President, Pharmaceutical Operations and Technology.
- In January 2023 we announced the appointment of Priya Singhal as Executive Vice President, Head of Development.

Board of Directors Update

- In June 2022 Nancy Leaming and Brian Posner retired from our Board of Directors.
- In November 2022 Christopher A. Viehbacher joined our Board of Directors.

For additional information on our executive officers, please read the subsection entitled "Information about our Executive Officers" included in this report.

Product and Pipeline Developments

Multiple Sclerosis and Neuroimmunology

TECFIDERA (dimethyl fumerate)

- In June 2022 the European Patent Office (EPO) granted a patent that expires in February 2028 related to TECFIDERA.
- In October 2022 the Advocate General of the Court of Justice of the European Union (CJEU) issued a nonbinding advisory opinion in Biogen's favor relating to regulatory data protection for TECFIDERA. This opinion recommends that the CJEU set aside the earlier judgement of the European General Court annulling the EMA's decision not to validate an application to market a generic version of TECFIDERA.

Alzheimer's Disease and Dementia

LEQEMBI (lecanemab)

- In January 2023 we and Eisai announced that the FDA granted accelerated approval of LEQEMBI, an anti-amyloid antibody for the treatment of Alzheimer's disease. Additionally, in January 2023 we and Eisai announced the completed submission of a supplemental BLA to the FDA for traditional approval of LEQEMBI.
- In September 2022 we and Eisai announced positive topline results from the confirmatory Phase 3 CLARITY Alzheimer's disease study of LEQEMBI. LEQEMBI met the primary endpoint and all key secondary endpoints with highly statistically significant results.
- In November 2022 Eisai presented full results from the confirmatory Phase 3 CLARITY Alzheimer's disease study of LEQEMBI at the 2022 Clinical Trials on Alzheimer's Disease conference.
- In November 2022 *The New England Journal of Medicine* published full results from the confirmatory Phase 3 CLARITY Alzheimer's disease study of LEQEMBI.

ADUHELM (aducanumab)

- In March 2022 we announced new data showing that after nearly two and a half years of treatment (128 weeks) with ADUHELM injection 100 mg/mL for intravenous use, patients in the long-term extension phase of the Phase 3 trials continued to experience significant reductions in two key Alzheimer's disease pathologies, amyloid beta plaques and plasma p-tau181.
- In March 2022 *The Journal of Prevention of Alzheimer's Disease* published a peer-reviewed manuscript detailing data from the pivotal Phase 3 EMERGE and ENGAGE studies of ADUHELM 100 mg/mL injection for intravenous use in early Alzheimer's disease. The publication includes results from the primary, secondary and tertiary endpoints in the trials, as well as safety data and biomarker sub-studies.
- In March 2022 we submitted the final study protocol for the confirmatory Phase 4 ENVISION study of ADUHELM to the FDA for review and approval.
- In April 2022 the Centers for Medicare and Medicaid Services (CMS) released a final NCD for the class of anti-amyloid treatments in Alzheimer's disease, including ADUHELM. The final NCD confirmed coverage with evidence development, in which patients with Medicare can only access treatment if they are part of an approved clinical trial. This decision effectively resulted in denying all Medicare beneficiaries access to ADUHELM.
- In April 2022 we announced our plans to offer a continuity of care plan for U.S. patients currently treated with ADUHELM, as a result of the CMS decision.

Neuropsychiatry

Zuranolone (BIIB125)

- In February 2022 we and Sage announced the Phase 3 CORAL study of zuranolone in people with MDD met the trial objectives, demonstrating a rapid and statistically significant reduction in depressive symptoms at Day 3 and over the 2-week treatment period, achieving the primary and key secondary endpoints.
- In June 2022 we and Sage announced that the Phase 3 SKYLARK study of zuranalone in women with PPD met its primary and all key secondary endpoints.
- In October 2022 we and Sage presented additional data from the Phase 3 SKYLARK study of zuranalone in women with PPD. This data was presented at the European College of Neuropsychopharmacology (ECNP) Congress.
- In December 2022 we and Sage completed the rolling submission of a NDA to the FDA for the approval of zuranolone for the potential treatment of MDD and PPD. This submission completes the NDA filing initiated earlier in 2022.
- In February 2023 the FDA accepted the NDA and granted Priority Review for zuranolone, with a PDUFA action date of August 5, 2023.

Neuromuscular Disorders

SPINRAZA (nusinersen)

- In March 2022 we announced the first patient was treated in the global Phase 3b ASCEND study, which is designed to evaluate the clinical outcomes and assess the safety of a higher dose of SPINRAZA in children, teens and adults with later-onset SMA who were previously treated with Evrysdi.

BIIB115

- In October 2022 the first patient in the Phase 1 study of BIIB115, an investigational ASO in development for SMA, was dosed.

Tofersen (BIIB067)

- In June 2022 we announced new 12-month data for tofersen demonstrating that earlier initiation of tofersen compared to delayed initiation (six months later in the open-label extension study) slowed declines in clinical function, respiratory function, muscle strength and quality of life.
- In July 2022 the FDA accepted the NDA and granted Priority Review for tofersen, an investigational antisense drug being evaluated for people with superoxide dismutase 1 (SOD1) ALS, which currently has a PDUFA action date of April 25, 2023.
- In September 2022 *The New England Journal of Medicine* published detailed results from the Phase 3 VALOR study of tofersen, including the combined analysis of the Phase 3 VALOR study and its open-label extension study evaluating tofersen for the potential treatment of SOD1 ALS.
- In December 2022 the EMA accepted for review the MAA for tofersen.

Movement Disorders

BIIB122 (DNL151)

- In May 2022 dosing commenced in the Phase 2b LUMA study of BIIB122, a small molecule inhibitor of leucine-rich repeat kinase 2 (LRRK2), evaluating the efficacy and safety of BIIB122 compared to placebo in approximately 640 patients with early stage Parkinson's disease.
- In October 2022 we and our collaboration partner Denali Therapeutics Inc. (Denali) announced the initiation of the Phase 3 LIGHTHOUSE study of BIIB122 in patients with Parkinson's disease and a confirmed pathogenic mutation in the LRRK2 gene.

ALO1811

- In June 2022 we entered into a collaboration and license agreement with Alectos Therapeutics Inc. (Alectos) to develop and commercialize ALO1811, a novel preclinical selective GBA2 inhibitor, for the potential oral disease modifying treatment for patients with Parkinson's disease.

Immunology

Litifilimab (BIIB059)

- In July 2022 *The New England Journal of Medicine* published positive results from the cutaneous lupus erythematosus (CLE) portion of the two-part Phase 2 LILAC study (Part B) evaluating litifilimab, an investigational drug for the treatment of lupus. The study met its primary endpoint by demonstrating the enhanced efficacy of litifilimab compared to placebo in reducing skin disease activity.
- In September 2022 *The New England Journal of Medicine* published a second manuscript detailing positive results from the systemic lupus erythematosus (SLE) portion of the two-part Phase 2 LILAC study (Part A) evaluating litifilimab. The study met its primary endpoint by demonstrating that litifilimab was associated with a statistically significant reduction in total active joint count compared to placebo.
- In October 2022 the first patient was dosed in the Phase 2/3 AMETHYST study of litifilimab, evaluating the efficacy and safety of litifilimab compared to placebo in patients with CLE.

Biosimilars

BIIB801 (referencing CIMZIA)

- In February 2022 we entered into a commercialization and license agreement with Xbrane Biopharma AB (Xbrane) to develop, manufacture and commercialize BIIB801, a proposed certolizumab pegol biosimilar referencing CIMZIA.

BYOOVIZ (referencing LUCENTIS)

- In June 2022 we and Samsung Bioepis announced that BYOOVIZ, a ranibizumab biosimilar referencing LUCENTIS, launched in the U.S.

BIIB800 (referencing ACTEMRA)

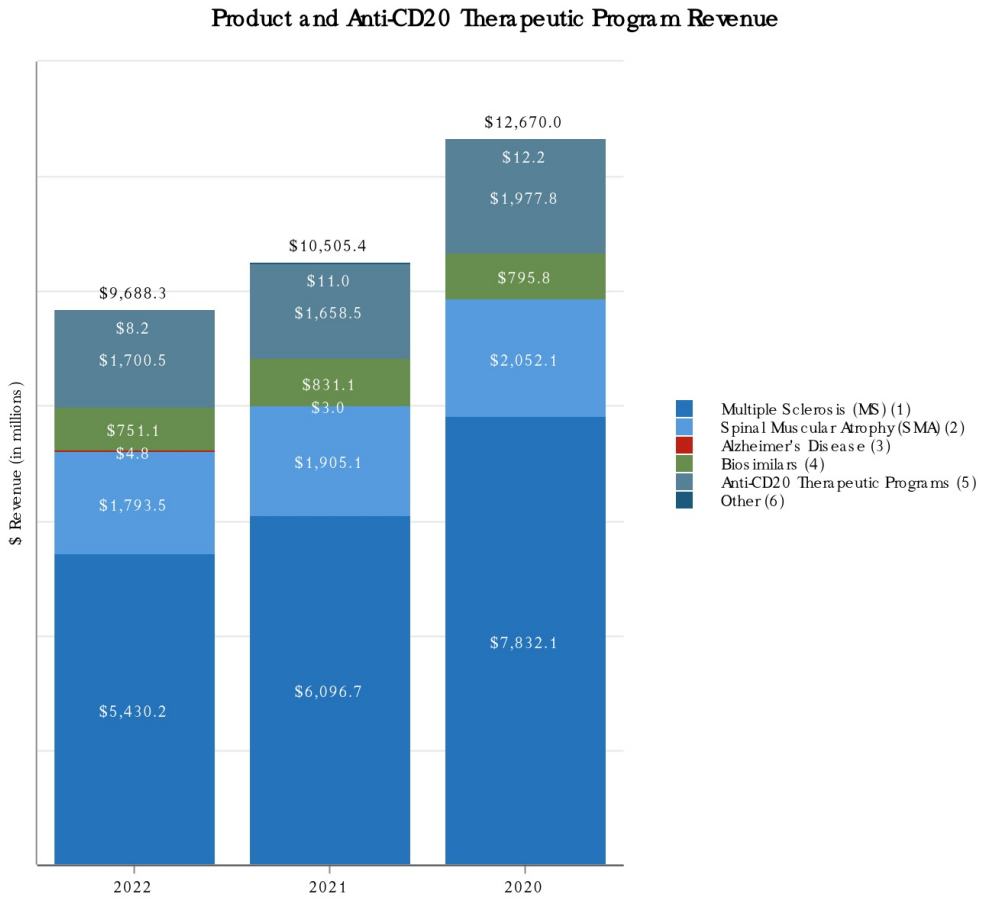
- In June 2022 we and our collaboration partner Bio-Thera Solutions, Ltd. (Bio-Thera) presented positive results from the Phase 3 study of BIIB800, a proposed tocilizumab biosimilar referencing ACTEMRA, an anti-interleukin-6 receptor monoclonal antibody, for the treatment of severe, active and progressive rheumatoid arthritis. The data was presented at the 2022 Annual European Congress of Rheumatology.
- In September 2022 the EMA accepted for review the MAA for BIIB800.
- In December 2022 the FDA accepted for review the abbreviated BLA for BIIB800.

Discontinued Programs

- In March 2022 we and Ionis Pharmaceuticals Inc. (Ionis) announced that the Phase 1 study of BIIB078 in ALS did not meet any secondary efficacy endpoints and it did not demonstrate clinical benefit. Based on these results, we discontinued development of BIIB078.
- In June 2022 we discontinued further development of BIIB100 for the potential treatment of certain neurological and neurodegenerative diseases, primarily in ALS, based on the decision by management as part of its strategic review process.
- In July 2022 we announced that the Phase 2 TALLY study of BIIB104 in cognitive impairment associated with schizophrenia did not meet its primary or secondary efficacy endpoints. Given the consistent lack of efficacy observed across the primary and secondary measures of cognition and functioning, we decided to discontinue the BIIB104 program.
- **In 2022 we discontinued further development of BIIB118 (CK1 inhibitor) for the potential treatment of patients with behavioral and neurological symptoms across various psychiatric and neurological diseases, based on the decision by management as part of its strategic review process.**
- In December 2022 we discontinued further development of vixotrigine (BIIB074) for the potential treatment of trigeminal neuralgia (TGN) and diabetic painful neuropathy (DPN), based on regulatory, development and commercialization challenges.
- In February 2023 we terminated our license and collaboration agreement with InnoCare Pharma Limited (InnoCare) for orelabrutinib, an oral small molecule Bruton's tyrosine kinase inhibitor for the potential treatment of MS.

Marketed Products

The following graph shows our revenue by product and revenue from anti-CD20 therapeutic programs for the years ended December 31, 2022, 2021 and 2020.



(1) MS includes TECFIDERA, VUMERITY, AVONEX, PLEGRIDY, TYSABRI and FAMPYRA. VUMERITY became commercially available in the E.U. during the fourth quarter of 2021.
(2) SMA includes SPINRAZA.
(3) Alzheimer's disease includes ADUHELM.
(4) Biosimilars includes BENEPALI, IMRALDI, FLIXABI and BYOOVIZ. BYOOVIZ launched in the U.S. in June 2022 and became commercially available during the third quarter of 2022.
(5) Anti-CD20 therapeutic programs include RITUXAN, RITUXAN HYCELA, GAZYVA and OCREVUS.
(6) Other includes FUMADERM.

Product sales for TECFIDERA, TYSABRI and SPINRAZA each accounted for more than 10.0% of our total revenue for the years ended December 31, 2022, 2021 and 2020. For additional financial information about our product and other revenue and geographic areas where we operate, please read *Note 5, Revenue* and *Note 25, Segment Information,* to our consolidated financial statements included in this report and *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations* included in this report. A discussion of the risks attendant to our operations is set forth in *Item 1A. Risk Factors* included in this report.

Multiple Sclerosis

We develop, manufacture and market a number of products designed to treat patients with MS. MS is a progressive disease in which the body loses the ability to transmit messages along nerve cells, leading to a loss of muscle control, paralysis and, in some cases, death. Patients with active RMS experience an uneven pattern of disease progression characterized by periods of stability that are interrupted by flare-ups of the disease after which the patient may return to a lower baseline of functioning.

The MS products we market and our major markets are as follows:

Product	Indication	Collaborator	Major Markets
Tecfidera (dimethyl fumarate) delayed-release capsules	RMS in the U.S. Relapsing-remitting MS (RRMS) in the E.U.	None	U.S. France Germany Italy Japan Spain U.K.
VUMERITY™ (diroximel fumarate)	RMS in the U.S. RRMS in the E.U.	Alkermes Pharma Ireland Limited, a subsidiary of Alkermes plc (Alkermes)	U.S. Germany Israel Switzerland U.K.
AVONEX® (interferon beta-1a)	RMS	None	U.S. France Germany Italy Japan Spain
plegridy® (peginterferon beta-1a)	RMS in the U.S. RRMS in the E.U.	None	U.S. France Germany Italy Spain U.K.
TYSABRI® (natalizumab)	RMS RRMS in the E.U. Crohn's disease in the U.S.	None	U.S. France Germany Italy Spain U.K.
fampyra® 10 mg prolonged-release tablets fampridine	Walking ability for patients with MS	Acorda Therapeutics, Inc. (Acorda)	France Germany

For additional information on our collaboration arrangements with Alkermes and Acorda, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Neuromuscular Disorders

SMA is characterized by loss of motor neurons in the spinal cord and lower brain stem, resulting in severe and progressive muscular atrophy and weakness. Ultimately, individuals with the most severe type of SMA can become paralyzed and have difficulty performing the basic functions of life, like breathing and swallowing. Due to a deletion or mutations in the SMN1 gene, people with SMA do not produce enough survival motor neuron (SMN) protein, which is critical to the survival of the neurons that control muscles. The severity of SMA correlates with the amount of SMN protein. People with Type 1 SMA, the most severe life-threatening form, produce very little SMN protein and do not

achieve the ability to sit without support, and typically do not live beyond two years of age without respiratory support and nutritional interventions. People with Type 2 and Type 3 SMA produce greater amounts of SMN protein and have less severe, but still life-altering, forms of SMA.

Our SMA product and major markets are as follows:

Product	Indication	Collaborator	Major Markets
SPINRAZA™ (nusinersen) injection 12 mg/5 mL	SMA	Ionis	U.S. Brazil Canada China France Germany Italy Japan Spain Turkey

For additional information on our collaboration arrangements with Ionis, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Alzheimer's Disease

Alzheimer's disease is characterized by two abnormalities in the brain: amyloid plaques and neurofibrillary tangles. Amyloid plaques, which are found in the tissue between the nerve cells, are unusual clumps of a protein called beta amyloid along with degenerating bits of neurons and other cells.

Our Alzheimer's disease products and major markets are as follows:

Product	Indication	Collaborator	Major Market
LEQEMBI™ (lecanemab-irmb) 100 mg/mL	Alzheimer's disease	Eisai	U.S.
Aduhelm® (aducanumab-avwa)	Alzheimer's disease	Eisai	U.S.

For additional information on our collaboration arrangements with Eisai, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Biosimilars

Biosimilars are a group of biologic medicines that are highly similar to currently available biologic therapies developed by companies known as "originators". Under our agreements with Samsung Bioepis, we commercialize three anti-tumor necrosis factor (TNF) biosimilars in certain countries in Europe: BENEPALI, an etanercept biosimilar referencing ENBREL, IMRALDI, an adalimumab biosimilar referencing HUMIRA, and FLIXABI, an infliximab biosimilar referencing REMICADE. We have also secured the exclusive rights to commercialize BYOOVIZ, a ranibizumab biosimilar referencing LUCENTIS, which was approved in the U.S., the E.U. and the United Kingdom (U.K.) during the third quarter of 2021. BYOOVIZ launched in the U.S. in June 2022 and became commercially available during the third quarter of 2022.

Our current biosimilar products and major markets are as follows:

Product	Indication	Major Markets
Benepali™ Etanercept	Rheumatoid arthritis Juvenile idiopathic arthritis Psoriatic arthritis Axial spondyloarthritis Plaque psoriasis Paediatric plaque psoriasis	France Germany Italy Spain U.K.
Imraldi™ Adalimumab	Rheumatoid arthritis Juvenile idiopathic arthritis Axial spondyloarthritis Psoriatic arthritis Psoriasis Paediatric plaque psoriasis Hidradenitis suppurativa Adolescent hidradenitis suppurativa Crohn's disease Paediatric Crohn's disease Ulcerative colitis Uveitis Paediatric Uveitis	France Germany Sweden U.K.
Flixabi™ Infliximab	Rheumatoid arthritis Crohn's disease Paediatric Crohn's disease Ulcerative colitis Paediatric ulcerative colitis Ankylosing spondylitis Psoriatic arthritis Psoriasis	France Germany Italy
Byooviz™ ranibizumab-nuna	Neovascular (wet) age-related macular degeneration Macular edema following retinal vein occlusion Myopic choroidal neovascularization	U.S.

For additional information on our collaboration arrangements with Samsung Bioepis, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Genentech Relationships

We have agreements with Genentech that entitle us to certain business and financial rights with respect to RITUXAN, RITUXAN HYCELA, GAZYVA, OCREVUS, LUNSUMIO, which was granted accelerated approval in the U.S. during the fourth quarter of 2022, glofitamab and options to add other potential anti-CD20 therapies.

Our current anti-CD20 therapeutic programs and major markets are as follows:

Product	Indication	Major Markets
Rituxan Rituximab	Non-Hodgkin's lymphoma CLL Rheumatoid arthritis Two forms of ANCA-associated vasculitis Pemphigus vulgaris	U.S. Canada
RituxanHYCELA rituximab/hyaluronidase human subcutaneous injection	Non-Hodgkin's lymphoma CLL	U.S.
GAZYVA obinutuzumab injection	In combination with chlorambucil for previously untreated CLL Follicular lymphoma In combination with chemotherapy followed by GAZYVA alone for previously untreated follicular lymphoma	U.S.
OCREVUS ocrelizumab	RMS PPMS	U.S.
Lunsumio mosunetuzumab-axgb injection for intravenous use 1 mg | 30 mg	Relapsed or refractory follicular lymphoma	U.S.

For additional information on our collaboration arrangements with Genentech, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Other

Product	Indication	Collaborator	Major Markets
Fumaderm	Moderate to severe plaque psoriasis	None	Germany

Patient Support and Access

We interact with patients, advocacy organizations and healthcare societies in order to gain insights into unmet needs. The insights gained from these engagements help us support patients with services, programs and applications that are designed to help patients lead better lives. Among other things, we provide customer service and other related programs for our products, such as disease and product specific websites, insurance research services, financial assistance programs and the facilitation of the procurement of our marketed products.

We are dedicated to helping patients obtain access to our therapies. Our patient representatives have access to a suite of financial assistance tools. With those tools, we help patients understand their insurance coverage and, if needed, help patients compare insurance options and programs. In the U.S., we have established programs that provide co-pay assistance or free product for qualified uninsured or underinsured patients, based on specific eligibility criteria. We also provide charitable contributions to

independent charitable organizations that assist patients with out-of-pocket expenses associated with their therapy.

We believe all healthcare stakeholders have a shared responsibility to ensure patients have equitable access to new, innovative medicines. We regularly review our pricing strategy and prioritize patient access to our therapies. We have a value-based contracting program designed to align the price of our therapies to the value our therapies deliver to patients. We also work with regulators, clinical researchers, ethicists, physicians and patient advocacy organizations and communities, among others, to determine how best to address requests for access to our investigational therapies in a manner that is consistent with our patient-focused values and compliant with regulatory standards and protocols. In appropriate situations, patients may have access to investigational therapies through Early Access Programs, single patient access or emergency use based on humanitarian or compassionate grounds.

Marketing and Distribution

Sales Force and Marketing

We promote our marketed products worldwide, including in the U.S., Europe and Japan, primarily through our own sales forces and marketing groups. In some countries, particularly in areas where we continue to expand into new geographic areas, we partner with third parties.

RITUXAN, RITUXAN HYCELA, GAZYVA, OCREVUS and LUNSUMIO are marketed by the Roche Group and its sublicensees.

We commercialize BENEPALI, IMRALDI and FLIXABI pursuant to our agreement with Samsung Bioepis in certain countries in Europe, as well as BYOOVIZ in the U.S.

We focus our sales and marketing efforts on specialist physicians in private practice or at major medical centers. We use customary industry practices to market our products and to educate physicians. This includes our sales representatives calling on individual health care providers (in-person and virtually), advertisements, professional symposia, direct mail, digital marketing, point of care marketing, public relations and other methods. We focus on health care provider sales and marketing efforts on specialty providers in both private practice and at major medical centers.

Distribution Arrangements

We distribute our products in the U.S. principally through wholesale and specialty distributors of pharmaceutical products and specialty pharmacies, mail order specialty distributors or shipping service providers. In other countries, the distribution of our products varies from country to country, including through wholesale distributors of pharmaceutical products and third-party distribution partners who are responsible for most marketing and distribution activities.

Eisai distributes AVONEX, TYSABRI, TECFIDERA and PLEGRIDY in India and other Asia-Pacific markets, excluding China.

RITUXAN, RITUXAN HYCELA, GAZYVA, OCREVUS and LUNSUMIO are distributed by the Roche Group and its sublicensees.

We distribute BENEPALI, IMRALDI and FLIXABI in certain countries in Europe and have an option to acquire exclusive rights to distribute these products in China, as well as BYOOVIZ in the U.S.

Our product sales to two wholesale distributors each accounted for more than 10.0% of our total revenue for the years ended December 31, 2022, 2021 and 2020, and on a combined basis, accounted for approximately 37.9%, 38.9% and 45.8%, respectively, of our gross product revenue. For additional information, please read *Note 5, Revenue*, to our consolidated financial statements included in this report.

Patents and Other Proprietary Rights

Patents are important for obtaining and protecting exclusive rights in our products and product candidates. We regularly seek patent protection in the U.S. and in selected countries outside the U.S. for inventions originating from our research and development efforts and those we license or acquire. In addition, we license rights to various patents and patent applications.

U.S. patents, as well as most foreign patents, are generally effective for 20 years from the date the earliest application was filed; however, U.S. patents on applications filed before June 8, 1995, may be effective until 17 years from the issue date, if that is later than the 20-year date. In some cases, the patent term may be extended to recapture a portion of the term lost during regulatory review of the claimed therapeutic or, in the case of the U.S., because of U.S. Patent and Trademark Office (USPTO) delays in prosecuting the application. Specifically, in the U.S., under the Drug Price Competition and Patent Term Restoration Act of 1984, commonly known as the Hatch-Waxman Act, a patent that covers a drug approved by the FDA may be eligible for patent term extension (for up to 5 years, but not beyond a total of 14 years from the date of product approval) as compensation for patent term lost during the FDA regulatory review process. The duration and extension of the term of foreign patents varies, in accordance with local law. For example, supplementary protection certificates (SPCs) on some of our products have

been granted in a number of European countries, compensating in part for delays in obtaining marketing approval.

Regulatory exclusivity, which may consist of regulatory data protection and market protection, also can provide meaningful protection for our products. Regulatory data protection provides to the holder of a drug or biologic marketing authorization, for a set period of time, the exclusive use of the proprietary pre-clinical and clinical data that it created at significant cost and submitted to the applicable regulatory authority to obtain approval of its product. After the period of exclusive use, third parties are permitted to reference such data in abbreviated applications for approval and to market (subject to any applicable market protection) their generic drugs and biosimilars. Market protection provides the holder of a drug or biologic marketing authorization the exclusive right to commercialize its product for a period of time, thereby preventing the commercialization of another product containing the same active ingredient(s) during that period. Although the World Trade Organization's agreement on trade-related aspects of intellectual property rights (TRIPS) requires signatory countries to provide regulatory exclusivity to innovative pharmaceutical products, implementation and enforcement varies widely from country to country.

We also rely upon other forms of unpatented confidential information to remain competitive. We protect such information principally through refraining from public disclosure and confidentiality agreements with our employees, consultants, outside scientific collaborators, scientists whose research we sponsor and other advisers. In the case of our employees, these agreements also provide, in compliance with relevant law, that inventions and other intellectual property conceived by such employees during their employment are our exclusive property.

Our trademarks are important to us and are generally covered by trademark applications or registrations in the USPTO and the patent or trademark offices of other countries. We also use trademarks licensed from third parties, such as the trademark FAMPYRA, which we license from Acorda. Trademark protection varies in accordance with local law, and continues in some countries as long as the trademark is used and in other countries as long as the trademark is registered. Trademark registrations generally are for fixed but renewable terms.

Our Patent Portfolio

The following table describes certain patents in the U.S. and Europe that we currently consider of primary importance to our marketed products, including the territory, patent number, general subject matter and expected expiration dates. Except as otherwise noted, the expected expiration dates include any granted patent term extensions and issued SPCs. In some instances, there are additional later-expiring patents relating to our products directed to, among other things, particular forms or compositions, methods of manufacturing or use of the drug in the treatment of particular diseases or conditions. We also continue to pursue additional patents and patent term extensions in the U.S. and other territories covering various aspects of our products that may, if issued, extend exclusivity beyond the expiration of the patents listed in the table.

Product	Territory	Patent No.	General Subject Matter	Patent Expiration[1]
TECFIDERA	Europe	1,131,065	Formulations of dialkyl fumarates and their use for treating autoimmune diseases	2024[3]
	Europe	2,653,873	Methods of use	2028
PLEGRIDY	U.S.	8,524,660	Methods of treatment	2023
	U.S.	8,017,733	Polymer conjugates of interferon beta-1a	2027
	Europe	1,656,952	Polymer conjugates of interferon-beta-1a and uses thereof	2024[4]
	Europe	1,476,181	Polymer conjugates of interferon-beta-1a and uses thereof	2023[5]
TYSABRI	U.S.	8,124,350	Methods of treatment	2027
	U.S.	8,349,321	Formulation	2024
	U.S.	8,815,236	Formulation	2024
	U.S.	8,871,449	Methods of treatment	2026
	U.S.	8,900,577	Formulation	2024
	U.S.	9,316,641	Safety-related assay	2032
	U.S.	9,493,567	Methods of treatment	2027
	U.S.	9,709,575	Methods of treatment	2026
	U.S.	10,119,976	Methods of evaluating patient risk	2034
	U.S.	10,233,245	Methods of treatment	2027
	U.S.	10,444,234	Safety-related assay	2031
	U.S.	10,677,803	Methods of treatment	2034
	U.S.	10,705,095	Methods of treatment	2026
	U.S.	11,280,794	Methods of treatment	2034
	U.S.	11,287,423	Safety-related assay	2031
	U.S.	11,292,845	Methods of treatment	2027
	Europe	1,485,127	Methods of use	2023[2]
	Europe	2,170,390	Formulation	2028
	Europe	2,236,154	Formulation	2024
	Europe	2,676,967	Methods of use	2027
	Europe	3,339,865	Safety-related assay	2031
	Europe	3,417,875	Formulation	2024
	Europe	3,575,792	Safety-related assay	2032
FAMPYRA	Europe	1,732,548	Sustained-release aminopyridine compositions for increasing walking speed in patients with MS	2025[6]
	Europe	2,377,536	Sustained-release aminopyridine compositions for treating MS	2025[7]
VUMERITY	U.S.	8,669,281	Compounds and pharmaceutical compositions	2033
	U.S.	9,090,558	Methods of treatment	2033
	U.S.	10,080,733	Crystalline forms, pharmaceutical compositions and methods of treatment	2033
	Europe	2,970,101	Crystalline forms, pharmaceutical compositions and methods of treatment Prodrugs of fumarates and their use in treating various diseases	2034
SPINRAZA	U.S.	7,101,993	Oligonucleotides containing 2'-O-modified purines	2023
	U.S.	7,838,657	SMA treatment via targeting of SMN2 splice site inhibitory sequences	2027
	U.S.	8,110,560	SMA treatment via targeting of SMN2 splice site inhibitory sequences	2025
	U.S.	8,361,977	Compositions and methods for modulation of SMN2 splicing	2030
	U.S.	8,980,853	Compositions and methods for modulation of SMN2 splicing	2030
	U.S.	9,717,750	Compositions and methods for modulation of SMN2 splicing	2030
	U.S.	9,926,559	Compositions and methods for modulation of SMN2 splicing	2034

	U.S.	10,266,822	SMA treatment via targeting of SMN2 splice site inhibitory sequences	2025
	U.S.	10,436,802	Methods for Treating Spinal Muscular Atrophy	2035
	Europe	1,910,395	Compositions and methods for modulation of SMN2 splicing	2026[8]
	Europe	2,548,560	Compositions and methods for modulation of SMN2 splicing	2026[9]
	Europe	3,305,302	Compositions and methods for modulation of SMN2 splicing	2030
	Europe	3,308,788	Compositions and methods for modulation of SMN2 splicing	2026
	Europe	3,449,926	Compositions and methods for modulation of SMN2 splicing	2030
ADUHELM	U.S.	8,906,367	Method of providing disease-specific binding molecules and targets	2032[10]
	U.S.	10,131,708	Methods of treating Alzheimer's disease	2028
LEQEMBI	U.S.	8,025,878	Protofibril selective antibodies and the use thereof	2027[1][10]

Footnotes follow on next page.

(1) In addition to patent protection, certain of our products are entitled to regulatory exclusivity in the U.S. and the E.U. expected until the dates set forth below:

Product	Territory	Expected Expiration
TECFIDERA	E.U.	Subject to appeal
PLEGRIDY	U.S.	2026
	E.U.	2024
SPINRAZA	U.S.	2023
	E.U.	2029
ADUHELM	U.S.	2033
LEQEMBI	U.S.	2035

(2) For additional information as to the validity of this patent, please read *Note 21, Litigation*, to our consolidated financial statements included in this report.

(3) This patent is subject to granted SPCs in certain European countries, which extended the patent term in those countries to 2024.

(4) This patent is subject to granted SPCs in certain European countries, which extended the patent term in those countries to 2024.

(5) This patent is subject to granted SPCs in certain European countries, which extended the patent term in those countries to 2028.

(6) This patent is subject to granted SPCs in certain European countries, which extended the patent term in those countries to 2026.

(7) This patent is subject to granted SPCs in certain European countries, which extended the patent term in those countries to 2026.

(8) This patent is subject to granted SPCs in certain European countries, which extended the patent term in those countries to 2031.

(9) This patent is subject to granted SPCs in certain European countries, which extended the patent term in those countries to 2031.

(10) A patent with this subject matter may be entitled to patent term extension in the U.S.

The existence of patents does not guarantee our right to practice the patented technology or commercialize the patented product. Patents relating to pharmaceutical, biopharmaceutical and biotechnology products, compounds and processes, such as those that cover our existing products, compounds and processes and those that we will likely file in the future, do not always provide complete or adequate protection. Litigation, interferences, oppositions, *inter partes* reviews, administrative challenges or other similar types of proceedings are, have been and may in the future be necessary in some instances to determine the validity and scope of certain of our patents, regulatory exclusivities or other proprietary rights, and in other instances to determine the validity, scope or non-infringement of certain patent rights claimed by third parties to be pertinent to the manufacture, use or sale of our products. We also face challenges to our patents, regulatory exclusivities or other proprietary rights covering our products by third-parties, such as manufacturers of generics, biosimilars, prodrugs and products approved under abbreviated regulatory pathways. A discussion of certain risks and uncertainties that may affect our patent position, regulatory exclusivities or other proprietary rights is set forth in *Item 1A. Risk Factors* included in this report, and the discussion of legal proceedings related to certain patents described above is set forth in *Note 21, Litigation,* to our consolidated financial statements included in this report.

Competition

Competition in the biopharmaceutical industry and the markets in which we operate is intense. There are many companies, including biotechnology and pharmaceutical companies, engaged in developing products for the indications our approved products are approved to treat and the therapeutic areas we are targeting with our research and development activities. Some of our competitors may have substantially greater financial, marketing, research and development and other resources than we do.

We believe that competition and leadership in the industry is based on managerial and technological excellence and innovation as well as establishing patent and other proprietary positions through research and development. The achievement of a leadership position also depends largely upon our ability to maximize the approval, acceptance and use of our product candidates and the availability of adequate financial resources to fund facilities, equipment, personnel, clinical testing, manufacturing and marketing. Another key aspect of remaining competitive in the industry is recruiting and retaining leading scientists and technicians to conduct our research activities and advance our development programs, including with the commercial expertise to effectively market our products.

Competition among products approved for sale may be based, among other things, on patent position, product efficacy, safety, patient convenience, delivery devices, reliability, availability, reimbursement and price. In addition, early entry of a new pharmaceutical product into the market may have important advantages in gaining product acceptance and market share. Accordingly, the relative speed with which we can develop products, complete the testing and approval process and supply commercial quantities of products will have a significant impact on our competitive position.

The introduction of new products or technologies, including the development of new processes or technologies by competitors or new information about existing products or technologies, results in increased competition for our marketed products and pricing pressure on our marketed products. The development of new or improved treatment options or standards of care or cures for the diseases our products treat reduces and could eliminate the use of our products or may limit the utility and application of ongoing clinical trials for our product candidates.

In addition, the commercialization of certain of our own approved products, products of our collaborators and pipeline product candidates may negatively impact future sales of our existing products.

Our products and revenue streams continue to face increasing competition in many markets from the introduction of generic versions, prodrugs and biosimilars of existing products and products approved under abbreviated regulatory pathways. Such products are likely to be sold at substantially lower prices than branded products. Accordingly, the introduction of such products as well as other lower-priced competing products may significantly reduce both the price that we are able to charge for our products and the volume of products we sell, which will negatively impact our revenue. In addition, in some markets, when a generic or biosimilar version of one of our products is commercialized, it may be automatically substituted for our product and significantly reduce our revenue in a short period of time.

We believe our long-term competitive position depends upon our success in discovering and developing innovative, cost-effective products that serve unmet medical needs, along with our ability to manufacture products efficiently and to launch and market them effectively in a highly competitive environment.

Additional information about the competition that our marketed products face is set forth below and in *Item 1A. Risk Factors* included in this report.

Multiple Sclerosis

TECFIDERA, AVONEX, PLEGRIDY, TYSABRI and VUMERITY each compete with one or more of the following branded products as well as generic and biosimilar versions of these products:

Competing Product	Competitor
AUBAGIO (teriflunomide)	Sanofi Genzyme
BETASERON/BETAFERON (interferon-beta-1b)	Bayer Group
BRIUMVI (ublituximab-xiiy)	TG Therapeutics, Inc.
COPAXONE (glatiramer acetate)	Teva Pharmaceuticals Industries Ltd.
EXTAVIA (interferon-beta-1b)	Novartis AG
GILENYA (fingolimod)	Novartis AG
GLATOPA (glatiramer acetate)	Sandoz, a division of Novartis AG
LEMTRADA (alemtuzumab)	Sanofi Genzyme
MAVENCLAD (cladribine)	EMD Serono
MAYZENT (siponimod)	Novartis AG
OCREVUS (ocrelizumab)	Genentech
PONVORY (ponesimod)	Janssen Pharmaceutical Companies of Johnson & Johnson
REBIF (interferon-beta-1)	EMD Serono
ZEPOSIA (ozanimod)	BMS
BAFIERTAM (monomethyl fumarate)	Banner Life Sciences
KESIMPTA (ofatumumab)	Novartis AG

Multiple TECFIDERA generic entrants are now in North America, Brazil and certain E.U. countries and have deeply discounted prices compared to

TECFIDERA. The generic competition for TECFIDERA has significantly reduced our TECFIDERA revenue and we expect that TECFIDERA revenue will continue to decline in the future.

In the E.U., we are seeking to enforce a patent granted in June 2022 that relates to TECFIDERA and expires in 2028. In addition, we are litigating to affirm that TECFIDERA is entitled to regulatory data and market protection until at least February 2024. Our Company, the EMA and the EC have each appealed the May 2021 decision of the European General Court, which annulled the EMA's decision not to validate an application for approval of a TECFIDERA generic on the basis that the EMA and EC conducted the wrong assessment when determining TECFIDERA's entitlement to regulatory data and marketing protection. Our Company, the EMA and the EC have each appealed the General Court's decision as wrongly decided and the appeal is pending. On October 6, 2022, the Advocate General of the CJEU issued a nonbinding advisory opinion in Biogen's favor. This opinion recommends that the CJEU set aside the judgment of the European General Court. We are awaiting the decision of the CJEU.

FAMPYRA is indicated as a treatment to improve walking in adult patients with MS who have a walking disability and is the first treatment that addresses this unmet medical need with demonstrated efficacy in people with all types of MS. FAMPYRA is currently the only therapy approved to improve walking in patients with MS.

Competition in the MS market is intense. Along with us, a number of companies are working to develop additional treatments for MS that may in the future compete with our MS products. One such product that was approved in the U.S. in 2017 and in the E.U. in 2018 is OCREVUS, a treatment for RMS and PPMS that was developed by Genentech. While we have a financial interest in OCREVUS, future sales of our MS products may be adversely affected if OCREVUS continues to gain market share, or if other MS products that we or our competitors are developing are commercialized.

Spinal Muscular Atrophy

We face competition from a gene therapy product and an oral product. We expect that we will experience competition from both products in additional jurisdictions in the future, which may adversely affect our sales of SPINRAZA.

Additionally, we are aware of other products now in development that, if launched, may also compete with SPINRAZA. Future sales of SPINRAZA may be adversely affected by the commercialization of competing products.

Psoriasis

FUMADERM competes with several different types of therapies in the psoriasis market within Germany, including oral systemics such as methotrexate and cyclosporine.

Biosimilars

BENEPALI, IMRALDI and FLIXABI, the three biosimilar products we currently commercialize in certain countries in Europe pursuant to an agreement with Samsung Bioepis, compete with their reference products, ENBREL, HUMIRA and REMICADE, respectively, as well as other biosimilars of those reference products.

In addition, BYOOVIZ, a biosimilar product we currently commercialize in the U.S. pursuant to an agreement with Samsung Bioepis, competes with its reference product LUCENTIS, as well as other biosimilars of this reference product.

Genentech Relationships in Other Indications

RITUXAN, RITUXAN HYCELA and GAZYVA in Oncology

RITUXAN, RITUXAN HYCELA and GAZYVA compete with a number of therapies in the oncology market, including TREANDA (bendamustine HCL), ARZERRA (ofatumumab), IMBRUVICA (ibrutinib) and ZYDELIG (idelalisib).

We also expect that over time RITUXAN HYCELA and GAZYVA will increasingly compete with RITUXAN in the oncology market. In addition, we are aware of several other anti-CD20 molecules, including biosimilar products, that have been approved and are competing with RITUXAN, RITUXAN HYCELA and GAZYVA in the oncology and other markets. Biosimilar products referencing RITUXAN have launched in the U.S and are being offered at lower prices. This competition has had a significant adverse impact on the pre-tax profits of our collaboration arrangements with Genentech, as the sales of RITUXAN have decreased substantially compared to prior periods. We expect that biosimilar competition will continue to increase as these products capture additional market share and that this will have a significant adverse impact on our co-promotion profits in the U.S. in future years.

RITUXAN in Rheumatoid Arthritis

RITUXAN competes with several different types of therapies in the rheumatoid arthritis market, including, among others, traditional disease-modifying anti-rheumatic drugs such as steroids, methotrexate and cyclosporine, TNF inhibitors, ORENCIA (abatacept), ACTEMRA (tocilizumab) and XELJANZ (tofacitinib).

We are also aware of other products, including biosimilars, in development that, if approved, may

compete with RITUXAN in the rheumatoid arthritis market.

Research and Development Programs

A commitment to research is fundamental to our mission. Our research efforts are focused on better understanding the underlying biology of diseases so we can discover and deliver treatments that have the potential to make a real difference in the lives of patients with high unmet medical needs. By applying our expertise in biologics and our growing capabilities in small molecule, antisense, gene therapy, gene editing and other technologies, we target specific medical needs where we believe new or better treatments are needed.

We intend to continue committing significant resources to targeted research and development opportunities where there is a significant unmet need and where a drug candidate has the potential to be highly differentiated. As part of our ongoing research and development efforts, we have devoted significant resources to conducting clinical studies to advance the development of new pharmaceutical products and technologies and to explore the utility of our existing products in treating disorders beyond those currently approved in their labels.

For additional information on our research and development expense included in our consolidated statements of income, please read *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations* included in this report.

The table below highlights our current research and development programs that are in clinical trials and the current phase of such programs. Drug development involves a high degree of risk and investment, and the status, timing and scope of our development programs are subject to change. Important factors that could adversely affect our drug development efforts are discussed in *Item 1A. Risk Factors* included in this report.

Alzheimer's Disease and Dementia	**Lecanemab (Aβ mAb)*** - Alzheimer's**	Filed in the U.S., E.U. and Japan
	Lecanemab (Aβ mAb)* - Preclinical Alzheimer's	Phase 3
	Aducanumab (Aβ mAb) - Alzheimer's**	Filed in Japan and Other Markets
	BIIB080 (tau ASO)* - Alzheimer's	Phase 2
	BIIB113 (OGA inhibitor) - Alzheimer's	Phase 1
Neuropsychiatry	**Zuranolone ($GABA_A$ PAM)* - MDD**	Filed in the U.S.
	Zuranolone ($GABA_A$ PAM)* - PPD	Filed in the U.S.
Specialized Immunology	**Dapirolizumab pegol (anti-CD40L)* - SLE**	Phase 3
	Litifilimab (anti-BDCA2) - SLE	Phase 3
	Litifilimab (anti-BDCA2) - CLE	Phase 2/3
Neuromuscular Disorders	**Tofersen (SOD1 ASO)* - SOD1 ALS**	Filed in the U.S. and E.U.
	BIIB105 (ataxin-2 ASO)# - ALS	Phase 1/2
	BIIB115 (SMN ASO)* - SMA	Phase 1
Parkinson's Disease and Movement Disorders	**BIIB122 (DNL151)* - LRRK2 Parkinson's**	Phase 3
	BIIB122 (DNL151)* - Parkinson's	Phase 2
	BIIB124 (SAGE-324)* - Essential Tremor	Phase 2
	BIIB094 (ION859)# - Parkinson's	Phase 1
	BIIB101 (ION464)# - Multiple System Atrophy	Phase 1
	BIIB132 (ATXN-3 ASO)# - SCA3	Phase 1
Multiple Sclerosis	**BIIB091 (peripheral BTK inhibitor) - MS**	Phase 1
	BIIB107 (anti-VLA4) - MS	Phase 1
Neurovascular	**Glibenclamide IV (SUR1-TRPM4 Inhibitor) - LHI^ Stroke**	Phase 3
	Glibenclamide IV (SUR1-TRPM4 Inhibitor) - Brain Contusion	Phase 2
	BIIB131 (TMS-007) - Acute Ischemic Stroke	Phase 2
Genetic Neurodevelopmental Disorders	**BIIB121 (UBE3A ASO)# - Angelman Syndrome**	Phase 1

* Collaboration program
** Granted accelerated approval in the U.S. in June 2021 under the brand name ADUHELM.
*** Granted accelerated approval in the U.S. in January 2023 under the brand name LEQEMBI and filed for traditional approval in the U.S., E.U. and Japan.
# Option agreement
^ Large Hemispheric Infarction (LHI)

For information about certain of our agreements with collaborators and other third parties, please read the subsection entitled *Business Relationships* below and *Note 2, Acquisitions*, *Note 19, Collaborative and Other Relationships,* and *Note 20, Investments in Variable Interest Entities,* to our consolidated financial statements included in this report.

Business Relationships

As part of our business strategy, we establish business relationships, including entering into licenses, joint ventures and collaborative arrangements with other companies, universities and medical research institutions, to assist in the clinical development and/or commercialization of certain of our products and product candidates and to provide support for our research programs. We also evaluate opportunities for acquiring products or rights to products and technologies that are complementary to our business from other companies, universities and medical research institutions.

Below is a brief description of certain business relationships and collaborations that expand our pipeline and provide us with certain rights to existing and potential new products and technologies. For additional information on certain of these relationships, including their ongoing financial and accounting impact on our business, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Eisai Co., Ltd.

We have a collaboration agreement with Eisai to jointly develop and commercialize LEQEMBI (lecanemab), an anti-amyloid antibody for the treatment of Alzheimer's disease. Eisai serves as the lead of LEQEMBI development and regulatory submissions globally with both companies co-commercializing and co-promoting the product, and Eisai having final decision-making authority. All costs, including research, development, sales and marketing expense, are shared equally between us and Eisai. Upon LEQEMBI marketing approval, we and Eisai will co-promote LEQEMBI and share profits and losses equally. We currently manufacture LEQEMBI drug substance and drug product and in March 2022 we extended our supply agreement with Eisai related to LEQEMBI from five years to ten years for the manufacture of LEQEMBI drug substance.

We also have a collaboration agreement with Eisai for ADUHELM. Under our initial ADUHELM Collaboration Agreement, we would lead the ongoing development of ADUHELM, and we and Eisai would co-promote ADUHELM with a region-based profit split. On March 14, 2022, we amended our ADUHELM Collaboration Agreement with Eisai. As of the amendment date, we have sole decision making and commercialization rights worldwide on ADUHELM, and beginning January 1, 2023, Eisai receives only a tiered royalty based on net sales of ADUHELM, and no longer participates in sharing ADUHELM's global profits and losses. Eisai's share of development, commercialization and manufacturing expense was limited to $335.0 million for the period from January 1, 2022 to December 31, 2022, which was achieved as of December 31, 2022. Once this limit was achieved, we became responsible for all ADUHELM related costs.

In addition, we and Eisai co-promote AVONEX, TYSABRI and TECFIDERA in Japan in certain settings and Eisai distributes AVONEX, TYSABRI, TECFIDERA and PLEGRIDY in India and other Asia-Pacific markets, excluding China.

Sage Therapeutics, Inc.

We have a global collaboration and license agreement with Sage to jointly develop and commercialize zuranolone for the potential treatment of MDD and PPD and BIIB124 (SAGE-324) for the potential treatment of essential tremor with potential in other neurological conditions such as epilepsy. Under this collaboration, both companies will share equal responsibility and costs for development as well as profits and losses for commercialization in the U.S. Outside the U.S., we are responsible for development and commercialization, excluding Japan, Taiwan and South Korea, with respect to zuranolone and may pay Sage potential tiered royalties in the high teens to low twenties.

Ionis Pharmaceuticals, Inc.

We have an exclusive, worldwide option and collaboration agreement with Ionis relating to the development and commercialization of antisense therapeutics for up to three gene targets. Under a separate collaboration and license agreement with Ionis, we have an exclusive, worldwide license to develop and commercialize SPINRAZA for the treatment of SMA. We also have a 10-year exclusive collaboration agreement with Ionis to develop novel ASO drug candidates for a broad range of neurological diseases.

In addition, we have research collaboration agreements with Ionis under which both companies perform discovery level research and will develop and commercialize new ASO drug candidates for the potential treatment of SMA and additional antisense or other therapeutics for the potential treatment of neurological diseases.

Genentech, Inc. (Roche Group)

We have agreements with Genentech that entitle us to certain business and financial rights with respect to RITUXAN, RITUXAN HYCELA, GAZYVA, OCREVUS, LUNSUMIO, which was granted accelerated approval in the U.S. during the fourth quarter of 2022, glofitamab and options to add other potential anti-CD20 therapies.

Denali Therapeutics Inc.

We have a collaboration and license agreement with Denali to co-develop and co-commercialize Denali's small molecule inhibitors of LRRK2 for Parkinson's disease. Under this collaboration, both companies share responsibility and costs for global development based on specified percentages as well as profits and losses for commercialization in the U.S. and China. Outside the U.S. and China, we are responsible for commercialization and may pay Denali potential tiered royalties.

In addition to the LRRK2 program, we also have an exclusive option to license two preclinical programs from Denali's Transport Vehicle platform, including its Antibody Transport Vehicle (ATV): ATV enabled anti-amyloid beta program and a second program utilizing its Transport Vehicle technology. Further, we have the right of first negotiation on two additional ATV-enabled therapeutics for indications within specific neurodegenerative diseases, should Denali decide to seek a collaboration for such programs.

Samsung Bioepis Co., Ltd.

In February 2012 we entered into a joint venture agreement with Samsung BioLogics establishing an entity, Samsung Bioepis, to develop, manufacture and market biosimilar products. We also have an agreement with Samsung Bioepis to commercialize, over a 10-year term, three anti-TNF biosimilar product candidates in certain countries in Europe and, in the case of BENEPALI, Japan. Under this agreement, we are commercializing BENEPALI, an etanercept biosimilar referencing ENBREL, IMRALDI, an adalimumab biosimilar referencing HUMIRA, and FLIXABI, an infliximab biosimilar referencing REMICADE, in certain countries in Europe.

In December 2019 we completed a transaction with Samsung Bioepis and acquired an option to extend our existing commercial agreement with Samsung Bioepis for BENEPALI, IMRALDI and FLIXABI in certain countries in Europe. We have also secured the exclusive rights to commercialize BYOOVIZ, a ranibizumab biosimilar referencing LUCENTIS, which was approved in the U.S., the E.U. and the U.K. during the third quarter of 2021. BYOOVIZ launched in the U.S. in June 2022 and became commercially available during the third quarter of 2022. In addition to our commercialization agreements with Samsung Bioepis, we license certain of our proprietary technology to Samsung Bioepis in connection with Samsung Bioepis' development, manufacture and commercialization of its biosimilar products.

In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics. Under the terms of this transaction, we received approximately $1.0 billion in cash at closing and expect to receive approximately $1.3 billion in cash to be deferred over two payments of approximately $812.5 million due at the first anniversary and approximately $437.5 million due at the second anniversary of the closing of this transaction.

As part of this transaction, we are also eligible to receive up to an additional $50.0 million upon the achievement of certain commercial milestones. Our policy for contingent payments of this nature is to recognize the payments in the period that they become realizable, which is generally the same period in which the payments are earned.

For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions,* to our consolidated financial statements included in this report.

UCB

We have a collaboration agreement with UCB to jointly develop and commercialize dapirolizumab pegol, an anti-CD40L pegylated Fab, for the potential treatment of SLE and other future agreed indications. Both companies will share equally costs incurred for agreed indications, including research, development, sales and marketing expense. If marketing approval is obtained, both companies will co-promote dapirolizumab pegol and share profits and losses equally.

Sangamo Therapeutics, Inc.

We have a collaboration and license agreement with Sangamo Therapeutics, Inc. (Sangamo) to develop and commercialize ST-501 for tauopathies, including Alzheimer's disease; ST-502 for synucleinopathies, including Parkinson's disease; a third neuromuscular disease target; and up to nine additional neurological disease targets to be identified and selected within a five-year period. The companies are leveraging Sangamo's proprietary zinc finger protein technology delivered via adeno-associated virus to modulate the expression of key genes involved in neurological diseases. Under this collaboration, we may pay Sangamo tiered royalties on potential net sales of any products developed under this collaboration in the high single digit to sub-teen percentages.

Regulatory

Our current and contemplated activities and the products, technologies and processes that result from such activities are subject to substantial government regulation.

Regulation of Pharmaceuticals

Product Approval and Post-Approval Regulation in the U.S.

APPROVAL PROCESS

Before new pharmaceutical products may be sold in the U.S., preclinical studies and clinical trials of the products must be conducted and the results submitted to the FDA for approval. With limited exceptions, the FDA requires companies to register both pre-approval and post-approval clinical trials and disclose clinical trial results in public databases. Failure to register a trial or disclose study results within the required time periods could result in penalties, including civil monetary penalties. Clinical trial programs must establish efficacy, determine an appropriate dose and dosing regimen and define the conditions for safe use. This is a high-risk process that requires stepwise clinical studies in which the candidate product must successfully meet predetermined endpoints. The results of the preclinical and clinical testing of a product are then submitted to the FDA in the form of a BLA or a NDA. In response to a BLA or NDA, the FDA may grant marketing approval, request additional information or deny the application if it determines the application does not provide an adequate basis for approval.

Product development and receipt of regulatory approval takes a number of years, involves the expenditure of substantial resources and depends on a number of factors, including the severity of the disease in question, the availability of suitable alternative treatments, potential safety signals observed in preclinical or clinical tests and the risks and benefits of the product as demonstrated in clinical trials. The FDA has substantial discretion in the product approval process, and it is impossible to predict with any certainty whether and when the FDA will grant marketing approval. The agency may require the sponsor of a BLA or NDA to conduct additional clinical studies or to provide other scientific or technical information about the product, and these additional requirements may lead to unanticipated delays or expenses. Furthermore, even if a product is approved, the approval may be subject to limitations based on the FDA's interpretation of the existing pre-clinical and/or clinical data.

The FDA has developed four distinct approaches intended to facilitate the development and expedite the regulatory review of therapeutically important drugs, especially when the drugs are the first available treatment or have advantages over existing treatments: accelerated approval, fast track, breakthrough therapy and priority review.

- *Accelerated Approval*: The FDA may grant “accelerated approval” to products that treat serious or life-threatening illnesses and that provide meaningful therapeutic benefits to patients over existing treatments. Under this pathway, the FDA may approve a product based on surrogate endpoints or clinical endpoints other than survival or irreversible morbidity. When approval is based on surrogate endpoints or clinical endpoints other than survival or morbidity, the sponsor will be required to provide the FDA with confirmatory data post-approval to verify and describe clinical benefit. Under the FDA's accelerated approval regulations, if the FDA concludes that a drug that has been shown to be effective can be safely used only if distribution or use is restricted, it may require certain post-marketing restrictions to assure safe use. In addition, for products approved under accelerated approval, sponsors may be required to submit all copies of their promotional materials, including advertisements, to the FDA at least 30 days prior to initial dissemination. The FDA may withdraw approval if, for instance, post-marketing studies fail to verify clinical benefit, it becomes clear that restrictions on the distribution of the product are inadequate to ensure its safe use or if a sponsor fails to comply with the conditions of the accelerated approval.
- *Fast Track*: The FDA may grant "fast track" status to products that treat a serious condition and have data demonstrating the potential to address an unmet medical need or a drug that has been designated as a qualified infectious disease product.
- *Breakthrough Therapy*: The FDA may grant “breakthrough therapy” status to drugs designed to treat, alone or in combination with another drug or drugs, a serious or life-threatening disease or condition and for which preliminary clinical evidence suggests a substantial improvement over existing therapies based on a clinically significant endpoint. Breakthrough therapy status entitles the sponsor to earlier and more frequent meetings with the FDA regarding the development of nonclinical and clinical data and permits the FDA to offer product development or regulatory advice for the purpose of shortening the time to product approval. Breakthrough therapy status does not guarantee that a product will be eligible for priority review and does not ensure FDA approval.

- *Priority Review*: “Priority review” only applies to applications (original or efficacy supplement) for a drug that treats a serious condition and, if approved, would provide a significant improvement in safety or effectiveness of the treatment, diagnosis or prevention of a serious condition. Priority review may also be granted for any supplement that proposes a labeling change due to studies completed in response to a written request from the FDA for pediatric studies, for an application for a drug that has been designated as a qualified infectious disease product or for any application or supplement for a drug submitted with a priority review voucher.

  In December 2016 the FDA issued a rare pediatric disease priority review voucher to us in connection with the approval of SPINRAZA.

POST-MARKETING STUDIES

Regardless of the approval pathway employed, the FDA may require a sponsor to conduct additional post-marketing studies as a condition of approval to provide data on safety and effectiveness. If a sponsor fails to conduct the required studies, the FDA may withdraw its approval. In addition, if the FDA concludes that a drug that has been shown to be effective can be safely used only if distribution or use is restricted, it can mandate post-marketing restrictions to assure safe use. In such a case, the sponsor may be required to establish rigorous systems to assure use of the product under safe conditions. These systems are usually referred to as Risk Evaluation and Mitigation Strategies (REMS). The FDA can impose financial penalties for failing to comply with certain post-marketing commitments, including REMS. In addition, any changes to an approved REMS must be reviewed and approved by the FDA prior to implementation.

ADVERSE EVENT REPORTING

We monitor information on side effects and adverse events reported during clinical studies and after marketing approval and report such information and events to regulatory agencies. Non-compliance with the FDA's safety reporting requirements may result in civil or criminal penalties. Side effects or adverse events that are reported during clinical trials can delay, impede or prevent marketing approval. Based on new safety information that emerges after approval, the FDA can mandate product labeling changes, impose a new REMS or the addition of elements to an existing REMS, require new post-marketing studies (including additional clinical trials) or suspend or withdraw approval of the product. These requirements may affect our ability to maintain marketing approval of our products or require us to make significant expenditures to obtain or maintain such approvals.

APPROVAL OF CHANGES TO AN APPROVED PRODUCT

If we seek to make certain types of changes to an approved product, such as adding a new indication, making certain manufacturing changes or changing manufacturers or suppliers of certain ingredients or components, the FDA will need to review and approve such changes in advance. In the case of a new indication, we are required to demonstrate with additional clinical data that the product is safe and effective for a use other than what was initially approved. FDA regulatory review may result in denial or modification of the planned changes, or requirements to conduct additional tests or evaluations that can substantially delay or increase the cost of the planned changes.

REGULATION OF PRODUCT ADVERTISING AND PROMOTION

The FDA regulates all advertising and promotion activities and communications for products under its jurisdiction both before and after approval. Pursuant to FDA guidance, a company can make safety and efficacy claims either in or consistent with the product label. However, physicians may prescribe legally available drugs for uses that are not described in the drug's labeling. Such off-label prescribing is common across medical specialties, and often reflects a physician's belief that the off-label use is the best treatment for patients. The FDA does not regulate the behavior of physicians in their choice of treatments, but FDA regulations do impose stringent restrictions on manufacturers' communications regarding off-label uses. Failure to comply with applicable FDA requirements may subject a company to adverse publicity, enforcement action by the FDA, corrective advertising and the full range of civil and criminal penalties available to the government.

Regulation of Combination Products

Combination products are defined by the FDA to include products comprising two or more regulated components (e.g., a biologic and a device). Biologics and devices each have their own regulatory requirements, and combination products may have additional requirements. Some of our marketed products meet this definition and are regulated under this framework and similar regulations outside the U.S., and we expect that some of our pipeline product candidates may be evaluated for regulatory approval under this framework as well.

In May 2017 new regulations governing medical devices (MDR) and in-vitro diagnostic medical devices (IVDR) entered into force in the E.U. The MDR regulations became applicable in May 2021 and the

IVDR regulations became applicable in May 2022. All products covered by these regulations will be required to comply with them at the end of the transitional periods. These regulations introduce new requirements, including for clinical investigation of certain classifications of medical devices, require increased regulatory scrutiny, enhance the requirements for post market surveillance and vigilance and provide for greater transparency. These regulations also change the requirements for assessment of the medical device components of integral drug-device combination products, necessitating assessment of the device components under both the medical device and medicinal product regulatory regimes.

Product Approval and Post-Approval Regulation Outside the U.S.

We market our products in numerous jurisdictions outside the U.S. Most of these jurisdictions have product approval and post-approval regulatory processes that are similar in principle to those in the U.S. In Europe, for example, where a substantial part of our ex-U.S. efforts are focused, there are several routes for marketing approval, depending on the type of product for which approval is sought. Under the centralized procedure, a company submits a single application to the EMA. The marketing authorization application is similar to the NDA or BLA in the U.S. and is evaluated by the CHMP, the expert scientific committee of the EMA responsible for human medicines. If the CHMP determines that the MAA fulfills the requirements for quality, safety and efficacy and that the medicine has a positive benefit risk balance, it will adopt a positive opinion recommending the granting of the marketing authorization by the EC. The CHMP opinion is not binding, but is typically adopted by the EC. A MAA approved by the EC is valid in all member states of the E.U. The centralized procedure is required for all biological products, orphan medicinal products and new treatments for neurodegenerative disorders, and it is available for certain other products, including those which constitute a significant therapeutic, scientific or technical innovation.

In addition to the centralized procedure, the European regulatory framework includes the following options for regulatory review and approval in the E.U. member states:

- a national procedure, where the first application is made to the competent authority in one E.U. member state only;
- a decentralized procedure, where applicants submit identical applications to several E.U. member states and receive simultaneous approval, if the medicine has not yet been authorized in any E.U. member state; and
- a mutual recognition procedure, where applicants that have a medicine authorized in one E.U. member state can apply for mutual recognition of this authorization in other E.U. member states

As in the U.S., the E.U. also has distinct approaches intended to optimize the regulatory pathways for therapeutically important drugs, including the Priority Medicines Evaluation Scheme (PRIME), accelerated assessment and conditional marketing authorization. PRIME is intended to provide additional support to medicine developers throughout the development process. Regulatory review timelines in the E.U. may be truncated under accelerated assessment for products that address an unmet medical need. In addition, conditional marketing authorizations may be granted for products in the interest of public health, where the benefit of immediate availability outweighs the risk of having less comprehensive data than normally required. Conditional marketing authorizations are valid for one year and can be renewed annually. The marketing authorization holder is required to complete specific obligations (ongoing or new studies and, in some cases, additional activities) with a view to providing comprehensive data confirming that the benefit risk balance is positive. Once comprehensive data on the product have been obtained, the marketing authorization may be converted into a standard marketing authorization.

Aside from the U.S. and the E.U., there are countries in other regions where it is possible to receive an "accelerated" review whereby the national regulatory authority will commit to truncated review timelines for products that meet specific medical needs.

In the E.U. there is detailed legislation on pharmacovigilance and extensive guidance on good pharmacovigilance practices. A failure to comply with the E.U. pharmacovigilance obligations may result in significant financial penalties for the marketing authorization holder.

Regardless of the approval process employed, various parties share responsibilities for the monitoring, detection and evaluation of adverse events post-approval, including national competent authorities, the EMA, the EC and the marketing authorization holder. The EMA's Pharmacovigilance Risk Assessment Committee is responsible for assessing and monitoring the safety of human medicines and makes recommendations on product safety issues. Marketing authorization holders have an obligation to inform regulatory agencies of any new information which may influence the evaluation of benefits and risks of the medicinal product concerned.

In the U.S., the E.U. and other jurisdictions, regulatory agencies, including the FDA, conduct periodic inspections of NDA, BLA and marketing authorization holders to assess their compliance with pharmacovigilance obligations.

Good Manufacturing Practices

Regulatory agencies regulate and inspect equipment, facilities and processes used in the manufacturing and testing of pharmaceutical and biologic products prior to approving a product. If, after receiving approval from regulatory agencies, a company makes a material change in manufacturing equipment, location or process, additional regulatory review and approval may be required. We also must adhere to current Good Manufacturing Practices (cGMP) and product-specific regulations enforced by regulatory agencies following product approval. The FDA, the EMA and other regulatory agencies also conduct periodic visits to re-inspect equipment, facilities and processes following the initial approval of a product. If, as a result of these inspections, it is determined that our equipment, facilities or processes do not comply with applicable regulations and conditions of product approval, regulatory agencies may seek civil, criminal or administrative sanctions or remedies against us, including significant financial penalties and the suspension of our manufacturing operations.

Good Clinical Practices

The FDA, the EMA and other regulatory agencies promulgate regulations and standards for designing, conducting, monitoring, auditing and reporting the results of clinical trials to ensure that the data and results are accurate and that the rights and welfare of trial participants are adequately protected (commonly referred to as current Good Clinical Practices (cGCP)). Regulatory agencies enforce cGCP through periodic inspections of trial sponsors, principal investigators and trial sites, contract research organizations (CROs) and institutional review boards. If our studies fail to comply with applicable cGCP guidelines, the clinical data generated in our clinical trials may be deemed unreliable and relevant regulatory agencies may require us to perform additional clinical trials before approving our marketing applications. Noncompliance can also result in civil or criminal sanctions. We rely on third-parties, including CROs, to carry out many of our clinical trial-related activities. Failure of such third-parties to comply with cGCP can likewise result in rejection of our clinical trial data or other sanctions.

In April 2014 the EC adopted a new Clinical Trial Regulation, which was entered into force in June 2014 but did not apply until January 2022. There are transitional provisions for clinical trials which are ongoing at the date of application. Clinical trial applications may also continue to be made under the Clinical Trial Directive (the existing regulatory framework) until January 2023. All clinical trials must fully comply with the Clinical Trial Regulation by January 2025. The regulation harmonizes the procedures for assessment and governance of clinical trials throughout the E.U. and will require that information on the authorization, conduct and results of each clinical trial conducted in the E.U. be publicly available.

Approval of Biosimilars

In the U.S. the Patient Protection and Affordable Care Act (PPACA) amended the Public Health Service Act (PHSA) to authorize the FDA to approve biological products, referred to as biosimilars or follow-on biologics, that are shown to be "highly similar" to previously approved biological products based upon potentially abbreviated data packages. The biosimilar must show it has no clinically meaningful differences in terms of safety and effectiveness from the reference product, and only minor differences in clinically inactive components are allowable in biosimilar products. The approval pathway for biosimilars does, however, grant a biologics manufacturer a 12-year period of exclusivity from the date of approval of its biological product before biosimilar competition can be introduced. There is uncertainty, however, as the approval framework for biosimilars originally was enacted as part of the PPACA. There have been, and there are likely to continue to be, federal legislative and administrative efforts to repeal, substantially modify or invalidate some or all of the provisions of the PPACA. If the PPACA is repealed, substantially modified or invalidated, it is unclear what, if any, impact such action would have on biosimilar regulation.

A biosimilars approval pathway has been in place in the E.U. since 2003. The EMA has issued a number of scientific and product specific biosimilar guidelines, including requirements for approving biosimilars containing monoclonal antibodies. In the E.U., biosimilars are generally approved under the centralized procedure. The approval pathway allows sponsors of a biosimilar to seek and obtain regulatory approval based in part on reliance on the clinical trial data of an innovator product to which the biosimilar has been demonstrated, through comprehensive comparability studies, to be “similar.” In many cases, this allows biosimilars to be brought to market without conducting the full complement of clinical trials typically required for novel biologic drugs.

Orphan Drug Act

Under the U.S. Orphan Drug Act, the FDA may grant orphan drug designation to drugs or biologics intended to treat a “rare disease or condition,” which generally is a disease or condition that affects fewer than 200,000 individuals in the U.S. If a product

which has an orphan drug designation subsequently receives an initial FDA approval for the indication for which it has such designation, the product is entitled to orphan exclusivity, i.e., the FDA may not approve any other applications to market the same drug for the same indication for a period of seven years following marketing approval, except in certain very limited circumstances, such as if the later product is shown to be clinically superior to the orphan product. Legislation similar to the U.S. Orphan Drug Act has been enacted in other countries to encourage the research, development and marketing of medicines to treat, prevent or diagnose rare diseases. In the E.U., medicinal products that receive and maintain an orphan designation are entitled to 10 years of market exclusivity following approval, protocol assistance and access to the centralized procedure for marketing authorization. SPINRAZA has been granted orphan drug designation in the U.S., the E.U. and Japan.

Regulation Pertaining to Pricing and Reimbursement

In both domestic and foreign markets, sales of our products depend, to a significant extent, on the availability and amount of reimbursement by third-party payors, including governments, private health plans and other organizations. Substantial uncertainty exists regarding the pricing and reimbursement of our products, and drug prices continue to receive significant scrutiny. Governments may regulate coverage, reimbursement and pricing of our products to control cost or affect utilization of our products. Challenges to our pricing strategies, by either government or private stakeholders, could harm our business. The U.S. and foreign governments have enacted and regularly consider additional reform measures that affect health care coverage and costs. Private health plans may also seek to manage cost and utilization by implementing coverage and reimbursement limitations. Other payors, including managed care organizations, health insurers, pharmacy benefit managers, government health administration authorities and private health insurers, seek price discounts or rebates in connection with the placement of our products on their formularies and, in some cases, may impose restrictions on access, coverage or pricing of particular drugs based on perceived value.

Within the U.S.

- *Medicaid*: Medicaid is a joint federal and state program that is administered by the states for low income and disabled beneficiaries. Under the Medicaid Drug Rebate Program, we are required to pay a rebate for each unit of product reimbursed by the state Medicaid programs. The amount of the rebate is established by law and is adjusted upward if the average manufacturer price (AMP) increases more than inflation (measured by the Consumer Price Index - Urban). The rebate amount is calculated each quarter based on our report of current AMP and best price for each of our products to the CMS. The requirements for calculating AMP and best price are complex. We are required to report any revisions to AMP or best price previously reported within a certain period, which revisions could affect our rebate liability for prior quarters. In addition, if we fail to provide information timely or we are found to have knowingly submitted false information to the government, the statute governing the Medicaid Drug Rebate Program provides for civil monetary penalties.
- *Medicare*: Medicare is a federal program that is administered by the federal government. The program covers individuals age 65 and over as well as those with certain disabilities. Medicare Part B generally covers drugs that must be administered by physicians or other health care practitioners, are provided in connection with certain durable medical equipment or are certain oral anti-cancer drugs and certain oral immunosuppressive drugs. Medicare Part B pays for such drugs under a payment methodology based on the average sales price (ASP) of the drugs. Manufacturers, including us, are required to provide ASP information to the CMS on a quarterly basis. The manufacturer-submitted information is used to calculate Medicare payment rates. If a manufacturer is found to have made a misrepresentation in the reporting of ASP, the governing statute provides for civil monetary penalties.

  Medicare Part D provides coverage to enrolled Medicare patients for self-administered drugs (i.e., drugs that are not administered by a physician). Medicare Part D is administered by private prescription drug plans approved by the U.S. government. Each drug plan establishes its own Medicare Part D formulary for prescription drug coverage and pricing, which the drug plan may modify from time-to-time. The prescription drug plans negotiate pricing with manufacturers and pharmacies, and may condition formulary placement on the availability of manufacturer discounts. In addition, manufacturers, including us, are required to provide to the CMS a discount of up to 70.0% on brand name prescription drugs utilized by Medicare Part D beneficiaries when those beneficiaries reach the coverage gap in their drug benefits.

  On August 16, 2022, President Biden signed into law the IRA, which provides for (i) the government to negotiate prices for select high-cost Medicare Part D drugs (beginning in 2026) and Part B drugs (beginning in 2028), (ii) manufacturers to pay a rebate for Medicare Part B and Part D drugs when prices increase faster than inflation

beginning in 2022 for Part D and 2023 for Part B, and (iii) Medicare Part D redesign which replaces the current coverage gap provisions and establishes a $2,000 cap for out-of-pocket costs for Medicare beneficiaries beginning in 2025, with manufacturers being responsible for 10.0% of costs up to the $2,000 cap and 20.0% after that cap is reached.

The result of these forthcoming changes for manufacturers, including us, may include: i) a material adverse effect on our revenue on drugs subject to "negotiation"; ii) new rebate liability for drugs subject to the inflation provisions, and iii) potential significant additional costs related to the Part D re-design. However, as the degree of impact from this legislation on our business depends on a number of forthcoming implementation actions by regulatory authorities, the full extent of the IRA's impact on our sales and, in turn, our business, remains unclear.

- *Federal Agency Discounted Pricing*: Our products are subject to discounted pricing when purchased by federal agencies via the Federal Supply Schedule (FSS). FSS participation is required for our products to be covered and reimbursed by the Veterans Administration (VA), Department of Defense, Coast Guard and Public Health Service (PHS). Coverage under Medicaid, Medicare and the PHS pharmaceutical pricing program is also conditioned upon FSS participation. FSS pricing is intended not to exceed the price that we charge our most-favored non-federal customer for a product. In addition, prices for drugs purchased by the VA, Department of Defense (including drugs purchased by military personnel and dependents through the TriCare retail pharmacy program), Coast Guard and PHS are subject to a cap on pricing equal to 76.0% of the non-federal average manufacturer price (non-FAMP). An additional discount applies if non-FAMP increases more than inflation (measured by the Consumer Price Index - Urban). In addition, if we fail to provide information timely or we are found to have knowingly submitted false information to the government, the governing statute provides for civil monetary penalties.
- *340B Discounted Pricing*: To maintain coverage of our products under the Medicaid Drug Rebate Program and Medicare Part B, we are required to extend significant discounts to certain covered entities that purchase products under Section 340B of the PHS pharmaceutical pricing program. Purchasers eligible for discounts include hospitals that serve a disproportionate share of financially needy patients, community health clinics and other entities that receive certain types of grants under the PHSA. For all of our products, we must agree to charge a price that will not exceed the amount determined under statute (the "ceiling price") when we sell outpatient drugs to these covered entities. In addition, we may, but are not required to, offer these covered entities a price lower than the 340B ceiling price. The 340B discount formula is based on AMP and is generally similar to the level of rebates calculated under the Medicaid Drug Rebate Program.

Outside the U.S.

Outside the U.S., our products are paid for by a variety of payors, with governments being the primary source of payment. Governments may determine or influence reimbursement of products and may also set prices or otherwise regulate pricing. Negotiating prices with governmental authorities can delay commercialization of our products. Governments may use a variety of cost-containment measures to control the cost of products, including price cuts, mandatory rebates, value-based pricing and reference pricing (i.e., referencing prices in other countries and using those reference prices to set a price). Budgetary pressures in many countries are continuing to cause governments to consider or implement various cost-containment measures, such as price freezes, increased price cuts and rebates and expanded generic substitution and patient cost-sharing.

Regulation Pertaining to Sales and Marketing

We are subject to various federal and state laws pertaining to health care "fraud and abuse," including anti-kickback laws and false claims laws. Anti-kickback laws generally prohibit a prescription drug manufacturer from soliciting, offering, receiving or paying any remuneration to generate business, including the purchase or prescription of a particular drug. Although the specific provisions of these laws vary, their scope is generally broad and there may be no regulations, guidance or court decisions that clarify how the laws apply to particular industry practices. There is therefore a possibility that our practices might be challenged under anti-kickback or similar laws. False claims laws prohibit anyone from knowingly and willingly presenting, or causing to be presented, for payment to third-party payors (including Medicare and Medicaid), claims for reimbursed drugs or services that are false or fraudulent, claims for items or services not provided as claimed or claims for medically unnecessary items or services. Our activities relating to the sale and marketing of our products may be subject to scrutiny under these laws. Violations of fraud and abuse laws may be punishable by criminal or civil sanctions, including fines and civil monetary penalties, and exclusion from federal health care programs (including Medicare and Medicaid). In the U.S., federal and state authorities are paying increased attention to enforcement of these laws

within the pharmaceutical industry and private individuals have been active in alleging violations of the laws and bringing suits on behalf of the government under the federal civil False Claims Act. If we were subject to allegations concerning, or were convicted of violating, these laws, our business could be harmed.

Laws and regulations have been enacted by the federal government and various states to regulate the sales and marketing practices of pharmaceutical manufacturers. The laws and regulations generally limit financial interactions between manufacturers and health care providers or require disclosure to the government and public of such interactions. The laws include federal “sunshine” provisions. The sunshine provisions apply to pharmaceutical manufacturers with products reimbursed under certain government programs and require those manufacturers to disclose annually to the federal government (for re-disclosure to the public) certain payments made to physicians and certain other healthcare practitioners or to teaching hospitals. State laws may also require disclosure of pharmaceutical pricing information and marketing expenditures. Many of these laws and regulations contain ambiguous requirements. Given the lack of clarity in laws and their implementation, our reporting actions could be subject to the penalty provisions of the pertinent federal and state laws and regulations. Outside the U.S., other countries have implemented requirements for disclosure of financial interactions with healthcare providers and additional countries may consider or implement such laws.

Other Regulations

Foreign Anti-Corruption

We are subject to various federal and foreign laws that govern our international business practices with respect to payments to government officials. Those laws include the U.S. Foreign Corrupt Practices Act (FCPA), which prohibits U.S. companies and their representatives from paying, offering to pay, promising to pay or authorizing the payment of anything of value to any foreign government official, government staff member, political party or political candidate for the purpose of obtaining or retaining business or to otherwise obtain favorable treatment or influence a person working in an official capacity. In many countries, the health care professionals we regularly interact with may meet the FCPA's definition of a foreign government official. The FCPA also requires public companies to make and keep books and records that accurately and fairly reflect their transactions and to devise and maintain an adequate system of internal accounting controls.

The laws to which we are subject also include the U.K. Bribery Act 2010 (Bribery Act), which proscribes giving and receiving bribes in the public and private sectors, bribing a foreign public official and failing to have adequate procedures to prevent employees and other agents from giving bribes. U.S. companies that conduct business in the U.K. generally will be subject to the Bribery Act. Penalties under the Bribery Act include significant fines for companies and criminal sanctions for corporate officers under certain circumstances.

NIH Guidelines

We seek to conduct research at our U.S. facilities in compliance with the current U.S. National Institutes of Health Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines). By local ordinance, we are required to, among other things, comply with the NIH Guidelines in relation to our facilities in RTP, NC and are required to operate pursuant to certain permits.

Other Laws

Our present and future business has been and will continue to be subject to various other laws and regulations. Various laws, regulations and recommendations relating to data privacy and protection, safe working conditions, laboratory practices, the experimental use of animals and the purchase, storage, movement, import, export and use and disposal of hazardous or potentially hazardous substances, including radioactive compounds and infectious disease agents, used in connection with our research work are or may be applicable to our activities. Certain agreements entered into by us involving exclusive license rights may be subject to national or international antitrust regulatory control, the effect of which cannot be predicted. The extent of government regulation, which might result from future legislation or administrative action, cannot accurately be predicted.

The European Parliament and the Council of the E.U. adopted a comprehensive general data privacy regulation (GDPR) in 2016 to replace the current E.U. Data Protection Directive and related country-specific legislation. The GDPR took effect in May 2018 and governs the collection and use of personal data in the E.U. The GDPR, which is wide-ranging in scope, imposes several requirements relating to the consent of the individuals to whom the personal data relates, the information provided to the individuals, the security and confidentiality of the personal data, data breach notification and the use of third-party processors in connection with the processing of the personal data. The GDPR also imposes strict rules on the transfer of personal data out of the E.U. to the U.S., provides an enforcement authority and imposes large penalties for noncompliance, including the potential for fines of up to €20.0 million or 4.0% of the annual global revenue of the infringer, whichever is greater.

Manufacturing

We seek to ensure an uninterrupted supply of medicines to patients around the world. To that end, we continually review our manufacturing capacity, capabilities, processes and facilities. We believe that our manufacturing facilities, together with the third-party contract manufacturing organizations we outsource to, currently provide sufficient capacity for our products and to Samsung Bioepis, our collaboration partner that develops, manufactures and markets biosimilar products, and other strategic contract manufacturing partners.

In March 2021 we announced our plans to build a new gene therapy manufacturing facility in RTP, NC to support our gene therapy pipeline across multiple therapeutic areas. The new manufacturing facility will be approximately 197,000 square feet and is expected to be operational by the end of 2023, with an estimated total investment of approximately $195.0 million. Construction for this new facility began during the fourth quarter of 2021.

Manufacturing Facilities

Our drug substance manufacturing facilities include:

Facility	Drug Substance Manufactured
RTP, North Carolina	AVONEX PLEGRIDY TYSABRI Other*
Solothurn, Switzerland	ADUHELM LEQEMBI

* Other includes products manufactured for contract manufacturing partners.

In addition to our drug substance manufacturing facilities, we have a drug product manufacturing facility and supporting infrastructure in RTP, NC, including a parenteral facility and an oral solid dose products manufacturing facility.

The parenteral facility adds capabilities and capacity for filling biologics into vials and is used for filling product candidates. The oral solid dose products facility can supplement our outsourced small molecule manufacturing capabilities.

We also have an oligonucleotide synthesis manufacturing facility in RTP, NC. This facility gives us the capability to manufacture ASO candidates currently in our clinical pipeline.

In order to support our future growth and drug development pipeline, we are building a large-scale biologics manufacturing facility in Solothurn, Switzerland. In the second quarter of 2021 a portion of the facility received a Good Manufacturing Practice (GMP) multi-product license from the Swiss Agency for Therapeutic Products (SWISSMEDIC). Solothurn has been approved for the manufacture of ADUHELM and LEQEMBI by the FDA. We estimate the second manufacturing suite at the Solothurn facility will be operational by the end of 2023.

Genentech is responsible for all worldwide manufacturing activities for bulk RITUXAN, RITUXAN HYCELA and GAZYVA and has sourced the manufacture of certain bulk RITUXAN, RITUXAN HYCELA and GAZYVA requirements to a third party. Ionis supplies the active pharmaceutical ingredient (API) for SPINRAZA. Alkermes currently supplies both VUMERITY and FAMPYRA to us pursuant to separate supply agreements. In October 2019 we entered into a new supply agreement and amended our license and collaboration agreement with Alkermes for VUMERITY. We have elected to initiate a technology transfer and, following a transition period, to manufacture VUMERITY or have VUMERITY manufactured by a third party we have engaged in exchange for paying an increased royalty rate to Alkermes on any portion of future worldwide net commercial sales of VUMERITY that is manufactured by us or our designee. In October 2022 we entered into a new supply agreement with Alkermes for FAMPYRA. Acorda previously supplied FAMPYRA to us pursuant to a sublicensing arrangement with Alkermes, which was terminated in October 2022 as a result of an arbitration outcome between Acorda and Alkermes.

Third-Party Suppliers and Manufacturers

We principally use third parties to manufacture the API and the final product for our small molecule products and product candidates, including TECFIDERA and FUMADERM, and the final drug product for our large molecule products and, to a lesser extent, product candidates.

We source the majority of our fill-finish and all of our final product assembly and storage operations for our products, along with a substantial part of our label and packaging operations, to a concentrated group of third-party contract manufacturing organizations. Raw materials, delivery devices, such as syringes and auto-injectors, and other supplies required for the production of our products and product candidates are procured from various third-party suppliers and manufacturers in quantities adequate to meet our needs. Continuity of supply of such raw materials, devices and supplies is assured through inventory management and dual sourcing as appropriate. Our third-party service providers, suppliers and manufacturers may be subject to routine cGMP inspections by the FDA or comparable agencies in other jurisdictions and undergo assessment and certification by our quality management group.

ESG and Climate-Related Matters

Introduction

Our environmental, social and governance (ESG) efforts prioritize climate, health and equity, with a focus on vulnerable populations, as well as ongoing leadership in sustainability, governance, transparency and disclosure.

We remain committed to reducing our environmental footprint by eliminating harmful emissions and by minimizing resources used to manufacture our products. Since 2014 we have taken responsibility for our impact on climate change by matching 100% of our electricity usage with renewable energy, credits and offsets, driving efficiency initiatives internally and working with our suppliers. Green chemistry is embraced throughout our company, continually exploring new ways to make our drug development processes safer, more efficient and more sustainable while also saving resources.

Governance

ESG oversight is formally embedded into our Board of Director's governance principles and includes an annual review of our ESG strategy and short-and long-term goals. We regularly review our environmental commitments within the landscape of our business performance, rising costs and supply chain challenges. We remain committed to engaging employees and suppliers and collaborating with renowned institutions to advance the science and action to improve health outcomes.

As part of our broader commitment to these priorities, we continue to tie a portion of our employees' and executive officers' compensation to advancing our ESG efforts.

We strive to comply in all material respects with applicable laws and regulations concerning the environment. While it is impossible to predict accurately the future costs associated with environmental compliance and potential remediation activities, compliance with environmental laws is not expected to require significant capital expenditures and has not had, and is not expected to have, a material adverse effect on our operations or competitive position. Our Executive Committee has responsibility for evaluating the impact of climate change on the business and overseeing actions taken by the company to limit its adverse impact on the environment.

Our Enterprise Risk Management (ERM) framework is designed to ensure climate-related risks and opportunities are integrated into our overall business strategy. Our ERM team monitors strategic climate-related risks across all aspects of our business and utilizes climate scenarios as part of its assessments. On an annual basis, the ERM team evaluates identified risks, including any climate-related physical and transitional risks, by engaging leaders across the company. The ERM team provides annual updates on their findings and activities to our Executive Committee and Board of Directors.

Risk Management

Addressing ESG matters is part of our long-term global strategy and investment in our future and we have seen increased interest from stakeholders and investors on our ESG practices. While we continue to to advance our ESG efforts, there is no certainty that we will manage ESG matters in ways that successfully meet rapidly changing expectations from investors, regulators, third party rankings firms, customers and society as a whole. Our inability to manage ESG matters in accordance with expectations can negatively impact our reputation and business.

Climate Risk Management

We identify climate risk as the risk of loss arising from climate change and is comprised of both physical risk and transition risk. Physical risk considers how the physical impacts of climate change (e.g., increased storms, drought, fires, floods) can directly damage physical assets or otherwise impact their value or productivity. Transition risk considers how changes in policy. regulations, culture, technology, business practices and market preferences to address climate change (e.g., carbon pricing policies, power generation shifts from fossil fuels to renewable energy) can lead to changes in the value of assets and businesses. Disruption in supply chains, changing customer expectations in the biosimilar market and potential shifts in the regulatory environment that disadvantage the use of fossil fuels, may make it difficult for us to fulfill business obligations or cause us to incur substantial expense.

Identified material risks and opportunities are reported to our ERM team, which reports to our Executive Committee and Board of Directors. We consider and address those risks and opportunities that are financially material and may impact our business model, as well as mitigation measures that are in place or need to be adopted.

For additional information on our environment-related risks, please read *Item 1A. Risk Factors* included in this report.

Human Capital

As of December 31, 2022, we had approximately 8,725 employees worldwide. Approximately 4,970 employees were employed in the U.S. and approximately 3,755 employees were employed in foreign countries.

Diversity, Equity and Inclusion

At Biogen, prejudice, racism and intolerance are unacceptable. We are committed to Diversity, Equity and Inclusion (DE&I) across all aspects of our organization, including recruitment, hiring, promotion, retention and development practices. As of December 31, 2022, 30.4% of Biogen's manager-level and above positions were held by ethnic or racial minorities in the U.S. Our policies and practices are global, but the laws in many countries outside the U.S. do not permit us to collect ethnic or racial data on our employees. Globally, 47.4% of Biogen's positions at director-level and above were held by women as of December 31, 2022.

Our DE&I strategy outlines actionable steps to deepen our commitment across the business, building upon a strong foundation. This plan includes the strategy to build our talent and strengthen our leadership, improve health outcomes for underserved communities in the disease areas we treat and contribute to the communities impacting our employees and patients. We plan to create greater awareness and capability in our organization through leadership accountability and transparency. To establish and progress this strategy, we rely on a cross-company governing body of employees known as the Diversity, Equity & Inclusion Strategic Council.

We are honored to be recognized as an employer of choice. For the fifth consecutive year, we scored 100% on the Disability:IN's Disability Equality Index, which measures our policies and practices related to disability inclusion. Additionally, for the third consecutive year, we were awarded the DI-NC Employer Award by Disability:IN North Carolina for our commitment to champion and invest in disability inclusion at the affiliate and national levels. For the ninth consecutive year, we were recognized as a Best Place to Work for LGBTQ+ Equality by the Human Rights Campaign, scoring 100% on their Corporate Equality Index.

Strengthening our Global Competency

We are committed to strengthening the DE&I awareness and capability of our employees. We have focused on ensuring that our employees have the resources and learning they need to contribute to our strategy. Our people managers are trained on inclusive recruiting and hiring and our global employees are trained on DE&I curriculum.

In 2022 we introduced GlobeSmart®, a tool to enhance cross-cultural collaboration, increase cultural agility and further connect our global teams. Our people leaders have used GlobeSmart®, allowing them to explore different working styles, perspectives and approaches that exist around the globe, getting actionable, personalized advice for better collaboration and teamwork across cultures, and exploring new ways for teams to build trust, strengthen collaboration and leverage diversity.

Philosophy on Pay Equity

We are committed to ensuring our employees receive equal pay for equal work. We establish components and ranges of compensation based on market and benchmark data. Within this context, we strive to pay all employees equitably within a reasonable range, taking into consideration factors such as role; market data; internal equity; job location; relevant experience; and individual, business unit and company performance. In addition, we are committed to providing flexible benefits designed to allow our diverse global workforce to have reward opportunities that meet their varied needs so that they are inspired to perform their best on behalf of patients and stockholders each day.

We regularly review our compensation practices and analyze the equity of compensation decisions, for individual employees and our workforce as a whole. In 2022 we shared the results of a global gender pay assessment, analyzing pay at the executive, management and other professional levels.

We institute measures, such as communications and trainings, to recognize, interrupt and prevent bias in hiring, performance management and compensation decisions and we provide resources to further develop managers and leaders to help them make equitable decisions about pay.

Talent and Development

Many factors influence employee success and well-being. We foster a workplace to allow employees to deliver on our shared mission while helping to mitigate their challenges. From career development to wellness to workplace environment, there are many opportunities to meet employee needs, and to build a workplace where people are empowered to learn, grow and build rewarding careers. Our employees are encouraged to take advantage of an array of professional development resources. Managers coach employees for performance, and also engage in employee development discussions to support growth and learning.

Opportunities for ongoing learning can contribute to employee related engagement and success. At Biogen, development occurs through on-the-job learning, challenging new assignments, formal training, online learning, mentoring and more. With many employees continuing to work from home, virtual learning plays a key role. Virtual learnings are available through Biogen University as well as LinkedIn Learning. Through Biogen University we offer more than 1,200 instructor-based courses, of which approximately 300 are available virtually. Through LinkedIn Learning we provided employees with access

to more than 20,000 on-demand learning modules in 11 languages: English, German, French, Spanish, Japanese, Portuguese, Italian, Dutch, Polish, Turkish and Mandarin.

To create and sustain a workplace as diverse and inclusive as the patients we serve, we offer programs that invest in our talent pipeline and in our current leaders, including:

- *Activate, Reflect and Co-Create:* Preparing top talent for the rigors of executive roles.
- *Women's Leadership Program:* Addressing the unique challenges faced by female leaders to increase influence and impact.
- *Executive Leadership Retreat:* Immersing leaders in topics designed to help them shape culture and build resilience.
- *The Partnership, Inc's BioDiversity Fellows Program:* To continue to bolster our talent pipeline with a diverse mix of leaders, high potential, mid-career, underrepresented minorities participate in this program, which we helped create.
- *Women on the Rise:* Addressing the unique challenges faced by mid-level female leaders to increase influence and impact.
- *Emerging Leaders:* Preparing high-potential individual contributors for first-level leadership roles.
- *BetterUp:* Coaching program available to support individuals as they work toward enhancing their impact in the organization.

Our Employee Resource Networks (ERNs) provide invaluable opportunities for employees to share knowledge and build connections. Our current ERNs include:

- *Parenting Network Group:* Biogen's newest ERN provides support, networking and development opportunities to working parents and caregivers, as well as helping employees navigate the challenges of work-life balance.
- *IGNITE:* Brings together early-career professionals and their advocates.
- *AccessAbility:* Supports employees with disabilities and employees who are caretakers of individuals with disabilities.
- *Biogen Veterans Network:* Encourages veterans and allies of veterans to connect and support one another.
- *Mosaic:* Fosters awareness and appreciation of different cultural backgrounds, in addition to promoting networking and development opportunities for members.
- *ReachOUT:* Supports a best-in-class working environment for LGBTQ+ employees and embraces all LGBTQ+ employees and their allies.
- *Women's Innovation Network:* Creates networking, mentoring and learning opportunities for women and allies worldwide.
- *ourIMPACT:* Advances climate, health and equity at work, in employees' personal lives and in the communities where we live and work.

We continue to evolve our programs to meet our employees' health and wellness needs, which we believe is essential to attract and retain employees of the highest caliber. We have refreshed our flexible working arrangement policies to allow for more flexibility around work hours to help employees balance the demands of their work and home lives, shifted many of our on-site wellness services to virtual, including virtual behavior health, nutrition, fitness and overall well-being classes and counseling, rolled out the Headspace meditation app globally at no cost, provided workshops and programming to help employees cope with stress, isolation and building resilience, along with financial planning workshops and counseling sessions, expanded our caregiver services to meet the growing needs of our employees and provided additional holidays and time off for recharging, voting and volunteering.

Employee Surveys

We utilize an employee survey program to pulse employees through email and mobile apps as well as provide an opportunity for commentary and facilitate feedback to questions. The survey is designed to empower managers and leaders with anonymous information on their practices related to building culture, performance and an engaged workforce, allowing them to create plans and measure efficacy for continuous improvement. We care deeply about employee feedback and are building an analytics community across Human Resources to bring more rigor and sophistication to the collection and analysis of employee opinions. We use their perspectives to guide us to take actions that improve engagement and support and help maintain our reputation as a great place to work for all our employees. An example of such an action was our 2022 Wellness Week, a weeklong mid-year shutdown.

Succession Planning

Each year we conduct a talent review across our global enterprise that includes, among other important topics, a review of succession plans for many of our roles. To help ensure the long-term continuity of our business, we actively manage the development of talent to fill the roles that are most critical to the

ongoing success of our company. In addition, each year our Board of Directors reviews the succession plan for our executives.

Workplace Health and Safety

The well-being of our employees is the priority, and we believe every employee plays a role in creating a safe and healthy workplace. Our employees have varied roles and functions, which is why we empower them to promote a safe working environment, regardless of whether work happens in the lab, in an office or in a manufacturing plant. Our policies and practices are intended to protect not only our employees, but also the surrounding communities where we operate.

In 2022 we continued to make significant progress integrating Human Performance into our Environment, Health and Safety programs. We believe that, when it comes to safety, workers are part of the solution. We encourage employees to collaboratively engage in proactive problem solving through practices such as Open Reporting and Work Observation and Risk Conversations. Additionally, our physical safety program focused on detailed evaluations of critical tasks that could expose employees to serious injury or fatality if controls are absent or not used. The actions we implement as a result of these evaluations reduce the risks associated with these essential activities and ensure our operational systems are safer and more resilient for employees. We also use “After Action Reviews” following the completion of a project. These reviews enable us to not only focus on areas for improvement, but also to learn and apply good practices from what goes well. By engaging and empowering our employees through such programs, we believe that we can help change how the entire industry approaches safety performance and risk management.

Information about our Executive Officers (as of February 15, 2023)

Officer	Current Position	Age	Year Joined Biogen
Christopher A. Viehbacher	President, Chief Executive Officer	62	2022
Susan H. Alexander	Executive Vice President, Chief Legal Officer and Secretary	66	2006
Michael R. McDonnell	Executive Vice President and Chief Financial Officer	59	2020
Nicole Murphy	Executive Vice President, Pharmaceutical Operations and Technology	50	2015
Ginger Gregory, Ph.D.	Executive Vice President and Chief Human Resources Officer	55	2017
Rachid Izzar	Executive Vice President, Global Product Strategy and Commercialization	48	2019
Priya Singhal, M.D., M.P.H.	Executive Vice President, Head of Development	55	2020
Robin C. Kramer	Senior Vice President, Chief Accounting Officer	57	2018

Christopher A. Viehbacher

Experience

Mr. Viehbacher has served as our President and Chief Executive Officer and member of our Board of Directors since November 2022. Prior to joining Biogen, Mr. Viehbacher served as Managing Partner of Gurnet Point Capital, a Boston based investment fund from 2015 to 2022. Prior to that, Mr. Viehbacher served as Global CEO of Sanofi, from 2008 to 2014. Prior to joining Sanofi, Mr. Viehbacher spent over 20 years with GlaxoSmithKline in Germany, Canada, France and, latterly, the U.S. as president of its North American pharmaceutical division. Mr. Viehbacher began his career with PricewaterhouseCoopers LLP and qualified as a chartered accountant. Mr. Viehbacher previously served on the board of directors of Vedanta Biosciences, Inc. as chair, BEFORE Brands, Inc., and Crossover Health. He is also a trustee of Northeastern University and a member of the board of fellows at Stanford Medical School.

Public Company Boards

- PureTech Health Plc.

Education

- Queen's University in Kingston, Ontario, Canada, B.A.

Susan H. Alexander

Experience

Ms. Alexander has served as our Executive Vice President, Chief Legal Officer and Secretary since April 2018. Prior to that, Ms. Alexander served as our Executive Vice President, Chief Legal, Corporate Services and Secretary from March 2017 to March 2018, as our Executive Vice President, Chief Legal Officer and Secretary from December 2011 to March 2017 and as our Executive Vice President, General Counsel and Corporate Secretary from 2006 to December 2011. Prior to joining Biogen, Ms. Alexander served as the Senior Vice President, General Counsel and Corporate Secretary of PAREXEL International Corporation, a biopharmaceutical services company, from 2003 to January 2006. From 2001 to 2003 Ms. Alexander served as General Counsel of IONA Technologies, a software company. From 1995 to 2001 Ms. Alexander served as Counsel at Cabot Corporation, a specialty chemicals and performance materials company. Prior to that, Ms. Alexander was a partner at the law firms of Hinckley, Allen & Snyder and Fine & Ambrogne.

Education

- Wellesley College, B.A.
- Boston University School of Law, J.D.

Michael R. McDonnell

Experience

Mr. McDonnell has served as our Executive Vice President and Chief Financial Officer since August 2020. Prior to joining Biogen, Mr. McDonnell served as Executive Vice President and Chief Financial Officer of IQVIA Holdings Inc., a leading global provider of advanced analytics, technology solutions and contract research services to the life sciences industry, from December 2015 until July 2020. Prior to that, Mr. McDonnell served as the Executive Vice President and Chief Financial Officer of Intelsat, a leading global provider of satellite services, from November 2008 to December 2015, as Executive Vice President and Chief Financial Officer of MCG Capital Corporation, a publicly-held commercial finance company, from September 2004 until October 2008 and as MCG Capital Corporation's Chief Operating Officer from August 2006 until October 2008. Before joining MCG Capital Corporation, Mr. McDonnell served as Executive Vice President and Chief Financial Officer for EchoStar Communications Corporation (f/k/a DISH Network Corporation), a direct-to-home satellite television operator, from July 2004 until August 2004 and as its Senior Vice President and Chief Financial Officer from August 2000 to July 2004. Mr. McDonnell spent 14 years at PricewaterhouseCoopers LLP, including 4 years as a partner. Mr. McDonnell is a licensed certified public accountant (CPA).

Public Company Boards

- Merit Medical Systems, Inc.

Education

- Georgetown University, B.S. Accounting

Nicole Murphy

Experience

Ms. Murphy has served as our Executive Vice President, Pharmaceutical Operations and Technology since February 2022. Prior to that, Ms. Murphy has held senior executive positions at Biogen, including most recently as our Senior Vice President, Head of Global Manufacturing & Technical Operations, from June 2019 to January 2022. In 2017, Ms. Murphy played a critical role during the successful spin-off of Biogen's hemophilia franchise, as the Vice President and Head of Technical Operations of Bioverativ responsible for clinical and commercial development, quality, regulatory, manufacturing and procurement. Prior to the spin-off Ms. Murphy was the General Manager and Head of Cambridge Site Operations at Biogen from May 2015 to December 2016. Prior to joining Biogen, Ms. Murphy was Executive Director, Head of Supply Chain at Amgen, a biopharmaceutical company, where her responsibilities included leadership of commercial manufacturing and technical operations. Ms. Murphy also held numerous technical and operational roles during her time at Amgen from 2001 to 2015 where she contributed significantly to various facility start-ups, business development integrations, strategic transformations and new product introductions. Prior to Amgen, Ms. Murphy held a variety of process development and engineering positions at Immunex Pharmaceuticals and the Monsanto Company.

Education

- University of Massachusetts Amherst, B.S. Engineering
- Rensselaer Polytechnic Institute, M.S. Engineering and a Masters of Business Administration

Ginger Gregory, Ph.D.

Experience

Dr. Gregory has served as our Executive Vice President and Chief Human Resources Officer since July 2017. Prior to joining Biogen, Dr. Gregory served as Executive Vice President and Chief Human Resources Officer at Shire PLC, a global specialty biopharmaceutical company, from February 2014 to April 2017. Prior to that, Dr. Gregory held executive-level human resources positions for several multinational companies across a variety of industries, including Dunkin' Brands Group Inc., a restaurant holding company, where she served as Chief Human Resource Officer, Novartis AG, a pharmaceutical company, where she was the division head of Human Resources for Novartis Vaccines and Diagnostics, Novartis Consumer Health and Novartis Institutes of BioMedical Research and Novo Nordisk A/S, a pharmaceutical company, where she served as Senior Vice President, Corporate People & Organization at the company's headquarters in Copenhagen, Denmark. Earlier in her career, Dr. Gregory held a variety of human resources generalist and specialist positions at BMS, a pharmaceutical company, and served as a consultant with Booz Allen & Hamilton, an information technology consulting company, in the area of organization change and effectiveness.

Education

- University of Massachusetts, B.A. Psychology
- The George Washington University, Ph.D. Psychology

Rachid Izzar

Experience

Mr. Izzar has served as our Executive Vice President, Head of Global Product Strategy and Commercialization since July 2021. Prior to that Mr. Izzar served as our President for the Intercontinental Region, which includes Latin America, Australia, Asia, Japan, the Middle East and Africa, Turkey and Russia, and the Global Biogen Biosimilars Unit. Prior to joining Biogen, Mr. Izzar was a Country President for AstraZeneca in France, where his responsibilities included leadership for commercial and manufacturing operations. He held numerous roles at his time with AstraZeneca, including the position of Global Vice President of the Cardiovascular Franchise where he contributed significantly to the development of the franchise within the North American subsidiary, as well as in Europe and China. Prior to that, Mr. Izzar was Vice President Strategic Transformation, also, China Portfolio for CEO based in Shanghai and Vice President Commercial International covering China, Australia, Brazil, Russia, America Latin, Asia, Turkey, the Middle East and Africa.

Education

- University of Sherbrooke, Masters of Business Administration
- Harvard Business School, Enterprise Executive Transformation Program

Priya Singhal, M.D., M.P.H.

Experience

Dr. Singhal has served as our Executive Vice President and Head of Development since January 2023. Prior to that Dr. Singhal served as our Interim Head of Research and Development since 2021 in addition to serving as Head of Global Safety and Regulatory Sciences, including China and Japan Research and Development, since rejoining Biogen in 2020. Dr. Singhal was initially at Biogen from 2012 to 2018 and served in positions of increasing seniority as Vice President Clinical Trials Benefit-Risk Management, Global Head of Safety and Benefit Risk Management and as the Interim Co-lead and Senior Vice President of Global Development. Prior to her 2020 return to Biogen, Dr. Singhal served as Head of Research and Development and Manufacturing at Zafgen Inc. from 2019 to 2020. From 2008 to 2012 Dr. Singhal held roles at Vertex Pharmaceuticals, including Vice President, Medical Affairs. Dr. Singhal began her drug-development career at Millennium Pharmaceuticals, Inc. in 2005 and led benefit-risk management for Velcade and other compounds.

Education

- Harvard School of Public Health, M.P.H. in International Health
- University of Mumbai, Doctor of Medicine (M.D.)

Robin C. Kramer

Experience

Ms. Kramer has served as our Senior Vice President, Chief Accounting Officer since December 2020. Prior to that, Ms. Kramer served as our Vice President, Chief Accounting Officer from November 2018 to December 2020. Prior to joining Biogen, Ms. Kramer served as the Senior Vice President and Chief Accounting Officer of Hertz Global Holdings, Inc., a car rental company, from May 2014 to November 2018. Prior to that, Ms. Kramer was an audit partner at Deloitte & Touche LLP (Deloitte), a professional services firm, from 2007 to 2014, including serving in Deloitte's National Office Accounting Standards and Communications Group from 2007 to 2010. From 2005 to 2007 Ms. Kramer served as Chief Accounting Officer of Fisher Scientific International, Inc., a laboratory supply and biotechnology company, and from 2004 to 2005 Ms. Kramer served as Director, External Reporting, Accounting and Control for the Gillette Company, a personal care company. Ms. Kramer also held partner positions in the public accounting firms of Ernst & Young LLP and Arthur Andersen LLP. Ms. Kramer is a licensed CPA in Massachusetts. She is a member of the Massachusetts Society of CPAs and the American Institute of CPAs. Ms. Kramer currently serves on the board of directors of the Center for Women and Enterprise. Ms. Kramer previously served as a Board Member for the Massachusetts State Board of Accountancy from September 2011 to December 2015 and Probus Insurance Company Europe DAC from 2016 to 2018.

Public Company Boards

- Armata Pharmaceuticals, Inc., a biotechnology company

Education

- Salem State University, B.B.A. Accounting

Available Information

Our principal executive offices are located at 225 Binney Street, Cambridge, MA 02142 and our telephone number is (617) 679-2000. Our website address is www.biogen.com. We make available free of charge through the *Investors* section of our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and all amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the U.S. Securities and Exchange Commission. We include our website address in this report only as an inactive textual reference and do not intend it to be an active link to our website. The contents of our website are not incorporated into this report.

ITEM 1A. RISK FACTORS

Risks Related to Our Business

We are substantially dependent on revenue from our products.

Our revenue depends upon continued sales of our products as well as the financial rights we have in our anti-CD20 therapeutic programs. A significant portion of our revenue is concentrated on sales of our products in increasingly competitive markets. Any of the following negative developments relating to any of our products or any of our anti-CD20 therapeutic programs may adversely affect our revenue and results of operations or could cause a decline in our stock price:

- the introduction, greater acceptance or more favorable reimbursement of competing products, including new originator therapies, generics, prodrugs and biosimilars of existing products and products approved under abbreviated regulatory pathways;
- safety or efficacy issues;
- limitations and additional pressures on product pricing or price increases, including those resulting from governmental or regulatory requirements; increased competition, including from generic or biosimilar versions of our products; or changes in, or implementation of, reimbursement policies and practices of payors and other third-parties;
- adverse legal, administrative, regulatory or legislative developments;
- our ability to maintain a positive reputation among patients, healthcare providers and others, which may be impacted by our pricing and reimbursement decisions; or
- the inability or reluctance of patients to receive a diagnosis, prescription or administration of our products or a decision to prescribe and administer competitive therapies as a direct or indirect result of the COVID-19 pandemic.

LEQEMBI is in the early stages of commercial launch in the U.S. In addition to risks associated with new product launches and the other factors described in these Risk Factors, Biogen's and Eisai's ability to successfully commercialize LEQEMBI may be adversely affected due to:

- Eisai's ability to obtain and maintain adequate reimbursement for LEQEMBI;
- the effectiveness of Eisai's and Biogen's commercial strategy for marketing LEQEMBI; and
- Eisai's and Biogen's ability to maintain a positive reputation among patients, healthcare providers and others in the Alzheimer's disease community, which may be impacted by pricing and reimbursement decisions relating to LEQEMBI, which are made by Eisai.

The FDA may withdraw approval if Eisai and Biogen fail to comply with the conditions of the accelerated approval.

Our long-term success depends upon the successful development of new products and additional indications for our existing products.

Our long-term success will depend upon the successful development of new products from our research and development activities or our licenses or acquisitions from third-parties, as well as additional indications for our existing products.

Product development is very expensive and involves a high degree of uncertainty and risk and may not be successful. Only a small number of research and development programs result in the commercialization of a product. It is difficult to predict the success and the time and cost of product development of novel approaches for the treatment of diseases. The development of novel approaches for the treatment of diseases, including development efforts in new modalities such as those based on the antisense oligonucleotide platform and gene therapy, may present additional challenges and risks, including obtaining approval from regulatory authorities that have limited experience with the development of such therapies.

Clinical trial data are subject to differing interpretations and even if we view data as sufficient to support the safety, effectiveness and/or approval of an investigational therapy, regulatory authorities may disagree and may require additional data, limit the scope of the approval or deny approval altogether. Furthermore, the approval of a product candidate by one regulatory agency does not mean that other regulatory agencies will also approve such product candidate.

Success in preclinical work or early-stage clinical trials does not ensure that later stage or larger scale clinical trials will be successful. Clinical trials may indicate that our product candidates lack efficacy, have harmful side effects, result in unexpected adverse events or raise other concerns that may significantly reduce the likelihood of regulatory approval. This may result in terminated programs, significant restrictions on use and safety warnings in an approved label, adverse placement within the treatment paradigm or significant reduction in the commercial potential of the product candidate.

Even if we could successfully develop new products or indications, we may make a strategic decision to discontinue development of a product candidate or indication if, for example, we believe commercialization will be difficult relative to the standard of care or we prefer to pursue other opportunities in our pipeline.

Sales of new products or products with additional indications may not meet investor expectations.

If we fail to compete effectively, our business and market position would suffer.

The biopharmaceutical industry and the markets in which we operate are intensely competitive. We compete in the marketing and sale of our products, the development of new products and processes, the acquisition of rights to new products with commercial potential and the hiring and retention of personnel. We compete with biotechnology and pharmaceutical companies that have a greater number of products on the market and in the product pipeline, substantially greater financial, marketing, research and development and other resources and other technological or competitive advantages.

Our products continue to face increasing competition from the introduction of new originator therapies, generics, prodrugs and biosimilars of existing products and products approved under abbreviated regulatory pathways. Some of these products are likely to be sold at substantially lower prices than our branded products. The introduction of such products as well as other lower-priced competing products has reduced, and may in the future, significantly reduce both the price that we are able to charge for our products and the volume of products we sell, which will negatively impact our revenue. For instance, demand and price for TECFIDERA declined significantly as a result of multiple TECFIDERA generic entrants entering the U.S. market in 2020. In addition, in some markets, when a generic or biosimilar version of one of our products is commercialized, it may be automatically substituted for our product and significantly reduce our revenue in a short period of time.

Our ability to compete, maintain and grow our business may also be adversely affected due to a number of factors, including:

- the introduction of other products, including products that may be more efficacious, safer, less expensive or more convenient alternatives to our products, including our own products and products of our collaborators;
- the off-label use by physicians of therapies indicated for other conditions to treat patients;
- patient dynamics, including the size of the patient population and our ability to identify, attract and maintain new and current patients to our therapies;
- the reluctance of physicians to prescribe, and patients to use, our products without additional data on the efficacy and safety of such products;
- damage to physician and patient confidence in any of our products, generic or biosimilars of our products or any other product from the same class as one of our products, or to our sales and reputation as a result of label changes, pricing and reimbursement decisions or adverse experiences or events that may occur with patients treated with our products or generic or biosimilars of our products;
- inability to obtain appropriate pricing and adequate reimbursement for our products compared to our competitors in key international markets; or
- our ability to obtain and maintain patent, data or market exclusivity for our products.

Our business may be adversely affected if we do not successfully execute or realize the anticipated benefits of our strategic and growth initiatives.

The successful execution of our strategic and growth initiatives may depend upon internal development projects, commercial initiatives and external opportunities, which may include the acquisition and in-licensing of products, technologies and companies or the entry into strategic alliances and collaborations.

While we believe we have a number of promising programs in our pipeline, failure or delay of internal development projects to advance or difficulties in executing on our commercial initiatives could impact our current and future growth, resulting in additional reliance on external development opportunities for growth.

Supporting the further development of our existing products and potential new products in our pipeline will require significant capital expenditures and management resources, including investments in research and development, sales and marketing, manufacturing capabilities and other areas of our business. We have made, and may continue to make, significant operating and capital expenditures for potential new products prior to regulatory approval with no assurance that such investment will be recouped, which may adversely affect our financial condition, business and operations.

The availability of high quality, fairly valued external product development is limited and the opportunity for their acquisition is highly competitive. As such, we are not certain that we will be able to identify suitable candidates for acquisition or if we will be able to reach agreement.

We may fail to initiate or complete transactions for many reasons, including failure to obtain regulatory or other approvals as well as disputes or litigation. Furthermore, we may not be able to achieve the full strategic and financial benefits expected to result from transactions, or the benefits may be delayed or not occur at all. We may also face additional costs or liabilities in completed transactions that were not contemplated prior to completion.

Any failure in the execution of a transaction, in the integration of an acquired asset or business or in achieving expected synergies could result in slower growth, higher than expected costs, the recording of asset impairment charges and other actions which could adversely affect our business, financial condition and results of operations.

Sales of our products depend, to a significant extent, on adequate coverage, pricing and reimbursement from third-party payors, which are subject to increasing and intense pressure from political, social, competitive and other sources. Our inability to obtain and maintain adequate coverage, or a reduction in pricing or reimbursement, could have an adverse effect on our business, reputation, revenue and results of operations.

Sales of our products depend, to a significant extent, on adequate coverage, pricing and reimbursement from third-party payors. When a new pharmaceutical product is approved, the availability of government and private reimbursement for that product may be uncertain, as is the pricing and amount for which that product will be reimbursed.

Pricing and reimbursement for our products may be adversely affected by a number of factors, including:

- changes in, and implementation of, federal, state or foreign government regulations or private third-party payors' reimbursement policies;
- pressure by employers on private health insurance plans to reduce costs;
- consolidation and increasing assertiveness of payors seeking price discounts or rebates in connection with the placement of our products on their formularies and, in some cases, the imposition of restrictions on access or coverage of particular drugs or pricing determined based on perceived value;
- our ability to receive reimbursement for our products or our ability to receive comparable reimbursement to that of competing products; and
- our value-based contracting program pursuant to which we aim to tie the pricing of our products to their clinical values by either aligning price to patient outcomes or adjusting price for patients who discontinue therapy for any reason, including efficacy or tolerability concerns.

Our ability to set the price for our products varies significantly from country to country and, as a result, so can the price of our products. Governments may use a variety of cost-containment measures to control the cost of products, including price cuts, mandatory rebates, value-based pricing and reference pricing (i.e., referencing prices in other countries and using those reference prices to set a price). Drug prices are under significant scrutiny in the markets in which our products are prescribed; for example the IRA has certain provisions related to drug pricing. We expect drug pricing and other health care costs to continue to be subject to intense political and societal pressures on a global basis. Certain countries set prices by reference to the prices in other countries where our products are marketed. Our inability to obtain and maintain adequate prices in a particular country may not only limit the revenue from our products within that country but may also adversely affect our ability to secure acceptable prices in existing and potential new markets, which may limit market growth. This may create the opportunity for third-party cross-border trade or influence our decision to sell or not to sell a product, thus adversely affecting our geographic expansion plans and revenue. Additionally and in part due to the impact of the COVID-19 pandemic, in certain jurisdictions governmental health agencies may adjust, retroactively and/or prospectively, reimbursement rates for our products.

Competition from current and future competitors may negatively impact our ability to maintain pricing and our market share. New products marketed by our competitors could cause our revenue to decrease due to potential price

reductions and lower sales volumes. Additionally, the introduction of generic or biosimilar versions of our products, follow-on products, prodrugs or products approved under abbreviated regulatory pathways may significantly reduce the price that we are able to charge for our products and the volume of products we sell.

Many payors continue to adopt benefit plan changes that shift a greater portion of prescription costs to patients, including more limited benefit plan designs, higher patient co-pay or co-insurance obligations and limitations on patients' use of commercial manufacturer co-pay payment assistance programs (including through co-pay accumulator adjustment or maximization programs). Significant consolidation in the health insurance industry has resulted in a few large insurers and pharmacy benefit managers exerting greater pressure in pricing and usage negotiations with drug manufacturers, significantly increasing discounts and rebates required of manufacturers and limiting patient access and usage. Further consolidation among insurers, pharmacy benefit managers and other payors would increase the negotiating leverage such entities have over us and other drug manufacturers. Additional discounts, rebates, coverage or plan changes, restrictions or exclusions as described above could have a material adverse effect on sales of our affected products.

Our failure to obtain or maintain adequate coverage, pricing or reimbursement for our products could have an adverse effect on our business, reputation, revenue and results of operations.

We depend on relationships with collaborators and other third-parties for revenue, and for the development, regulatory approval, commercialization and marketing of certain of our products and product candidates, which are outside of our full control.

We rely on a number of collaborative and other third-party relationships for revenue and the development, regulatory approval, commercialization and marketing of certain of our products and product candidates. We also outsource certain aspects of our regulatory affairs and clinical development relating to our products and product candidates to third-parties. Reliance on third-parties subjects us to a number of risks, including:

- we may be unable to control the resources our collaborators or third-parties devote to our programs, products or product candidates;
- disputes may arise under an agreement, including with respect to the achievement and payment of milestones, payment of development or commercial costs, ownership of rights to technology developed, and the underlying agreement may fail to provide us with significant protection or may fail to be effectively enforced if the collaborators or third-parties fail to perform;
- the interests of our collaborators or third-parties may not always be aligned with our interests, and such parties may not pursue regulatory approvals or market a product in the same manner or to the same extent that we would, which could adversely affect our revenue, or may adopt tax strategies that could have an adverse effect on our business, results of operations or financial condition;
- third-party relationships require the parties to cooperate, and failure to do so effectively could adversely affect product sales or the clinical development or regulatory approvals of product candidates under joint control, could result in termination of the research, development or commercialization of product candidates or could result in litigation or arbitration;
- any failure on the part of our collaborators or third-parties to comply with applicable laws, including tax laws, regulatory requirements and/or applicable contractual obligations or to fulfill any responsibilities they may have to protect and enforce any intellectual property rights underlying our products could have an adverse effect on our revenue as well as involve us in possible legal proceedings; and
- any improper conduct or actions on the part of our collaborators or third-parties could subject us to civil or criminal investigations and monetary and injunctive penalties, impact the accuracy and timing of our financial reporting and/or adversely impact our ability to conduct business, our operating results and our reputation.

Given these risks, there is considerable uncertainty regarding the success of our current and future collaborative efforts. If these efforts fail, our product development or commercialization of new products could be delayed, revenue from products could decline and/or we may not realize the anticipated benefits of these arrangements.

Our results of operations may be adversely affected by current and potential future healthcare reforms.

In the U.S., federal and state legislatures, health agencies and third-party payors continue to focus on containing the cost of health care. Legislative and regulatory proposals, enactments to reform health care insurance programs (including those contained in the IRA) and increasing pressure from social sources could significantly

influence the manner in which our products are prescribed, purchased and reimbursed. For example, provisions of the Patient Protection and Affordable Care Act (PPACA) have resulted in changes in the way health care is paid for by both governmental and private insurers, including increased rebates owed by manufacturers under the Medicaid Drug Rebate Program, annual fees and taxes on manufacturers of certain branded prescription drugs, the requirement that manufacturers participate in a discount program for certain outpatient drugs under Medicare Part D and the expansion of the number of hospitals eligible for discounts under Section 340B of the Public Health Service Act. These changes have had and are expected to continue to have a significant impact on our business.

We may face uncertainties as a result of efforts to repeal, substantially modify or invalidate some or all of the provisions of the PPACA. There is no assurance that the PPACA, as currently enacted or as amended in the future, will not adversely affect our business and financial results, and we cannot predict how future federal or state legislative or administrative changes relating to healthcare reform will affect our business.

There is increasing public attention on the costs of prescription drugs and we expect drug pricing and other health care costs to continue to be subject to intense political and societal pressures on a global basis. For example, two committees of the U.S. House of Representatives previously investigated the approval and price of ADUHELM. In addition, there have been (including elements of the IRA), and are expected to continue to be, legislative proposals to address prescription drug pricing. Some of these proposals could have significant effects on our business, including an executive order issued in September 2020 to test a “most favored nation” model for Part B and Part D drugs that tie reimbursement rates to international drug pricing metrics. These actions and the uncertainty about the future of the PPACA and healthcare laws may put downward pressure on pharmaceutical pricing and increase our regulatory burdens and operating costs.

There is also significant economic pressure on state budgets, including as a result of the COVID-19 pandemic, that may result in states increasingly seeking to achieve budget savings through mechanisms that limit coverage or payment for our drugs. In recent years, some states have considered legislation and ballot initiatives that would control the prices of drugs, including laws to allow importation of pharmaceutical products from lower cost jurisdictions outside the U.S. and laws intended to impose price controls on state drug purchases. State Medicaid programs are increasingly requesting manufacturers to pay supplemental rebates and requiring prior authorization by the state program for use of any drug for which supplemental rebates are not being paid. Government efforts to reduce Medicaid expense may lead to increased use of managed care organizations by Medicaid programs. This may result in managed care organizations influencing prescription decisions for a larger segment of the population and a corresponding limitation on prices and reimbursement for our products.

In the E.U. and some other international markets, the government provides health care at low cost to consumers and regulates pharmaceutical prices, patient eligibility or reimbursement levels to control costs for the government-sponsored health care system. Many countries have announced or implemented measures, and may in the future implement new or additional measures, to reduce health care costs to limit the overall level of government expenditures. These measures vary by country and may include, among other things, patient access restrictions, suspensions on price increases, prospective and possible retroactive price reductions and other recoupments and increased mandatory discounts or rebates, recoveries of past price increases and greater importation of drugs from lower-cost countries. These measures have negatively impacted our revenue and may continue to adversely affect our revenue and results of operations in the future.

Our success in commercializing biosimilars is subject to risks and uncertainties inherent in the development, manufacture and commercialization of biosimilars. If we are unsuccessful in such activities, our business may be adversely affected.

The development, manufacture and commercialization of biosimilar products require specialized expertise and are very costly and subject to complex regulation. Our success in commercializing biosimilars is subject to a number of risks, including:

- *Reliance on Third-Parties.* We are dependent, in part, on the efforts of collaboration partners and other third-parties over whom we have limited or no control in the development and manufacturing of biosimilars products. If these third-parties fail to perform successfully, our biosimilar product development or commercialization of biosimilar products could be delayed, revenue from biosimilar products could decline and/or we may not realize the anticipated benefits of these arrangements;
- *Regulatory Compliance.* Biosimilar products may face regulatory hurdles or delays due to the evolving and uncertain regulatory and commercial pathway of biosimilars products in certain jurisdictions;
- *Ability to Provide Adequate Supply.* Manufacturing biosimilars is complex. If we encounter any manufacturing or supply chain difficulties we may be unable to meet demand. We are dependent on a third-party for the manufacture of our biosimilar products and such third-party may not perform its obligations in a timely and

cost-effective manner or in compliance with applicable regulations and may be unable or unwilling to increase production capacity commensurate with demand for our existing or future biosimilar products;

- *Intellectual Property and Regulatory Challenges.* Biosimilar products may face extensive patent clearances, patent infringement litigation, injunctions or regulatory challenges, which could prevent the commercial launch of a product or delay it for many years or result in imposition of monetary damages, penalties or other civil sanctions and damage our reputation;
- *Failure to Gain Market and Patient Acceptance.* Market success of biosimilar products will be adversely affected if patients, physicians and/or payors do not accept biosimilar products as safe and efficacious products offering a more competitive price or other benefit over existing therapies; and
- *Competitive Challenges.* Biosimilar products face significant competition, including from innovator products and biosimilar products offered by other companies that may receive greater acceptance or more favorable reimbursement. Local tendering processes may restrict biosimilar products from being marketed and sold in some jurisdictions. The number of competitors in a jurisdiction, the timing of approval and the ability to market biosimilar products successfully in a timely and cost-effective manner are additional factors that may impact our success in this business area.

Risks Related to Intellectual Property

If we are unable to obtain and maintain adequate protection for our data, intellectual property and other proprietary rights, our business may be harmed.

Our success, including our long-term viability and growth, depends, in part, on our ability to obtain and defend patent and other intellectual property rights, including certain regulatory forms of exclusivity, that are important to the commercialization of our products and product candidates. Patent protection and/or regulatory exclusivity in the U.S. and other important markets remains uncertain and depends, in part, upon decisions of the patent offices, courts, administrative bodies and lawmakers in these countries. We may fail to obtain or preserve patent and other intellectual property rights, including certain regulatory forms of exclusivity, or the protection we obtain may not be of sufficient breadth and degree to protect our commercial interests in all countries where we conduct business, which could result in financial, business or reputational harm to us or could cause a decline or volatility in our stock price. In addition, settlements of such proceedings often result in reducing the period of exclusivity and other protections, resulting in a reduction in revenue from affected products.

In many markets, including the U.S., manufacturers may be allowed to rely on the safety and efficacy data of the innovator's product and do not need to conduct clinical trials before marketing a competing version of a product after there is no longer patent or regulatory exclusivity. In such cases, manufacturers often charge significantly lower prices and a major portion of the company's revenue may be reduced in a short period of time. In addition, manufacturers of generics and biosimilars may choose to launch or attempt to launch their products before the expiration of our patent or other intellectual property protections.

Furthermore, our products may be determined to infringe patents or other intellectual property rights held by third-parties. Legal proceedings, administrative challenges or other types of proceedings are and may in the future be necessary to determine the validity, scope or non-infringement of certain patent rights claimed by third-parties to be pertinent to the manufacture, use or sale of our products. Legal proceedings may also be necessary to determine the rights, obligations and payments claimed during and after the expiration of intellectual property license agreements we have entered with third parties. Such proceedings are unpredictable and are often protracted and expensive. Negative outcomes of such proceedings could hinder or prevent us from manufacturing and marketing our products, require us to seek a license for the infringed product or technology or result in the assessment of significant monetary damages against us that may exceed amounts, if any, accrued in our financial statements. A failure to obtain necessary licenses for an infringed product or technology could prevent us from manufacturing or selling our products. Furthermore, payments under any licenses that we are able to obtain could reduce our profits from the covered products and services. Any of these circumstances could result in financial, business or reputational harm to us or could cause a decline or volatility in our stock price.

Risks Related to Development, Clinical Testing and Regulation of Our Products and Product Candidates

Successful preclinical work or early stage clinical trials does not ensure success in later stage trials, regulatory approval or commercial viability of a product.

Positive results in a clinical trial may not be replicated in subsequent or confirmatory trials. Additionally, success in preclinical work or early stage clinical trials does not ensure that later stage or larger scale clinical trials will be successful or that regulatory approval will be obtained. Even if later stage clinical trials are successful,

regulatory authorities may delay or decline approval of our product candidates. Regulatory authorities may disagree with our view of the data, require additional studies, disagree with our trial design or endpoints or not approve adequate reimbursement. Regulatory authorities may also fail to approve the facilities or processes used to manufacture a product candidate, our dosing or delivery methods or companion devices. Regulatory authorities may grant marketing approval that is more restricted than anticipated, including limiting indications to narrow patient populations and the imposition of safety monitoring, educational requirements, requiring confirmatory trials and risk evaluation and mitigation strategies. The occurrence of any of these events could result in significant costs and expense, have an adverse effect on our business, financial condition and results of operations and/or cause our stock price to decline or experience periods of volatility.

Clinical trials and the development of biopharmaceutical products is a lengthy and complex process. If we fail to adequately manage our clinical activities, our clinical trials or potential regulatory approvals may be delayed or denied.

Conducting clinical trials is a complex, time-consuming and expensive process. Our ability to complete clinical trials in a timely fashion depends on a number of key factors, including protocol design, regulatory and institutional review board approval, patient enrollment rates and compliance with current Good Clinical Practices. If we or our third-party clinical trial providers or third-party CROs do not successfully carry out these clinical activities, our clinical trials or the potential regulatory approval of a product candidate may be delayed or denied.

We have opened clinical trial sites and are enrolling patients in a number of countries where our experience is limited. In most cases, we use the services of third-parties to carry out our clinical trial related activities and rely on such parties to accurately report their results. Our reliance on third-parties for these activities may impact our ability to control the timing, conduct, expense and quality of our clinical trials. One CRO has responsibility for a substantial portion of our activities and reporting related to our clinical trials, adversely affect our expense associated with such trials and if such CRO does not adequately perform, many of our trials may be affected. We may need to replace our CROs, which may result in the delay of the affected trials or otherwise adversely affect our efforts to obtain regulatory approvals and commercialize our product candidates.

Adverse safety events or restrictions on use and safety warnings for our products can negatively affect our business, product sales and stock price.

Adverse safety events involving our marketed products, generic or biosimilar versions of our marketed products or products from the same class as one of our products may have a negative impact on our business. Discovery of safety issues with our products could create product liability and could cause additional regulatory scrutiny and requirements for additional labeling or safety monitoring, withdrawal of products from the market and/or the imposition of fines or criminal penalties. Adverse safety events may also damage physician, patient and/or investor confidence in our products and our reputation. Any of these could result in adverse impacts on our results of operations.

Regulatory authorities are making greater amounts of stand-alone safety information directly available to the public through periodic safety update reports, patient registries and other reporting requirements. The reporting of adverse safety events involving our products or products similar to ours and public rumors about such events may increase claims against us and may also cause our product sales to decline or our stock price to experience periods of volatility.

Restrictions on use or safety warnings that may be required to be included in the label of our products may significantly reduce expected revenue for those products and require significant expense and management time.

Risks Related to Our Operations

A breakdown or breach of our technology systems could subject us to liability or interrupt the operation of our business.

We are increasingly dependent upon technology systems and data to operate our business. The COVID-19 pandemic has caused us to modify our business practices in ways that heighten this dependence, including changing the requirement that most of our office-based employees in the U.S. and our other key markets work from the office, with a number of our employees now working in hybrid or full-remote positions. As a result, we are increasingly dependent upon our technology systems to operate our business and our ability to effectively manage our business depends on the security, reliability and adequacy of our technology systems and data, which includes use of cloud technologies, including Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). Breakdowns, invasions, corruptions, destructions and/or breaches of our technology systems or those of our business partners, including our cloud technologies, and/or unauthorized access to our data and information could subject us to liability, negatively impact our business operations, and/or require replacement of technology and/or ransom payments. Our technology systems, including our cloud technologies, continue to increase in multitude and complexity, increasing our vulnerability when breakdowns, malicious intrusions and random attacks occur. Data

privacy or security breaches also pose a risk that sensitive data, including intellectual property, trade secrets or personal information belonging to us, patients, customers or other business partners, may be exposed to unauthorized persons or to the public.

Cyber-attacks are increasing in their frequency, sophistication and intensity, and are becoming increasingly difficult to detect, when they impact vendors, customers or companies, including vendors, suppliers and other companies in our supply chain. They are often carried out by motivated, well-resourced, skilled and persistent actors, including nation states, organized crime groups, “hacktivists” and employees or contractors acting with careless or malicious intent. Geopolitical instability, including that related to Russia's invasion of Ukraine may increase cyber-attacks. Cyber-attacks include deployment of harmful malware and key loggers, ransomware, a denial-of-service attack, a malicious website, the use of social engineering and other means to affect the confidentiality, integrity and availability of our technology systems and data. Cyber-attacks also include manufacturing, hardware or software supply chain attacks, which could cause a delay in the manufacturing of products or products produced for contract manufacturing or lead to a data privacy or security breach. Our key business partners face similar risks and any security breach of their systems could adversely affect our security posture. In addition, our increased use of cloud technologies heightens these and other operational risks, and any failure by cloud or other technology service providers to adequately safeguard their systems and prevent cyber-attacks could disrupt our operations and result in misappropriation, corruption or loss of confidential or propriety information.

While we continue to build and improve our systems and infrastructure, including our business continuity plans, there can be no assurance that our efforts will prevent breakdowns or breaches in our systems that could adversely affect our business and operations and/or result in the loss of critical or sensitive information, which could result in financial, legal, operational or reputational harm to us, loss of competitive advantage or loss of consumer confidence. Our liability insurance may not be sufficient in type or amount to cover us against claims related to security breaches, cyber-attacks and other related breaches.

Regulators are considering new cyber security regulations. For example, the SEC has proposed amendments to its disclosure rules regarding cyber security risk management, strategy, governance and incident reporting by public companies. These proposed regulations may impact the manner in which we operate.

Regulators are imposing new data privacy and security requirements, including new and greater monetary fines for privacy violations. For example, the E.U.’s General Data Protection Regulation established regulations regarding the handling of personal data, and provides an enforcement authority and imposes large penalties for noncompliance. New U.S. data privacy and security laws, such as the California Consumer Privacy Act (CCPA), and others that may be passed, similarly introduce requirements with respect to personal information, and non-compliance with the CCPA may result in liability through private actions (subject to statutorily defined damages in the event of certain data breaches) and enforcement. Failure to comply with these current and future laws, policies, industry standards or legal obligations or any security incident resulting in the unauthorized access to, or acquisition, release or transfer of personal information may result in governmental enforcement actions, litigation, fines and penalties or adverse publicity and could cause our customers to lose trust in us, which could have a material adverse effect on our business and results of operations.

Manufacturing issues could substantially increase our costs, limit supply of our products and/or reduce our revenue.

The process of manufacturing our products is complex, highly regulated and subject to numerous risks, including:

- *Risks of Reliance on Third-Parties and Single Source Providers.* We rely on third-party suppliers and manufacturers for many aspects of our manufacturing process for our products and product candidates including VUMERITY. In some cases, due to the unique manner in which our products are manufactured, we rely on single source providers of raw materials and manufacturing supplies. These third-parties are independent entities subject to their own unique operational and financial risks that are outside of our control. These third-parties may not perform their obligations in a timely and cost-effective manner or in compliance with applicable regulations, and they may be unable or unwilling to increase production capacity commensurate with demand for our existing or future products. Finding alternative providers could take a significant amount of time and involve significant expense due to the specialized nature of the services and the need to obtain regulatory approval of any significant changes to our suppliers or manufacturing methods. We cannot be certain that we could reach agreement with alternative providers or that the FDA or other regulatory authorities would approve our use of such alternatives. Furthermore, factors such as the COVID-19 pandemic, weather events, labor or raw material shortages and other supply chain disruptions could result in difficulties and delays in manufacturing our products, which could have an adverse impact on our results in operations or result in product shortages.

- *Global Bulk Supply Risks.* We rely on our manufacturing facilities for the production of drug substance for our large molecule products and product candidates. Our global bulk supply of these products and product candidates depends on the uninterrupted and efficient operation of these facilities, which could be adversely affected by equipment failures, labor or raw material shortages, public health epidemics, natural disasters, power failures, cyber-attacks and many other factors.
- *Risks Relating to Compliance with current GMP (cGMP).* We and our third-party providers are generally required to maintain compliance with cGMP and other stringent requirements and are subject to inspections by the FDA and other regulatory authorities to confirm compliance. Any delay, interruption or other issues that arise in the manufacture, fill-finish, packaging or storage of our products as a result of a failure of our facilities or operations or those of third-parties to receive regulatory approval or pass any regulatory agency inspection could significantly impair our ability to develop and commercialize our products. Significant noncompliance could also result in the imposition of monetary penalties or other civil or criminal sanctions and damage our reputation.
- *Risk of Product Loss.* The manufacturing process for our products is extremely susceptible to product loss due to contamination, oxidation, equipment failure or improper installation or operation of equipment or vendor or operator error. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If microbial, viral or other contaminations are discovered in our products or manufacturing facilities, we may need to close our manufacturing facilities for an extended period of time to investigate and remediate the contaminant.

Any adverse developments affecting our manufacturing operations or the operations of our third-party suppliers and manufacturers may result in shipment delays, inventory shortages, lot failures, product withdrawals or recalls or other interruptions in the commercial supply of our products. We may also have to take inventory write-offs and incur other charges and expense for products that fail to meet specifications, undertake costly remediation efforts or seek more costly manufacturing alternatives. Such developments could increase our manufacturing costs, cause us to lose revenue or market share as patients and physicians turn to competing therapeutics, diminish our profitability or damage our reputation.

In addition, although we have business continuity plans to reduce the potential for manufacturing disruptions or delays and reduce the severity of a disruptive event, there is no guarantee that these plans will be adequate, which could adversely affect our business and operations.

Management and other personnel changes may disrupt our operations, and we may have difficulty retaining personnel or attracting and retaining qualified replacements on a timely basis for the management and other personnel who may leave the Company.

Changes in management, other personnel and our overall retention rate may disrupt our business, and any such disruption could adversely affect our operations, programs, growth, financial condition or results of operations. New members of management may have different perspectives on programs and opportunities for our business, which may cause us to focus on new opportunities or reduce or change emphasis on our existing programs.

Our success is dependent upon our ability to attract and retain qualified management and other personnel in a highly competitive environment. Qualified individuals are in high demand, and we may incur significant costs to attract or retain them. We may face difficulty in attracting and retaining talent for a number of reasons, including management changes, the underperformance or discontinuation of one or more marketed or late stage programs, recruitment by competitors or changes in the overall labor market. In addition, changes in our organizational structure or in our flexible working arrangements could impact employees' productivity and morale as well as our ability to attract, retain and motivate employees. We cannot ensure that we will be able to hire or retain the personnel necessary for our operations or that the loss of any personnel will not have a material impact on our financial condition and results of operations.

If we fail to comply with the extensive legal and regulatory requirements affecting the health care industry, we could face increased costs, penalties and a loss of business.

Our activities, and the activities of our collaborators, distributors and other third-party providers, are subject to extensive government regulation and oversight in the U.S. and in foreign jurisdictions, and are subject to change and evolving interpretations, which could require us to incur substantial costs associated with compliance or to alter one or more of our business practices. The FDA and comparable foreign agencies directly regulate many of our most critical business activities, including the conduct of preclinical and clinical studies, product manufacturing, advertising and promotion, product distribution, adverse event reporting, product risk management and our compliance with good practice quality guidelines and regulations. Our interactions with physicians and other health

care providers that prescribe or purchase our products are also subject to government regulation designed to prevent fraud and abuse in the sale and use of products and place significant restrictions on the marketing practices of health care companies. Health care companies are facing heightened scrutiny of their relationships with health care providers and have been the target of lawsuits and investigations alleging violations of government regulation, including claims asserting submission of incorrect pricing information, impermissible off-label promotion of pharmaceutical products, payments intended to influence the referral of health care business, submission of false claims for government reimbursement, antitrust violations or violations related to environmental matters. There is also enhanced scrutiny of company-sponsored patient assistance programs, including insurance premium and co-pay assistance programs and donations to third-party charities that provide such assistance. The U.S. government has challenged some of our donations to third-party charities that provide patient assistance. If we, or our vendors or donation recipients, are found to fail to comply with relevant laws, regulations or government guidance in the operation of these programs, we could be subject to significant fines or penalties. Risks relating to compliance with laws and regulations may be heightened as we continue to expand our global operations and enter new therapeutic areas with different patient populations, which may have different product distribution methods, marketing programs or patient assistance programs from those we currently utilize or support.

Conditions and regulations governing the health care industry are subject to change, with possible retroactive effect, including:

- new laws, regulations or judicial decisions, or new interpretations of existing laws, regulations or judicial decisions, related to health care availability, pricing or marketing practices, compliance with employment practices, method of delivery, payment for health care products and services, compliance with health information and data privacy and security laws and regulations, tracking and reporting payments and other transfers of value made to physicians and teaching hospitals, extensive anti-bribery and anti-corruption prohibitions, product serialization and labeling requirements and used product take-back requirements;
- changes in the FDA and foreign regulatory approval processes or perspectives that may delay or prevent the approval of new products and result in lost market opportunity;
- government shutdowns or relocations may result in delays to the review and approval process, slowing the time necessary for new drug candidates to be reviewed and/or approved, which may adversely affect our business;
- requirements that provide for increased transparency of clinical trial results and quality data, such as the EMA's clinical transparency policy, which could impact our ability to protect trade secrets and competitively-sensitive information contained in approval applications or could be misinterpreted leading to reputational damage, misperception or legal action, which could harm our business; and
- changes in FDA and foreign regulations that may require additional safety monitoring, labeling changes, restrictions on product distribution or use or other measures after the introduction of our products to market, which could increase our costs of doing business, adversely affect the future permitted uses of approved products or otherwise adversely affect the market for our products.

Violations of governmental regulation may be punishable by criminal and civil sanctions, including fines and civil monetary penalties and exclusion from participation in government programs, including Medicare and Medicaid, as well as against executives overseeing our business. We could also be required to repay amounts we received from government payors or pay additional rebates and interest if we are found to have miscalculated the pricing information we submitted to the government. In addition, legal proceedings and investigations are inherently unpredictable, and large judgments or settlements sometimes occur. While we believe that we have appropriate compliance controls, policies and procedures in place to comply with the laws or regulations of the jurisdictions in which we operate, there is a risk that acts committed by our employees, agents, distributors, collaborators or third-party providers might violate such laws or regulations. Whether or not we have complied with the law, an investigation or litigation related to alleged unlawful conduct could increase our expense, damage our reputation, divert management time and attention and adversely affect our business.

Our sales and operations are subject to the risks of doing business internationally.

We are increasing our presence in international markets, subjecting us to many risks that could adversely affect our business and revenue. There is no guarantee that our efforts and strategies to expand sales in international markets will succeed. Emerging market countries may be especially vulnerable to periods of global and local political, legal, regulatory and financial instability and may have a higher incidence of corruption and fraudulent business practices. Certain countries may require local clinical trial data as part of the drug registration process in addition to global clinical trials, which can add to overall drug development and registration timelines. We may also be required

to increase our reliance on third-party agents or distributors and unfamiliar operations and arrangements previously utilized by companies we collaborate with or acquire in emerging markets.

Our sales and operations are subject to the risks of doing business internationally, including:

- the impact of public health epidemics, such as the COVID-19 pandemic, on the global economy and the delivery of healthcare treatments;
- less favorable intellectual property or other applicable laws;
- the inability to obtain necessary foreign regulatory approvals of products in a timely manner;
- limitations and additional pressures on our ability to obtain and maintain product pricing, reimbursement or receive price increases, including those resulting from governmental or regulatory requirements;
- increased cost of goods due to factors such as inflation and supply chain disruptions;
- additional complexity in manufacturing internationally;
- delays in clinical trials relating to geopolitical instability related to Russia's invasion of Ukraine;
- the inability to successfully complete subsequent or confirmatory clinical trials in countries where our experience is limited;
- longer payment and reimbursement cycles and uncertainties regarding the collectability of accounts receivable;
- fluctuations in foreign currency exchange rates that may adversely impact our revenue, net income and value of certain of our investments;
- the imposition of governmental controls;
- diverse data privacy and protection requirements;
- increasingly complex standards for complying with foreign laws and regulations that may differ substantially from country to country and may conflict with corresponding U.S. laws and regulations;
- the far-reaching anti-bribery and anti-corruption legislation in the U.K., including the U.K. Bribery Act 2010, and elsewhere and escalation of investigations and prosecutions pursuant to such laws;
- compliance with complex import and export control laws;
- changes in tax laws; and
- the imposition of tariffs or embargoes and other trade restrictions.

In addition, our international operations are subject to regulation under U.S. law. For example, the U.S. Foreign Corrupt Practices Act (FCPA) prohibits U.S. companies and their representatives from paying, offering to pay, promising to pay or authorizing the payment of anything of value to any foreign government official, government staff member, political party or political candidate for the purpose of obtaining or retaining business or to otherwise obtain favorable treatment or influence a person working in an official capacity. In many countries, the health care professionals we regularly interact with may meet the FCPA's definition of a foreign government official. Failure to comply with domestic or foreign laws could result in various adverse consequences, including possible delay in approval or refusal to approve a product, recalls, seizures or withdrawal of an approved product from the market, disruption in the supply or availability of our products or suspension of export or import privileges, the imposition of civil or criminal sanctions, the prosecution of executives overseeing our international operations and damage to our reputation. Any significant impairment of our ability to sell products outside of the U.S. could adversely impact our business and financial results. In addition, while we believe that we have appropriate compliance controls, policies and procedures in place to comply with the FCPA, there is a risk that acts committed by our employees, agents, distributors, collaborators or third-party providers might violate the FCPA and we might be held responsible. If our employees, agents, distributors, collaborators or third-party providers are found to have engaged in such practices, we could suffer severe penalties and may be subject to other liabilities, which could negatively affect our business, operating results and financial condition.

We are building a large-scale biologics manufacturing facility, which will result in the incurrence of significant investment with no assurance that such investment will be recouped.

In order to support our future growth and drug development pipeline, we are expanding our large molecule production capacity by building a large-scale biologics manufacturing facility in Solothurn, Switzerland with no assurance that the additional capacity will be required or this investment will be recouped.

If we are unable to fully utilize our manufacturing facilities, our business may be harmed. Charges resulting from excess capacity may continue to occur and would have a negative effect on our financial condition and results of operations.

Although the Solothurn facility was approved by the FDA for ADUHELM and LEQEMBI, there can be no assurance that the regulatory authorities will approve the Solothurn facility for the manufacturing of other products.

The ongoing COVID-19 pandemic and other global health outbreaks may, directly or indirectly, adversely affect our business, results of operations and financial condition.

Our business has and could continue to be adversely affected, directly or indirectly, by the ongoing COVID-19 pandemic and other global health outbreaks.

We continue to monitor our operations and applicable government recommendations, and we have made modifications to our normal operations because of the COVID-19 pandemic and other global health outbreaks, including limiting travel and adopting flexible working arrangements. Customer-facing professionals interactions in healthcare settings have changed as a result of the COVID-19 pandemic and other global health outbreaks. This limits our ability to market our products and educate physicians, which, in turn, could have an adverse effect on our ability to compete in the marketing and sales of our products.

Changes in flexible working arrangements could impact employee retention, employees' productivity and morale, strain our technology resources and introduce operational risks. Additionally, the risk of cyber-attacks or other privacy or data security incidents may be heightened as a result of our moving increasingly towards a remote working environment, which may be less secure and more susceptible to hacking attacks.

The COVID-19 pandemic and other global health outbreaks could affect the health and availability of our workforce as well as those of the third-parties we rely on. Furthermore, delays and disruptions experienced by our collaborators or other third-parties due to the COVID-19 pandemic and other global health outbreaks could adversely impact the ability of such parties to fulfill their obligations, which could affect product sales or the clinical development or regulatory approvals of product candidates under joint control.

Our ability to continue our existing clinical trials or to initiate new clinical trials has been and may continue to be adversely affected, directly or indirectly, by the COVID-19 pandemic and other global health outbreaks. Restrictions on travel and/or transport of clinical materials as well as diversion of hospital staff and resources to COVID-19 infected patients could disrupt trial operations and recruitment, possibly resulting in a slowdown in enrollment and/or deviations from or disruptions in key clinical trial activities, such as clinical trial site monitoring. These challenges may lead to difficulties in meeting protocol-specified procedures. We may need to make certain adjustments to the operation of clinical trials in an effort to minimize risks to trial data integrity during the COVID-19 pandemic and other global health outbreaks. In addition, the impact of the COVID-19 pandemic and other global health outbreaks on the operations of the FDA and other health authorities may delay potential approvals of our product candidates.

State and federal healthcare reform measures have been adopted in the past, and may be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our products or additional pricing pressures and have a financial impact on our business that we cannot predict.

While it is not possible at this time to estimate the entirety of the impact that the COVID-19 pandemic and other global health outbreaks will continue to have on our business, the broad impact of the pandemic on all business activities may materially and adversely affect our business, supply chain and distribution systems, results of operations and financial condition.

The illegal distribution and sale by third-parties of counterfeit or unfit versions of our products or stolen products could have a negative impact on our reputation and business.

Third-parties might illegally distribute and sell counterfeit or unfit versions of our products, which do not meet our rigorous manufacturing, distribution and testing standards. A patient who receives a counterfeit or unfit drug may be at risk for a number of dangerous health consequences. Our reputation and business could suffer harm as a result of counterfeit or unfit drugs sold under our brand name. Inventory that is stolen from warehouses, plants or while in-transit, and that is subsequently improperly stored and sold through unauthorized channels, could adversely impact patient safety, our reputation and our business.

The increasing use of social media platforms presents new risks and challenges.

Social media is increasingly being used to communicate about our products and the diseases our therapies are designed to treat. Social media practices in the biopharmaceutical industry continue to evolve and regulations relating to such use are not always clear and create uncertainty and risk of noncompliance with regulations

applicable to our business. For example, patients may use social media channels to comment on the effectiveness of a product or to report an alleged adverse event. When such disclosures occur, there is a risk that we fail to monitor and comply with applicable adverse event reporting obligations or we may not be able to defend the company or the public's legitimate interests in the face of the political and market pressures generated by social media due to restrictions on what we may say about our products. There is also a risk of inappropriate disclosure of sensitive information or negative or inaccurate posts or comments about us on social media. We may also encounter criticism on social media regarding our company, management, product candidates or products. The immediacy of social media precludes us from having real-time control over postings made regarding us via social media, whether matters of fact or opinion. Our reputation could be damaged by negative publicity or if adverse information concerning us is posted on social media platforms or similar mediums, which we may not be able to reverse. If any of these events were to occur or we otherwise fail to comply with applicable regulations, we could incur liability, face restrictive regulatory actions or incur other harm to our business.

Risks Related to Holding Our Common Stock

Our operating results are subject to significant fluctuations.

Our quarterly revenue, expense and net income (loss) have fluctuated in the past and are likely to fluctuate significantly in the future due to the risks described in these *Risk Factors* as well as the timing of charges and expense that we may take. We have recorded, or may be required to record, charges that include:

- the cost of restructurings or other initiatives to streamline our operations and reallocate resources;
- impairments with respect to investments, fixed assets and long-lived assets, including in-process research and development (IPR&D) and other intangible assets;
- inventory write-downs for failed quality specifications, recurring charges for excess or obsolete inventory and charges for inventory write-downs relating to product suspensions, expirations or recalls;
- changes in the fair value of contingent consideration or our equity investments;
- bad debt expense and increased bad debt reserves;
- outcomes of litigation and other legal or administrative proceedings, regulatory matters and tax matters;
- payments in connection with acquisitions, divestitures and other business development activities and under license and collaboration agreements;
- failure to meet certain contractual commitments; and
- the impact of public health epidemics, such as the COVID-19 pandemic, on employees, the global economy and the delivery of healthcare treatments.

Our revenue and certain assets and liabilities are also subject to foreign currency exchange rate fluctuations due to the global nature of our operations. Our efforts to mitigate the impact of fluctuating currency exchange rates may not be successful. As a result, currency fluctuations among our reporting currency, the U.S. dollar, and other currencies in which we do business will affect our operating results, often in unpredictable ways. Our net income may also fluctuate due to the impact of charges we may be required to take with respect to foreign currency hedge transactions. In particular, we may incur higher than expected charges from early termination of a hedge relationship.

Our operating results during any one period do not necessarily suggest the anticipated results of future periods.

Our investments in properties may not be fully realized.

We own or lease real estate primarily consisting of buildings that contain research laboratories, office space and manufacturing operations. We may decide to consolidate or co-locate certain aspects of our business operations or dispose of one or more of our properties, some of which may be located in markets that are experiencing high vacancy rates and decreasing property values. If we determine that the fair value of any of our owned properties is lower than their book value, we may not realize the full investment in these properties and incur significant impairment charges or additional depreciation when the expected useful lives of certain assets have been shortened due to the anticipated closing of facilities. If we decide to fully or partially vacate a property, we may incur significant cost, including facility closing costs, employee separation and retention expense, lease termination fees, rent expense in excess of sublease income and impairment of leasehold improvements and accelerated depreciation of assets. Any of these events may have an adverse impact on our results of operations.

Our investment portfolio is subject to market, interest and credit risk that may reduce its value.

We maintain a portfolio of marketable securities for investment of our cash as well as investments in equity securities of certain biotechnology companies. Changes in the value of our investment portfolio could adversely

affect our earnings. The value of our investments may decline due to, among other things, increases in interest rates, downgrades of the bonds and other securities in our portfolio, negative company-specific news, biotechnology market sentiment, instability in the global financial markets that reduces the liquidity of securities in our portfolio, declines in the value of collateral underlying the securities in our portfolio and other factors. Each of these events may cause us to record charges to reduce the carrying value of our investment portfolio or sell investments for less than our acquisition cost. Although we attempt to mitigate these risks through diversification of our investments and continuous monitoring of our portfolio's overall risk profile, the value of our investments may nevertheless decline.

There can be no assurance that we will continue to repurchase shares or that we will repurchase shares at favorable prices.

From time to time our Board of Directors authorizes share repurchase programs. The amount and timing of share repurchases are subject to capital availability and our determination that share repurchases are in the best interest of our shareholders and are in compliance with all respective laws and our applicable agreements. Our ability to repurchase shares will depend upon, among other factors, our cash balances and potential future capital requirements for strategic transactions, our results of operations, our financial condition and other factors beyond our control that we may deem relevant. Additionally, the recently enacted IRA includes an excise tax on share repurchases, which will increase the cost of share repurchases. A reduction in repurchases under, or the completion of, our share repurchase programs could have a negative effect on our stock price. We can provide no assurance that we will repurchase shares at favorable prices, if at all.

We may not be able to access the capital and credit markets on terms that are favorable to us.

We may seek access to the capital and credit markets to supplement our existing funds and cash generated from operations for working capital, capital expenditure and debt service requirements and other business initiatives. The capital and credit markets are experiencing, and have in the past experienced, extreme volatility and disruption, which leads to uncertainty and liquidity issues for both borrowers and investors. In the event of adverse market conditions, we may be unable to obtain capital or credit market financing on favorable terms. Changes in credit ratings issued by nationally recognized credit rating agencies could also adversely affect our cost of financing and the market price of our securities.

Our indebtedness could adversely affect our business and limit our ability to plan for or respond to changes in our business.

Our indebtedness, together with our significant contingent liabilities, including milestone and royalty payment obligations, could have important consequences to our business; for example, such obligations could:

- increase our vulnerability to general adverse economic and industry conditions;
- limit our ability to access capital markets and incur additional debt in the future;
- require us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thereby reducing the availability of our cash flow for other purposes, including business development, research and development and mergers and acquisitions; and
- limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate, thereby placing us at a disadvantage compared to our competitors that have less debt.

Some of our collaboration agreements contain change in control provisions that may discourage a third-party from attempting to acquire us.

Some of our collaboration agreements include change in control provisions that could reduce the potential acquisition price an acquirer is willing to pay or discourage a takeover attempt that could be viewed as beneficial to shareholders. Upon a change in control, some of these provisions could trigger reduced milestone, profit or royalty payments to us or give our collaboration partner rights to terminate our collaboration agreement, acquire operational control or force the purchase or sale of the programs that are the subject of the collaboration.

General Risk Factors

Our effective tax rate fluctuates, and we may incur obligations in tax jurisdictions in excess of accrued amounts.

As a global biopharmaceutical company, we are subject to taxation in numerous countries, states and other jurisdictions. As a result, our effective tax rate is derived from a combination of applicable tax rates, including withholding taxes, in the various places that we operate. In preparing our financial statements, we estimate the amount of tax that will become payable in each of such places. Our effective tax rate may be different than experienced in the past or our current expectations due to many factors, including changes in the mix of our

profitability from country to country, the results of examinations and audits of our tax filings (including those related to the impact of the Tax Cuts and Jobs Act of 2017), adjustments to the value of our uncertain tax positions, interpretations by tax authorities or other bodies with jurisdiction, the result of tax cases, changes in accounting for income taxes and changes in tax laws and regulations either prospectively or retrospectively (including those related to the IRA).

Our inability to secure or sustain acceptable arrangements with tax authorities and future changes in the tax laws, among other things, may result in tax obligations in excess of amounts accrued in our financial statements.

The enactment of some or all of the recommendations set forth or that may be forthcoming in the Organization for Economic Cooperation and Development's project on "Base Erosion and Profit Shifting" (BEPS) by tax authorities and economic blocs in the countries in which we operate, could unfavorably impact our effective tax rate. These initiatives focus on common international principles for the entitlement to taxation of global corporate profits and minimum global tax rates.

Our business involves environmental risks, which include the cost of compliance and the risk of contamination or injury.

Our business and the business of several of our strategic partners involve the controlled use of hazardous materials, chemicals, biologics and radioactive compounds. Although we believe that our safety procedures for handling and disposing of such materials comply with state, federal and foreign standards, there will always be the risk of accidental contamination or injury. If we were to become liable for an accident, or if we were to suffer an extended facility shutdown, we could incur significant costs, damages and penalties that could harm our business. Manufacturing of our products and product candidates also requires permits from government agencies for water supply and wastewater discharge. If we do not obtain appropriate permits, including permits for sufficient quantities of water and wastewater, we could incur significant costs and limits on our manufacturing volumes that could harm our business. Additionally, regulators are considering new environmental disclosure rules. For example, the SEC has proposed amendments to its disclosure rules regarding climate-related disclosure requirements. These proposed regulations may impact the manner in which we operate.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Below is a summary of our owned and leased properties as of December 31, 2022.

U.S.

Massachusetts

In Cambridge, MA we own approximately 263,000 square feet of real estate space, consisting of a building that houses a research laboratory and a cogeneration plant.

In addition, we lease a total of approximately 1,429,000 square feet in Massachusetts, which is summarized as follows:

- 1,072,000 square feet in Cambridge, MA, which is comprised of offices for our corporate headquarters and other administrative and development functions and laboratories, of which 289,000 square feet is subleased by multiple companies for general office space, laboratories and manufacturing facilities; and
- 357,000 square feet of office space in Weston, MA, of which 174,000 square feet is subleased through the remaining term of our lease agreement.

Our Massachusetts lease agreements expire at various dates through the year 2028.

125 Broadway Building Sale and Leaseback

In September 2022 we completed the sale of our building and land parcel located at 125 Broadway. In connection with this sale, we simultaneously leased back the building for a term of approximately 5.5 years, which resulted in the recognition of approximately $168.2 million in new lease liabilities and right-of-use assets recorded within our consolidated balance sheets as of December 31, 2022. The sale and immediate leaseback of this building qualified for sale and leaseback treatment and is classified as an operating lease. For additional information

on our 125 Broadway sale and leaseback transaction, please read *Note 11, Property, Plant and Equipment and Note 12, Leases*, to our consolidated financial statements included in this report.

300 Binney Street Lease Modification

In September 2022 we entered into an agreement to partially terminate a portion of our lease located at 300 Binney Street, Cambridge, MA (300 Binney Street), as well as to reduce the lease term for the majority of the remaining space. The agreement was driven by our 2022 efforts to reduce costs by consolidating real estate locations. For additional information on our 300 Binney Street lease modification, please read *Note 12, Leases*, to our consolidated financial statements included in this report.

North Carolina

In RTP, NC we own approximately 1,040,000 square feet of real estate space, which is summarized as follows:

- 357,000 square feet of laboratory and office space;
- 206,000 square foot multi-purpose facility, including an ASO manufacturing suite and administrative space;
- 175,000 square feet related to a large-scale biologics manufacturing facility;
- 105,000 square feet related to a small-scale biologics manufacturing facility;
- 84,000 square feet of warehouse space and utilities;
- 70,000 square feet related to a parenteral fill-finish facility; and
- 43,000 square feet related to a large-scale purification facility.

In addition, we lease approximately 65,000 square feet of warehouse space in Durham, NC. Our North Carolina lease agreements expire at various dates through the year 2025.

In March 2021 we announced our plans to build a new gene therapy manufacturing facility in RTP, NC to support our gene therapy pipeline across multiple therapeutic areas. The new manufacturing facility will be approximately 197,000 square feet and is expected to be operational by the end of 2023, with an estimated total investment of approximately $195.0 million. Construction for this new facility began during the fourth quarter of 2021.

International

Switzerland

In order to support our future growth and drug development pipeline, we are building a large-scale biologics manufacturing facility in Solothurn, Switzerland. Upon completion, this facility will include 393,000 square feet related to a large-scale biologics manufacturing facility, 290,000 square feet of warehouse, utilities and support space and 51,000 square feet of administrative space. In the second quarter of 2021 a portion of the facility received a GMP multi-product license from SWISSMEDIC. Solothurn has been approved for the manufacture of ADUHELM and LEQEMBI by the FDA. We estimate the second manufacturing suite at the Solothurn facility will be operational by the end of 2023.

Other International

We lease office space in Baar, Switzerland, our international headquarters; the U.K.; Germany; France; Japan; Canada and numerous other countries. Our international lease agreements expire at various dates through the year 2031.

ITEM 3. LEGAL PROCEEDINGS

For a discussion of legal matters as of December 31, 2022, please read *Note 21, Litigation,* to our consolidated financial statements included in this report, which is incorporated into this item by reference.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market and Stockholder Information

Our common stock trades on The Nasdaq Global Select Market under the symbol “BIIB.” As of February 14, 2023, there were approximately 448 shareholders of record of our common stock.

Dividends

We have not paid cash dividends since our inception. While we historically have not paid cash dividends and do not have a current intention to pay cash dividends, we continually review our capital allocation strategies, including, among other things, payment of cash dividends, share repurchases and acquisitions.

Issuer Purchases of Equity Securities

The following table summarizes our common stock repurchase activity during the fourth quarter of 2022:

Period	Total Number of Shares Purchased (#)	Average Price Paid per Share ($)	Total Number of Shares Purchased as Part of Publicly Announced Programs (#)	Approximate Dollar Value of Shares That May Yet Be Purchased Under Our Programs ($ in millions)
October 2022	—	$ —	—	$ 2,050.0
November 2022	—	$ —	—	$ 2,050.0
December 2022	—	$ —	—	$ 2,050.0
Total[1]	—	$ —		

[1] There were no share repurchases during the fourth quarter of 2022.

In October 2020 our Board of Directors authorized a program to repurchase up to $5.0 billion of our common stock (2020 Share Repurchase Program). Our 2020 Share Repurchase Program does not have an expiration date. All share repurchases under our 2020 Share Repurchase Program will be retired. Under our 2020 Share Repurchase Program, we repurchased and retired approximately 3.6 million, 6.0 million and 1.6 million shares of our common stock at a cost of approximately $750.0 million, $1.8 billion and $400.0 million during the years ended December 31, 2022, 2021 and 2020, respectively. Approximately $2.1 billion remained available under our 2020 Share Repurchase Program as of December 31, 2022.

In December 2019 our Board of Directors authorized a program to repurchase up to $5.0 billion of our common stock (December 2019 Share Repurchase Program), which was completed as of September 30, 2020. All shares repurchased under our December 2019 Share Repurchase Program were retired. Under our December 2019 Share Repurchase Program, we repurchased and retired approximately 16.7 million shares of our common stock at a cost of approximately $5.0 billion during the year ended December 31, 2020.

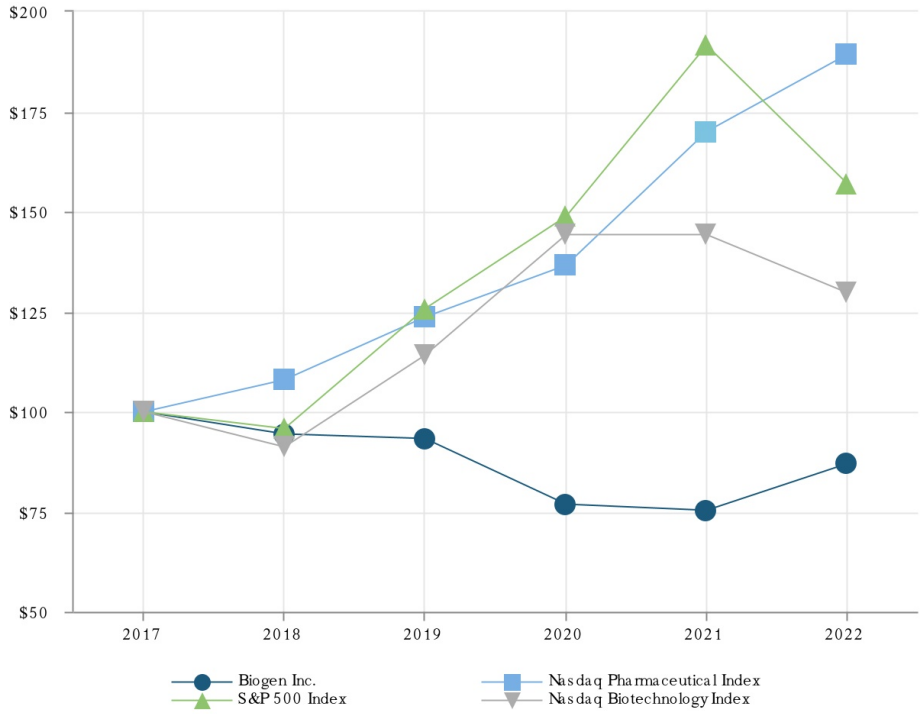
In March 2019 our Board of Directors authorized a program to repurchase up to $5.0 billion of our common stock (March 2019 Share Repurchase Program), which was completed as of March 31, 2020. All shares repurchased under our March 2019 Share Repurchase Program were retired. Under our March 2019 Share Repurchase Program, we repurchased and retired approximately 4.1 million shares of our common stock at a cost of approximately $1.3 billion during the year ended December 31, 2020.

In August 2022 the IRA was signed into law. Among other things, the IRA levies a 1.0% excise tax on net stock repurchases after December 31, 2022. Historically, we have made discretionary share repurchases.

Performance Graph

The performance graph below compares the five-year cumulative total stockholder return on our common stock, the Nasdaq Pharmaceutical Index, the S&P 500 Index and the Nasdaq Biotechnology Index. The performance graph below assumes the investment of $100.00 on December 31, 2017, in our common stock and each of the three indexes, with dividends being reinvested.

The stock price performance in the graph below is not necessarily indicative of future price performance.



	2017	2018	2019	2020	2021	2022
Biogen Inc.	$100.00	$94.46	$93.14	$76.86	$75.31	$86.92
Nasdaq Pharmaceutical Index	$100.00	$107.95	$123.62	$136.62	$169.94	$189.23
S&P 500 Index	$100.00	$95.62	$125.72	$148.85	$191.58	$156.88
Nasdaq Biotechnology Index	$100.00	$91.14	$114.02	$144.15	$144.18	$129.59

The information included under the heading *Performance Graph* is “furnished” and not “filed” for purposes of Section 18 of the Securities Exchange Act, or otherwise subject to the liabilities of that section, nor shall it be deemed to be “soliciting material” subject to Regulation 14A or incorporated by reference in any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934.

ITEM 6. RESERVED

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion should be read in conjunction with our consolidated financial statements and the accompanying notes beginning on page F-1 of this report.

For our discussion of the year ended December 31, 2021, compared to the year ended December 31, 2020, please read *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations* located in our Annual Report on Form 10-K for the year ended December 31, 2021.

Executive Summary

Introduction

Biogen is a global biopharmaceutical company focused on discovering, developing and delivering innovative therapies for people living with serious and complex diseases worldwide. We have a broad portfolio of medicines to treat MS, have introduced the first approved treatment for SMA and co-developed two treatments to address a defining pathology of Alzheimer's disease. We are focused on advancing our pipeline in neurology, neuropsychiatry, specialized immunology and rare diseases. We support our drug discovery and development efforts through internal research and development programs and external collaborations.

Our marketed products include TECFIDERA, VUMERITY, AVONEX, PLEGRIDY, TYSABRI and FAMPYRA for the treatment of MS; SPINRAZA for the treatment of SMA; ADUHELM for the treatment of Alzheimer's disease; and FUMADERM for the treatment of severe plaque psoriasis. We also collaborate with Eisai on the commercialization of LEQEMBI for the treatment of Alzheimer's disease, which was granted accelerated approval by the FDA in January 2023. We have certain business and financial rights with respect to RITUXAN for the treatment of non-Hodgkin's lymphoma, CLL and other conditions; RITUXAN HYCELA for the treatment of non-Hodgkin's lymphoma and CLL; GAZYVA for the treatment of CLL and follicular lymphoma; OCREVUS for the treatment of PPMS and RMS; LUNSUMIO (mosunetuzumab), which was granted accelerated approval in the U.S. during the fourth quarter of 2022 for the treatment of relapsed or refractory follicular lymphoma; glofitamab, an investigational bispecific antibody for the potential treatment of non-Hodgkin's lymphoma; and have the option to add other potential anti-CD20 therapies, pursuant to our collaboration arrangements with Genentech, a wholly-owned member of the Roche Group.

In addition to continuing to invest in new potential innovation in MS and SMA we are advancing our mid-to-late stage programs including zuranolone for MDD and PPD, BIIB080 for Alzheimer's disease, tofersen for ALS and both litifilimab and dapirolizumab pegol for certain forms of lupus.

We also commercialize biosimilars of advanced biologics including BENEPALI, an etanercept biosimilar referencing ENBREL, IMRALDI, an adalimumab biosimilar referencing HUMIRA, and FLIXABI, an infliximab biosimilar referencing REMICADE, in certain countries in Europe, as well as BYOOVIZ, a ranibizumab biosimilar referencing LUCENTIS, in the U.S. We continue to develop potential biosimilar products including BIIB800, a proposed tocilizumab biosimilar referencing ACTEMRA, and SB15, a proposed aflibercept biosimilar referencing EYLEA. In February 2023 we announced that we are exploring strategic options for our biosimilars business.

For additional information on our collaboration arrangements, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

We seek to ensure an uninterrupted supply of medicines to patients around the world. To that end, we continually review our manufacturing capacity, capabilities, processes and facilities. In order to support our future growth and drug development pipeline, we are expanding our large molecule production capacity by building a large-scale biologics manufacturing facility in Solothurn, Switzerland. In the second quarter of 2021 a portion of the facility received a GMP multi-product license from SWISSMEDIC. Solothurn has been approved for the manufacture of ADUHELM and LEQEMBI by the FDA. We estimate the second manufacturing suite at the Solothurn facility will be operational by the end of 2023. We believe that the Solothurn facility will support our anticipated near-term needs for the manufacturing of biologic assets. If we are unable to fully utilize our manufacturing facilities, due to lower than forecasted demand for our products, we will incur excess capacity charges which will have a negative effect on our financial condition and results of operations.

Our revenue depends upon continued sales of our products as well as the financial rights we have in our anti-CD20 therapeutic programs, and, unless we develop, acquire rights to and/or commercialize new products and technologies, we will be substantially dependent on sales from our products and our financial rights in our anti-CD20 therapeutic programs for many years.

In the longer term, our revenue growth will depend upon the successful clinical development, regulatory approval and launch of new commercial

products as well as additional indications for our existing products, our ability to obtain and maintain patents and other rights related to our marketed products, assets originating from our research and development efforts and/or successful execution of external business development opportunities.

Business Environment

For a detailed discussion on our business environment, please read *Item 1. Business,* included in this report. For additional information on our competition and pricing risks that could negatively impact our product sales, please read *Item 1A. Risk Factors,* included in this report.

ADUHELM (aducanumab)

U.S.

In June 2021 the FDA granted accelerated approval of ADUHELM, which, until March of 2022, we had been collaborating on with Eisai, based on reduction in amyloid beta plaques observed in patients treated with ADUHELM. As part of the accelerated approval, we are required to conduct a confirmatory trial to verify the clinical benefit of ADUHELM in patients with Alzheimer's disease. The FDA may withdraw approval if, among other things, the confirmatory trial fails to verify clinical benefit of ADUHELM, ADUHELM's benefit-risk is no longer positive or we fail to comply with the conditions of the accelerated approval.

In April 2022 the CMS released a final NCD for the class of anti-amyloid treatments in Alzheimer's disease, including ADUHELM. The final NCD confirmed coverage with evidence development, in which patients with Medicare can only access treatment if they are part of an approved clinical trial. This decision effectively resulted in denying all Medicare beneficiaries access to ADUHELM. We expect that this decision will reduce future demand for ADUHELM to a minimal level.

During the first quarter of 2022, as a result of the final NCD, we recorded approximately $275.0 million of charges associated with the write-off of inventory and purchase commitments in excess of forecasted demand related to ADUHELM. Additionally, for the year ended December 31, 2022, we recorded approximately $111.0 million of aggregate gross idle capacity charges related to ADUHELM. These charges were recorded in cost of sales within our consolidated statements of income for the year ended December 31, 2022.

We have recognized approximately $197.0 million related to Eisai's 45.0% share of inventory, idle capacity charges and contractual commitments in collaboration profit (loss) sharing within our consolidated statements of income for the year ended December 31, 2022.

Additionally, as a result of the final NCD we have substantially eliminated our commercial infrastructure supporting ADUHELM, retaining minimal resources to manage patient access programs, including a continued free drug program for patients currently on treatment in the U.S.

We expect to continue funding certain regulatory and research and development activities for ADUHELM, including the continuation of the EMBARK re-dosing study and the Phase 4 post-marketing requirement study, ENVISION. Additional actions regarding ADUHELM may be informed by upcoming data readouts expected for this class of antibodies, as well as further engagement with the FDA and CMS.

On March 14, 2022, we amended our ADUHELM Collaboration Agreement with Eisai. As of the amendment date, we have sole decision making and commercialization rights worldwide on ADUHELM, and beginning January 1, 2023, Eisai receives only a tiered royalty based on net sales of ADUHELM, and no longer participates in sharing ADUHELM's global profits and losses. Eisai's share of development, commercialization and manufacturing expense was limited to $335.0 million for the period from January 1, 2022 to December 31, 2022, which was achieved as of December 31, 2022. Once this limit was achieved, we became responsible for all ADUHELM related costs.

Rest of World

In October 2020 the EMA accepted for review the MAA for aducanumab and in December 2020 the Ministry of Health, Labor and Welfare (MHLW) accepted for review the Japanese NDA for aducanumab.

In December 2021 the CHMP of the EMA adopted a negative opinion on the MAA for aducanumab in Europe. We sought re-examination of the opinion by the CHMP. In April 2022 we announced our decision to withdraw our MAA for aducanumab in Europe.

TECFIDERA

Multiple TECFIDERA generic entrants are now in North America, Brazil and certain E.U. countries and have deeply discounted prices compared to TECFIDERA. The generic competition for TECFIDERA has significantly reduced our TECFIDERA revenue and we expect that TECFIDERA revenue will continue to decline in the future.

In the E.U., we are seeking to enforce a patent granted in June 2022 that relates to TECFIDERA and expires in 2028. In addition, we are litigating to affirm that TECFIDERA is entitled to regulatory data and

market protection until at least February 2024. Our Company, the EMA and the EC have each appealed the May 2021 decision of the European General Court, which annulled the EMA's decision not to validate an application for approval of a TECFIDERA generic on the basis that the EMA and EC conducted the wrong assessment when determining TECFIDERA's entitlement to regulatory data and marketing protection. Our Company, the EMA and the EC have each appealed the General Court's decision as wrongly decided and the appeal is pending. On October 6, 2022, the Advocate General of the CJEU issued a nonbinding advisory opinion in Biogen's favor. This opinion recommends that the CJEU set aside the judgment of the European General Court. We are awaiting the decision of the CJEU.

For additional information, please read *Note 21, Litigation*, to our consolidated financial statements included in this report and the discussion under *Results of Operations - Product Revenue - Multiple Sclerosis (MS) - Fumarate* below.

Business Update Regarding COVID-19 and Other Disruptions

COVID-19

The COVID-19 pandemic continues to present a substantial public health and economic challenge around the world. The length of time and full extent to which the COVID-19 pandemic directly or indirectly impacts our business, results of operations and financial condition, including sales, expense, reserves and allowances, the supply chain, manufacturing, clinical trials, research and development costs and employee-related costs, depends on future developments that are highly uncertain, subject to change and are difficult to predict, including as a result of new information that may emerge concerning COVID-19 and the actions taken to contain or treat COVID-19 as well as the economic impact on local, regional, national and international customers and markets.

We are monitoring the demand for our products, including the duration and degree to which we may see delays in starting new patients on a product due to hospitals diverting the resources that are necessary to administer certain of our products to care for COVID-19 patients, including products, such as TYSABRI and SPINRAZA, that are administered in a physician's office or hospital setting. We may also see reduced demand for immunosuppressant therapies during the COVID-19 pandemic.

While we are currently continuing the clinical trials we have underway in sites across the globe, COVID-19 precautions have impacted the timeline for some of our clinical trials and these precautions may, directly or indirectly, have a further impact on timing in the future.

Geopolitical Tensions

The ongoing geopolitical tensions related to Russia's invasion of Ukraine have resulted in global business disruptions and economic volatility, including sanctions and other restrictions levied on the government and businesses in Russia. Although we do not have affiliates or employees, in either Russia or Ukraine, we do provide various therapies to patients in Russia through a distributor and are currently involved in clinical trials with sites in Ukraine and Russia. The timing and costs of these trials may be impacted as a result of the conflict. In addition, new government sanctions on the export of certain manufacturing materials to Russia may delay or limit our ability to get new products approved.

The impact of the conflict on our operations and financial performance remains uncertain and will depend on future developments, including the severity and duration of the conflict, its impact on regional and global economic conditions and whether the conflict spreads or has effects on countries outside Ukraine and Russia. Revenue generated from sales in these regions represented less than 2.0% of total product revenue for the years ended December 31, 2022 and 2021.

We will continue to monitor the ongoing conflict between Russia and Ukraine and assess any potential impacts on our business, supply chain, partners or customers, as well as any factors that could have an adverse effect on our results of operations.

Factors such as the COVID-19 pandemic and other global health outbreaks, adverse weather events, geopolitical events, labor or raw material shortages and other supply chain disruptions could result in product shortages or other difficulties and delays or increased costs in manufacturing our products.

For additional information on the various risks posed by the COVID-19 pandemic and the conflict in Ukraine, please read *Item 1A. Risk Factors,* included in this report.

Inflation Reduction Act of 2022

In August 2022 the IRA was signed into law in the U.S. The IRA introduced new tax provisions, including a 15.0% corporate alternative minimum tax and a 1.0% excise tax on stock repurchases. The provisions of the IRA will be effective for periods after December 31, 2022. The enactment of the IRA did not result in any material adjustments to our income tax provision or net deferred tax assets as of December 31, 2022. We expect additional guidance and regulations to be issued in future periods and will continue to assess its potential impact on our business and results of operations as further information becomes available.

The IRA also contains substantial drug pricing reforms that may have a significant impact on the pharmaceutical industry in the U.S. This includes allowing CMS to negotiate a maximum fair price for certain high-priced single source Medicare drugs, as well as redesigning Medicare Part D to reduce out-of-pocket prescription drug costs for beneficiaries, potentially resulting in higher contributions from plans and manufacturers. The IRA also establishes drug inflationary rebate requirements to penalize manufacturers from raising the prices of Medicare covered single-source drugs and biologics beyond the inflation-adjusted rate. Further, to incentivize biosimilar development, the IRA provides an 8.0% Medicare Part B add-on payment for qualifying biosimilar products for a five-year period.

The overall impact that the IRA will have on our business, results of operations and financial condition, and the impact on the pharmaceutical industry as a whole is not yet known. We will continue to assess as further information becomes available.

Financial Highlights

Diluted earnings per share attributable to Biogen Inc. were $20.87 for 2022, representing an increase of 100.7% as compared to $10.40 in the same period in 2021.

As described below under *Results of Operations*, our net income and diluted earnings per share attributable to Biogen Inc. for the year ended December 31, 2022, compared to the year ended December 31, 2021, reflects the following:

Revenue

- Total revenue was $10,173.4 million for 2022, representing an $808.3 million, or 7.4%, decrease compared to $10,981.7 million in 2021.
- Product revenue, net totaled $7,987.8 million for 2022, representing an $859.1 million, or 9.7%, decrease compared to $8,846.9 million in 2021. This decrease was primarily due to a $666.5 million, or 10.9%, decrease in MS product revenue, a $111.6 million, or 5.9%, decrease in SPINRAZA product revenue and an $80.0 million, or 9.6%, decrease in revenue from our biosimilar business.
    - The decrease in MS product revenue of $666.5 million, or 10.9%, from $6,096.7 million in 2021 to $5,430.2 million in 2022, was primarily due to a decrease in TECFIDERA demand as a result of multiple TECFIDERA generic entrants in North America, Brazil and certain E.U. countries, and a decrease in Interferon demand due to competition as patients transition to higher efficacy and oral MS therapies.
    - The decrease in SPINRAZA revenue of $111.6 million, or 5.9%, from $1,905.1 million in 2021 to $1,793.5 million in 2022, was primarily due to country mix, the unfavorable impact of foreign currency exchange and the timing of shipments, partially offset by an increase in sales volumes. The increase in sales volumes reflects growth in certain Asian markets, partially offset by a decrease in sales volumes from increased competition in certain established markets, particularly Germany and Japan.
    - The decrease in revenue from our biosimilar business of $80.0 million, or 9.6%, from $831.1 million in 2021 to $751.1 million in 2022, was primarily due to unfavorable pricing and the unfavorable impact of foreign currency exchange, partially offset by an increase in sales volumes.
- Revenue from anti-CD20 therapeutic programs totaled $1,700.5 million for 2022, representing a $42.0 million, or 2.5%, increase compared to $1,658.5 million in 2021. This increase was primarily due to a $144.6 million, or 14.6%, increase in royalty revenue on sales of OCREVUS, partially offset by a $103.4 million, or 18.0%, decrease in RITUXAN revenue. Sales of RITUXAN have been adversely affected by biosimilar competition.
- Other revenue totaled $485.1 million for 2022, representing a $8.8 million, or 1.8%, increase from $476.3 million in 2021.

Expense

- Total cost and expense was $6,581.6 million for 2022, representing a $2,654.9 million, or 28.7%, decrease compared to $9,236.5 million in 2021.

- Research and development expense decreased $270.1 million, or 10.8%, from $2,501.2 million in 2021 to $2,231.1 million in 2022, primarily due to higher upfront payments in 2021. In 2021 we recorded approximately $285.0 million of upfront payments related to our collaborations with InnoCare, Ionis, Bio-Thera, Genentech, Capsigen Inc., and Ginkgo Bioworks, as compared to $28.5 million in 2022. In addition, $39.1 million of estimated clinical trial closeout costs and manufacturing commitments associated with BIIB111 (timrepigene emparvovec) and BIIB112 (cotoretigene toliparvovec) were recorded in 2021.
- Amortization and impairment of acquired intangible assets decreased $515.4 million, or 58.5%, from $881.3 million in 2021 to $365.9 million in 2022, primarily due to higher impairment charges recorded in 2021. In 2021 we recorded $629.3 million of impairment charges, as compared to $119.6 million in 2022.
- The decrease in cost and expense was also due to a pre-tax gain of $503.7 million recognized in 2022 related to the sale of one of our buildings.
- Other (income) expense, net for 2022 reflected a pre-tax gain of $1.5 billion related to the sale of our 49.9% equity interest in Samsung Bioepis, partially offset by a pre-tax charge of $900.0 million, plus settlement fees and expenses, related to a litigation settlement agreement to resolve a qui tam litigation relating to conduct prior to 2015.

As described below under *Financial Condition, Liquidity and Capital Resources*:

- We generated $1,384.3 million of net cash flow from operations for 2022.
- Cash, cash equivalents and marketable securities totaled approximately $5,598.5 million as of December 31, 2022.
- We repurchased and retired approximately 3.6 million shares of our common stock at a cost of approximately $750.0 million during 2022 under our 2020 Share Repurchase Program. Approximately $2.1 billion remained available under our 2020 Share Repurchase Program as of December 31, 2022.

Developments in Key Collaborative Relationships

For additional information on our collaborative and other relationships discussed below, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Eisai Collaboration Agreements

LEQEMBI (lecanemab) Collaboration Agreement

In January 2023 we and Eisai announced that the FDA granted accelerated approval of LEQEMBI, an anti-amyloid antibody for the treatment of Alzheimer's disease. Additionally, in January 2023 we and Eisai announced the completed submission of a supplemental BLA to the FDA for traditional approval of LEQEMBI.

In January 2023 the EMA accepted for review the MAA for lecanemab.

In January 2023 Eisai completed the submission of a MAA to the PMDA in Japan for lecanemab, and was granted Priority Review by the Japanese Ministry of Health, Labor and Welfare.

In December 2022 Eisai initiated a rolling submission of a BLA to the NMPA of China for the approval of lecanemab.

In March 2022 we extended our supply agreement with Eisai related to LEQEMBI from five years to ten years for the manufacture of LEQEMBI drug substance.

ADUHELM Collaboration Agreement

On March 14, 2022, we amended our ADUHELM Collaboration Agreement with Eisai. As of the amendment date, we have sole decision making and commercialization rights worldwide on ADUHELM, and beginning January 1, 2023, Eisai receives only a tiered royalty based on net sales of ADUHELM, and no longer participates in sharing ADUHELM's global profits and losses. Eisai's share of development, commercialization and manufacturing expense was limited to $335.0 million for the period from January 1, 2022 to December 31, 2022, which was achieved as of December 31, 2022. Once this limit was achieved, we became responsible for all ADUHELM related costs.

For additional information on our collaboration arrangements with Eisai, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Zuranolone (BIIB125)

In June 2022 we and our collaboration partner Sage announced that the Phase 3 SKYLARK study of zuranolone, for the potential treatment of MDD and PPD, met its primary and all key secondary endpoints.

In December 2022 we and Sage completed the rolling submission of a NDA to the FDA for the approval of zuranolone for the potential treatment of MDD and PPD. This submission completes the NDA filing initiated earlier in 2022.

In February 2023 the FDA accepted the NDA and granted Priority Review for zuranolone, with a PDUFA action date of August 5, 2023.

For additional information on our collaboration arrangement with Sage, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Genentech

LUNSUMIO (mosunetuzumab)

In January 2022 we exercised our option with Genentech to participate in the joint development and commercialization of LUNSUMIO (mosunetuzumab), a bispecific antibody for the treatment of relapsed or refractory follicular lymphoma. In connection with this exercise, we recorded a $30.0 million option exercise fee payable to Genentech in December 2021.

In December 2022 Genentech announced that the FDA granted accelerated approval of LUNSUMIO, which was also approved by the EC in June 2022.

Glofitamab

In December 2022 we reached an agreement with Genentech related to the commercialization and sharing of economics for glofitamab, an investigational T-cell engaging bispecific antibody targeting CD20 and CD3 for the potential treatment of B-cell non-Hodgkin's lymphoma.

For additional information on our collaboration arrangements with Genentech, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Other Collaborative Relationships

Alcyone Therapeutics

In December 2022 we entered into a license and collaboration agreement with Alcyone to jointly develop the ThecaFlex DRx™ System, an implantable medical device intended for subcutaneous delivery of ASO therapies with a goal of improving the patient treatment experience and accessibility for people suffering from neurological disorders, such as SMA and ALS. Under the terms of this collaboration, we and Alcyone will jointly develop the ThecaFlex DRx™ System and Alcyone will be solely responsible for its manufacture and commercialization. In connection with this transaction, we made an upfront payment of $10.0 million to Alcyone.

Other Key Developments

Tofersen (BIIB067)

In July 2022 we announced that the FDA accepted the NDA and granted Priority Review for tofersen, an investigational antisense drug being evaluated for people with SOD1 ALS, which currently has a PDUFA action date of April 25, 2023. In December 2022 the EMA accepted for review the MAA for tofersen.

BIIB800 (referencing ACTEMRA)

In September 2022 we and our collaboration partner Bio-Thera announced that the EMA accepted for review the MAA for BIIB800, a proposed tocilizumab biosimilar referencing ACTEMRA, an anti-interleukin-6 receptor monoclonal antibody, for the treatment of severe, active and progressive rheumatoid arthritis. In December 2022 the FDA accepted for review the abbreviated BLA for BIIB800.

BIIB122 (DNL151)

In October 2022 we and our collaboration partner Denali announced the initiation of the Phase 3 LIGHTHOUSE study of BIIB122 for the potential treatment of Parkinson's disease.

For additional information on our collaboration arrangement with Denali, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Corporate Matters

Samsung Bioepis - Biogen's Joint Venture with Samsung BioLogics

In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics. Under the terms of this transaction, we received approximately $1.0 billion in cash at closing and expect to receive approximately $1.3 billion in cash to be deferred over two payments of approximately $812.5 million due at the first anniversary and approximately $437.5 million due at the second anniversary of the closing of this transaction.

As part of this transaction, we are also eligible to receive up to an additional $50.0 million upon the achievement of certain commercial milestones. Our policy for contingent payments of this nature is to recognize the payments in the period that they become realizable, which is generally the same period in which the payments are earned.

For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions,* to our consolidated financial statements included in this report.

2022 Cost Saving Initiatives

In December 2021 and May 2022 we announced our plans to implement a series of cost-reduction measures that when completed we expect may yield approximately $1.0 billion in expense savings. These savings are being achieved through a number of initiatives, including reductions to our workforce, the substantial elimination of our commercial ADUHELM infrastructure, the consolidation of certain real estate locations and operating efficiency gains across our selling, general and administrative and research and development functions.

Under these initiatives, we estimate we will incur total restructuring charges of approximately $131.0 million, primarily related to severance. These amounts were substantially incurred during 2022. As of December 31, 2022, approximately $35.9 million remained in our restructuring reserve and payments are expected to be made through 2026.

For additional information on our 2022 cost saving initiatives, please read *Note 4, Restructuring*, to our consolidated financial statements included in this report.

Senior Note Redemption

In July 2022 we redeemed our 3.625% Senior Notes totaling $1.0 billion in aggregate principal amount prior to their maturity on September 15, 2022.

For additional information on the redemption of our Senior Notes, please read *Note 13, Indebtedness*, to our consolidated financial statements included in this report.

125 Broadway Sale and Leaseback Transaction

In September 2022 we completed the sale of our building and land parcel located at 125 Broadway for an aggregate sales price of approximately $603.0 million, which is inclusive of a $10.8 million tenant allowance. Simultaneously, with the close of this transaction we leased back the building for a term of approximately 5.5 years.

For additional information on our 125 Broadway sale and leaseback transaction, please read *Note 11, Property, Plant and Equipment* and *Note 12, Leases*, to our consolidated financial statements included in this report.

RESULTS OF OPERATIONS

Revenue

Revenue is summarized as follows:

	For the Years Ended December 31,			% Change		$ Change	
(In millions, except percentages)	2022	2021	2020	2022 vs. 2021	2021 vs. 2020	2022 vs. 2021	2021 vs. 2020
Product revenue, net:							
United States	$ 3,469.3	$ 3,805.7	$ 5,900.1	(8.8)%	(35.5)%	$ (336.4)	$ (2,094.4)
Rest of world	4,518.5	5,041.2	4,792.1	(10.4)	5.2	(522.7)	249.1
Total product revenue, net	7,987.8	8,846.9	10,692.2	(9.7)	(17.3)	(859.1)	(1,845.3)
Revenue from anti-CD20 therapeutic programs	1,700.5	1,658.5	1,977.8	2.5	(16.1)	42.0	(319.3)
Other revenue	485.1	476.3	774.6	1.8	(38.5)	8.8	(298.3)
Total revenue	$ 10,173.4	$ 10,981.7	$ 13,444.6	(7.4)%	(18.3)%	$ (808.3)	$ (2,462.9)

Product Revenue

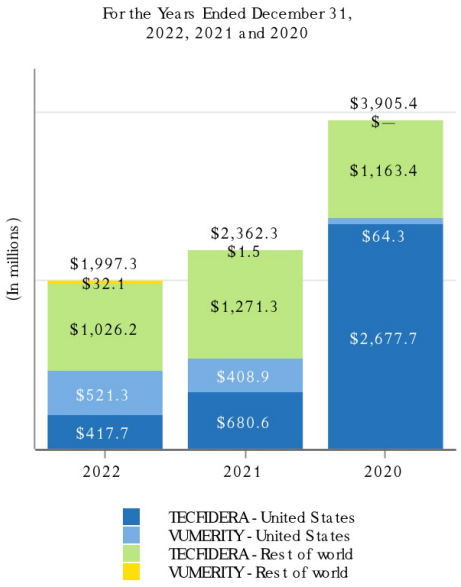
Product revenue is summarized as follows:

(In millions, except percentages)	For the Years Ended December 31, 2022	2021	2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020	$ Change 2022 vs. 2021	$ Change 2021 vs. 2020
Multiple Sclerosis (MS):							
TECFIDERA	$ 1,443.9	$ 1,951.9	$ 3,841.1	(26.0)%	(49.2)%	$ (508.0)	$ (1,889.2)
VUMERITY[1]	553.4	410.4	64.3	34.8	538.3	143.0	346.1
Total Fumarate	1,997.3	2,362.3	3,905.4	(15.5)	(39.5)	(365.0)	(1,543.1)
AVONEX	973.5	1,208.7	1,491.9	(19.5)	(19.0)	(235.2)	(283.2)
PLEGRIDY	331.9	357.4	385.6	(7.1)	(7.3)	(25.5)	(28.2)
Total Interferon	1,305.4	1,566.1	1,877.5	(16.6)	(16.6)	(260.7)	(311.4)
TYSABRI	2,030.9	2,063.1	1,946.1	(1.6)	6.0	(32.2)	117.0
FAMPYRA	96.6	105.2	103.1	(8.2)	2.0	(8.6)	2.1
Subtotal: MS	5,430.2	6,096.7	7,832.1	(10.9)	(22.2)	(666.5)	(1,735.4)
Spinal Muscular Atrophy:							
SPINRAZA	1,793.5	1,905.1	2,052.1	(5.9)	(7.2)	(111.6)	(147.0)
Biosimilars:							
BENEPALI	441.0	498.3	481.6	(11.5)	3.5	(57.3)	16.7
IMRALDI	224.5	233.4	216.3	(3.8)	7.9	(8.9)	17.1
FLIXABI	81.3	99.4	97.9	(18.2)	1.5	(18.1)	1.5
BYOOVIZ[2]	4.3	—	—	nm	—	4.3	—
Subtotal: Biosimilars	751.1	831.1	795.8	(9.6)	4.4	(80.0)	35.3
Other:							
FUMADERM	8.2	11.0	12.2	(25.5)	(9.8)	(2.8)	(1.2)
ADUHELM	4.8	3.0	—	60.0	nm	1.8	3.0
Total product revenue, net	$ 7,987.8	$ 8,846.9	$ 10,692.2	(9.7)%	(17.3)%	$ (859.1)	$ (1,845.3)

[1] VUMERITY became commercially available in the E.U. during the fourth quarter of 2021.
[2] BYOOVIZ launched in the U.S. in June 2022 and became commercially available during the third quarter of 2022.
nm Not meaningful

Multiple Sclerosis (MS)

Fumarate



Fumarate revenue includes sales from TECFIDERA and VUMERITY. During the fourth quarter of 2021 VUMERITY was approved for the treatment of RRMS in the E.U., Switzerland and the U.K.

For 2022 compared to 2021, the 13.8% decrease in U.S. Fumarate revenue was primarily due to a decrease in TECFIDERA demand as a result of multiple TECFIDERA generic entrants in the U.S. market, partially offset by net price increases in TECFIDERA driven by lower pharmacy rebates, managed care rebates and co-pay assistance as well as an increase in VUMERITY sales volumes.

For 2022 compared to 2021, the 16.9% decrease in rest of world Fumarate revenue was primarily due to TECFIDERA pricing reductions and a decrease in TECFIDERA demand as multiple TECFIDERA generic entrants entered into markets such as Germany and Canada. The decrease was also driven by the unfavorable impact of foreign currency exchange, partially offset by an increase in VUMERITY sales volumes.

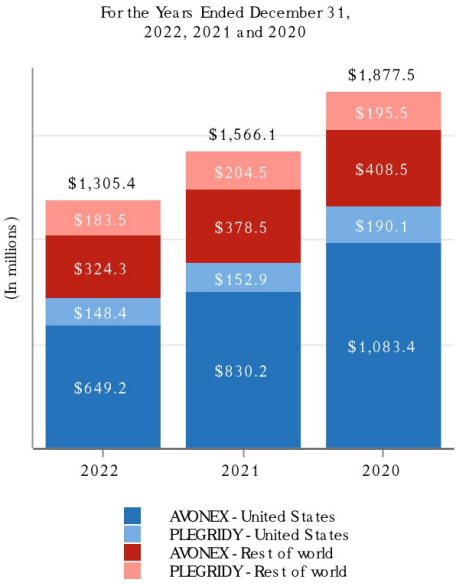
In the E.U., we are seeking to enforce a patent granted in June 2022 that relates to TECFIDERA and expires in 2028. In addition, we are litigating to affirm that TECFIDERA is entitled to regulatory data and market protection until at least February 2024. Our Company, the EMA and the EC have each appealed the May 2021 decision of the European General Court, which annulled the EMA's decision not to validate an application for approval of a TECFIDERA generic on the basis that the EMA and EC conducted the wrong assessment when determining TECFIDERA's entitlement to regulatory data and marketing protection. Our Company, the EMA and the EC have each appealed the General Court's decision as wrongly decided and the appeal is pending. On October 6, 2022, the Advocate General of the CJEU issued a nonbinding advisory opinion in Biogen's favor. This opinion recommends that the CJEU set aside the judgment of the European General Court. We are awaiting the decision of the CJEU.

For additional information, please read *Note 21, Litigation,* to our consolidated financial statements included in this report.

We expect that TECFIDERA revenue will continue to decline in 2023, compared to 2022, as a result of generic competition in the North America, Latin America and certain E.U. countries.

We expect an increase in VUMERITY sales volumes in 2023, compared to 2022, mostly due to demand growth in the U.S. and select European markets. We believe that we have resolved previously reported manufacturing issues at our contract manufacturer. In addition, we are in the process of securing regulatory approval for a secondary source of supply. We do not anticipate a supply shortage in 2023 and are currently focused on rebuilding adequate inventory.

Interferon

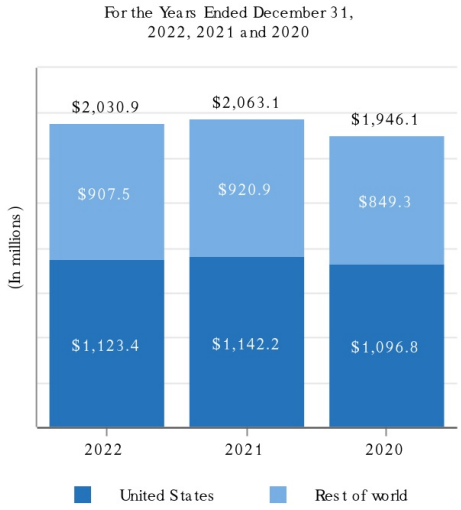


For 2022 compared to 2021, the 18.9% decrease in U.S. Interferon revenue was primarily due to a decrease in Interferon sales volumes of 15.5%. The net decline in sales volumes reflects the continued decline of the Interferon market as patients transition to higher efficacy and oral MS therapies.

For 2022 compared to 2021, the 12.9% decrease in rest of world Interferon revenue was primarily due to a decrease in Interferon sales volumes of 6.0% resulting from the continued decline of the Interferon market as patients transition to higher efficacy and oral MS therapies, as well as the unfavorable impact of foreign currency exchange.

We expect that Interferon revenue will continue to decline in both the U.S. and rest of world markets in 2023, compared to 2022, as a result of increasing competition from other MS products.

TYSABRI



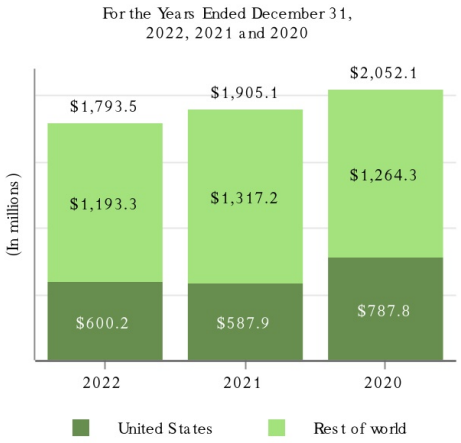
For 2022 compared to 2021, U.S. TYSABRI revenue was relatively flat, with a modest decrease in sales volumes, partially offset by an increase in pricing, net of higher discounts and allowances.

For 2022 compared to 2021, rest of world TYSABRI revenue was relatively flat, with a modest decrease in pricing and the unfavorable impact of foreign currency exchange, partially offset by an increase in sales volumes.

We anticipate TYSABRI revenue to be relatively flat on a global basis in 2023, compared to 2022, despite increasing competition from additional treatments for MS. We expect to continue to face price reductions in certain European markets. We are also aware of a potential biosimilar entrant of TYSABRI that may enter the U.S. and European markets as early as 2023.

Spinal Muscular Atrophy

SPINRAZA



For 2022 compared to 2021, U.S. SPINRAZA revenue was relatively flat, with a modest increase in sales volumes of 3.7%, resulting from the timing of shipments, partially offset by higher discounts and allowances.

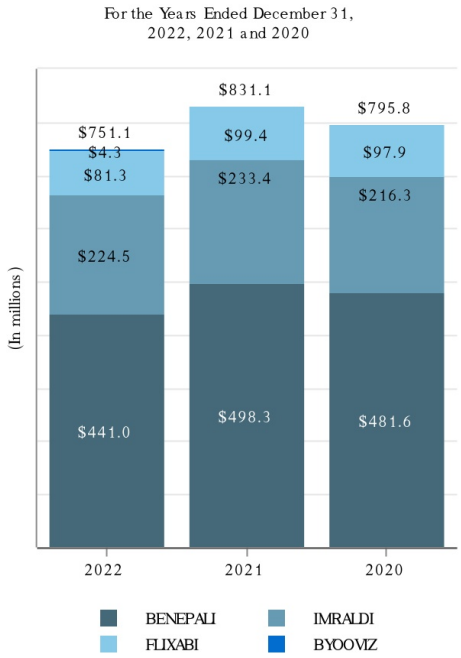
For 2022 compared to 2021, the 9.4% decrease in rest of world SPINRAZA revenue was primarily due to country mix, the unfavorable impact of foreign currency exchange and the timing of shipments, partially offset by an increase in sales volumes. The increase in sales volumes reflects growth in certain Asian markets, partially offset by a decrease in sales volumes from increased competition in certain established markets, particularly Germany and Japan.

Despite competition from a gene therapy product and an oral product, we anticipate SPINRAZA revenue to be relatively flat in 2023, compared to 2022. Moderate growth in the U.S. as well as continued access expansion in emerging markets is expected to offset increased competition and the impact of loading dose dynamics.

For additional information on our collaboration arrangements with Ionis, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Biosimilars

BENEPALI, IMRALDI, FLIXABI and BYOOVIZ



During the third quarter of 2021 BYOOVIZ, a ranibizumab biosimilar referencing LUCENTIS, was approved in the U.S., the E.U and the U.K. BYOOVIZ launched in the U.S. in June 2022 and became commercially available in July 2022 through major distributors in the U.S.

For 2022 compared to 2021, the 9.6% decrease in biosimilar revenue was primarily due to unfavorable pricing and the unfavorable impact of foreign currency exchange, partially offset by an increase in sales volumes.

We anticipate modest growth in revenue from our biosimilars business in 2023, compared to 2022, driven by the continued launch of BYOOVIZ in the U.S. and rest of world, offset in part by continued price reductions in certain markets.

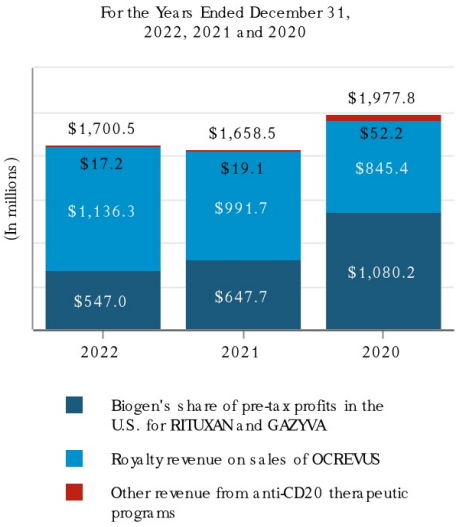
We are currently working with our contract manufacturer for IMRALDI to address facility regulatory inspection deficiencies at two filling locations, which could impact supply and have an adverse impact on 2023 IMRALDI sales, if not resolved. Manufacturing of BENEPALI also utilizes one of these facilities and therefore could have an adverse impact on 2023 BENEPALI sales. We are working with our existing secondary supplier for BENEPALI with the aim to secure additional capacity.

For additional information on our collaboration arrangements with Samsung Bioepis, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Revenue from Anti-CD20 Therapeutic Programs

Genentech (Roche Group)

Our share of RITUXAN, including RITUXAN HYCELA, and GAZYVA collaboration operating profits in the U.S., royalty revenue on sales of OCREVUS and other revenue from anti-CD20 therapeutic programs are summarized in the table below. For purposes of this discussion, we refer to RITUXAN and RITUXAN HYCELA collectively as RITUXAN.



Biogen's Share of Pre-tax Profits in the U.S. for RITUXAN and GAZYVA

The following table provides a summary of amounts comprising our share of pre-tax profits in the U.S. for RITUXAN and GAZYVA:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Product revenue, net	$ 1,729.2	$ 2,032.0	$ 3,334.1
Cost and expense	253.6	291.8	433.0
Pre-tax profits in the U.S.	$ 1,475.6	$ 1,740.2	$ 2,901.1
Biogen's share of pre-tax profits	$ 547.0	$ 647.7	$ 1,080.2

For 2022 compared to 2021, the decrease in U.S. product revenue, net was primarily due to a decrease in sales volumes of RITUXAN in the U.S. of 28.4%, primarily due to the onset of competition from multiple biosimilar products.

For 2022 compared to 2021, the decrease in collaboration costs and expense was primarily due to lower cost of sales, selling and marketing expense, distribution costs and other costs and expense related to RITUXAN.

We are aware of several other anti-CD20 molecules, including biosimilar products, that have been approved and are competing with RITUXAN and GAZYVA in the oncology and other markets. Biosimilar products referencing RITUXAN have launched in the U.S and are being offered at lower prices. This competition has had a significant adverse impact on the pre-tax profits of our collaboration arrangements with Genentech, as the sales of RITUXAN have decreased substantially compared to prior periods. We expect that biosimilar competition will continue to increase as these products capture additional market share and that this will have a significant adverse impact on our co-promotion profits in the U.S. in future years.

Royalty Revenue on Sales of OCREVUS

For 2022 compared to 2021, the increase in royalty revenue on sales of OCREVUS was primarily due to sales growth of OCREVUS in the U.S.

OCREVUS royalty revenue is based on our estimates from third party and market research data of OCREVUS sales occurring during the corresponding period. Differences between actual and estimated royalty revenue will be adjusted for in the period in which they become known, which is generally expected to be the following quarter.

Other Revenue from Anti-CD20 Therapeutic Programs

Other revenue from anti-CD20 therapeutic programs consists of our share of pre-tax co-promotion profits from RITUXAN in Canada.

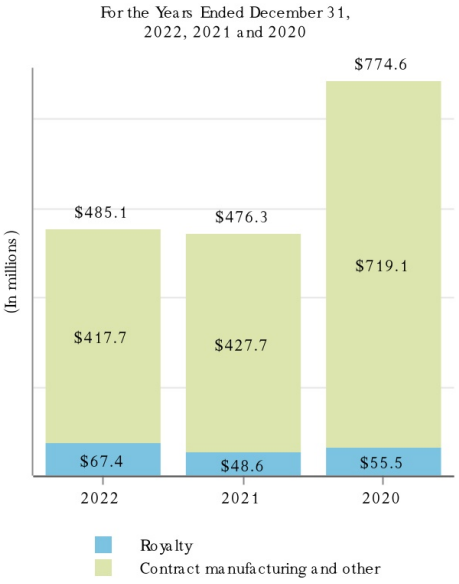
In December 2022 the FDA approved LUNSUMIO, a bispecific antibody for the treatment of relapsed or refractory follicular lymphoma. Our share of pre-tax profits and losses on LUNSUMIO will be included as a component of revenue from anti-CD20 therapeutic programs in our consolidated statements of income. For the year ended December 31, 2022, LUNSUMIO revenue was immaterial.

For additional information on our collaboration arrangements with Genentech, including information regarding the pre-tax profit-sharing formula and its impact on future revenue from anti-CD20 therapeutic programs, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Other Revenue

Other revenue consists of royalty revenue and contract manufacturing and other revenue and is summarized as follows:

Royalty Revenue and Contract Manufacturing and Other Revenue



Contract Manufacturing and Other Revenue

We record contract manufacturing and other revenue primarily from amounts earned under contract manufacturing agreements.

For 2022 compared to 2021, the decrease in contract manufacturing and other revenue was primarily due to lower contract manufacturing revenue related to the timing of batch releases.

Royalty Revenue

We receive royalties from net sales on products related to patents that we have out-licensed, as well as royalty revenue on biosimilar products from our collaboration arrangements with Samsung Bioepis.

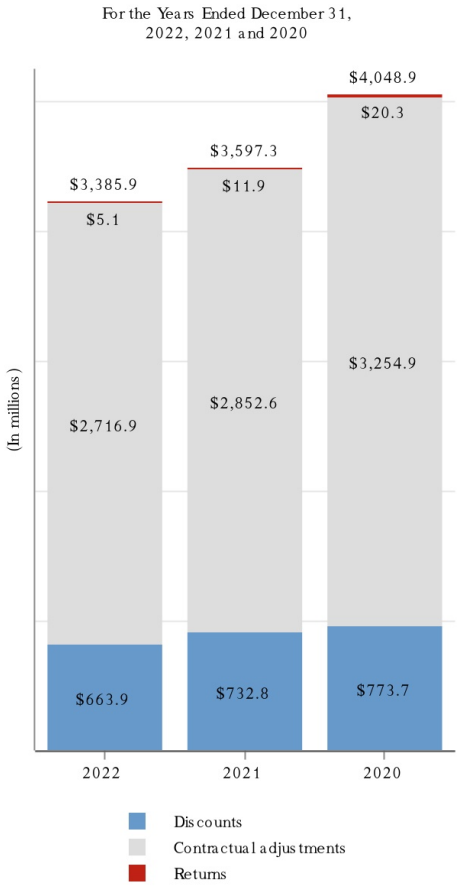
For additional information on our collaborative arrangements with Samsung Bioepis, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Reserves for Discounts and Allowances

Revenue from product sales is recorded net of reserves established for applicable discounts and allowances, including those associated with the implementation of pricing actions in certain international markets where we operate.

These reserves are based on estimates of the amounts earned or to be claimed on the related sales and are classified as reductions of accounts receivable (if the amount is payable to our customer) or a liability (if the amount is payable to a party other than our customer). These estimates reflect our historical experience, current contractual and statutory requirements, specific known market events and trends, industry data and forecasted customer buying and payment patterns. Actual amounts may ultimately differ from our estimates. If actual results vary, we adjust these estimates, which could have an effect on earnings in the period of adjustment.

Reserves for discounts, contractual adjustments and returns that reduced gross product revenue are summarized as follows:



For the years ended December 31, 2022, 2021 and 2020, reserves for discounts and allowances as a percentage of gross product revenue were 30.1%, 28.6% and 27.1%, respectively.

Discounts

Discounts include trade term discounts and wholesaler incentives.

For 2022 compared to 2021, the decrease in discounts was primarily due to a decrease in gross sales, driven by lower TECFIDERA sales, offset by higher purchase discounts for TYSABRI.

Contractual Adjustments

Contractual adjustments primarily relate to Medicaid and managed care rebates in the U.S., pharmacy rebates, co-payment (copay) assistance, Veterans Administration, 340B discounts, specialty pharmacy program fees and other government rebates or applicable allowances.

For 2022 compared to 2021, the decrease in contractual adjustments was primarily driven by lower TECFIDERA sales in the U.S., resulting in lower pharmacy rebates, Medicaid rebates and managed care rebates, as well as lower Medicaid rebates in the U.S. driven by a favorable change in estimates for VUMERITY.

Returns

Product return reserves are established for returns made by wholesalers. In accordance with contractual terms, wholesalers are permitted to return product for reasons such as damaged or expired product. The majority of wholesaler returns are due to product expiration. Provisions for product returns are recognized in the period the related revenue is recognized, resulting in a reduction to product sales.

For 2022 compared to 2021, return reserves were relatively consistent.

For additional information on our revenue reserves, please read *Note 5, Revenue,* to our consolidated financial statements included in this report.

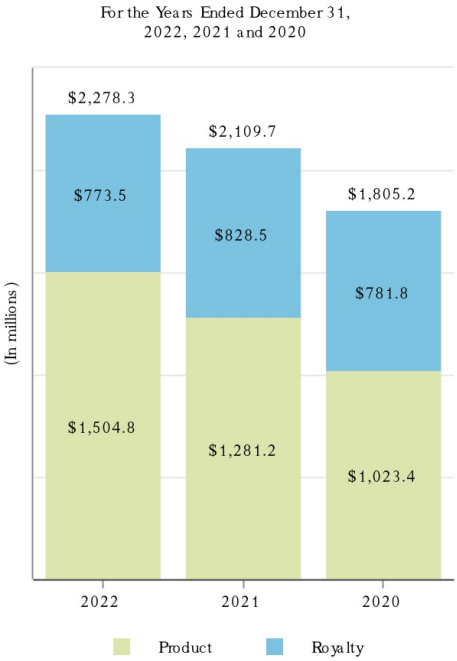
Cost and Expense

A summary of total cost and expense is as follows:

	For the Years Ended December 31,			% Change		$ Change	
(In millions, except percentages)	**2022**	**2021**	**2020**	**2022 vs. 2021**	**2021 vs. 2020**	**2022 vs. 2021**	**2021 vs. 2020**
Cost of sales, excluding amortization and impairment of acquired intangible assets	$ 2,278.3	$ 2,109.7	$ 1,805.2	8.0 %	16.9 %	$ 168.6	$ 304.5
Research and development	2,231.1	2,501.2	3,990.9	(10.8)	(37.3)	(270.1)	(1,489.7)
Selling, general and administrative	2,403.6	2,674.3	2,504.5	(10.1)	6.8	(270.7)	169.8
Amortization and impairment of acquired intangible assets	365.9	881.3	464.8	(58.5)	89.6	(515.4)	416.5
Collaboration profit (loss) sharing	(7.4)	7.2	232.9	(202.8)	(96.9)	(14.6)	(225.7)
(Gain) loss on divestiture of Hillerød, Denmark manufacturing operations	—	—	(92.5)	—	nm	—	92.5
(Gain) loss on fair value remeasurement of contingent consideration	(209.1)	(50.7)	(86.3)	312.4	(41.3)	(158.4)	35.6
Acquired in-process research and development	—	18.0	75.0	(100.0)	(76.0)	(18.0)	(57.0)
Restructuring charges	131.1	—	—	nm	—	131.1	—
Gain on sale of building	(503.7)	—	—	nm	—	(503.7)	—
Other (income) expense, net	(108.2)	1,095.5	(497.4)	(109.9)	(320.2)	(1,203.7)	1,592.9
Total cost and expense	$ 6,581.6	$ 9,236.5	$ 8,397.1	(28.7)%	10.0 %	$ (2,654.9)	$ 839.4

[nm] Not meaningful

Cost of Sales, Excluding Amortization and Impairment of Acquired Intangible Assets



Cost of sales, as a percentage of total revenue, were 22.4%, 19.2% and 13.4% for the years ended December 31, 2022, 2021 and 2020, respectively.

Product Cost of Sales

For 2022 compared to 2021, the increase in product cost of sales was primarily due to higher charges in 2022 associated with the write-off of excess ADUHELM inventory and purchase commitments, higher gross idle capacity charges associated with our manufacturing facilities and increased product cost of sales driven by product mix.

Inventory amounts written down as a result of excess, obsolescence or unmarketability totaled $336.2 million, $167.6 million and $26.6 million for the years ended December 31, 2022, 2021 and 2020, respectively.

For the years ended December 31, 2022 and 2021, we recorded approximately $286.0 million and $170.0 million, respectively, of charges associated with the write-off of ADUHELM inventory and purchase commitments in excess of forecasted demand.

For the years ended December 31, 2022 and 2021, we recorded approximately $119.0 million and $48.0 million, respectively, of aggregate gross idle capacity charges.

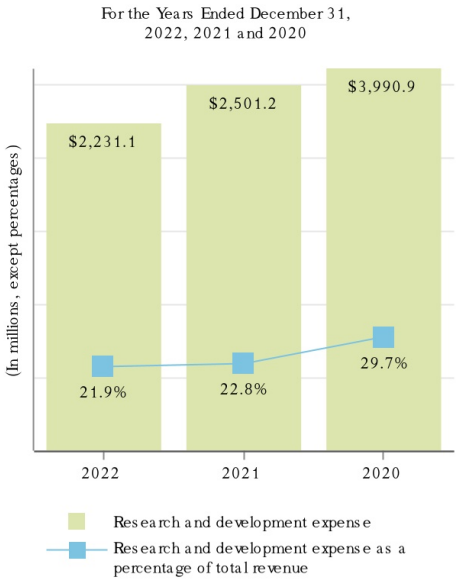
We have also recognized approximately $197.0 million and $99.0 million related to Eisai's 45.0% share of inventory, idle capacity charges and contractual commitments, which was recorded in collaboration profit (loss) sharing within our consolidated statements of income for the years ended December 31, 2022 and 2021, respectively.

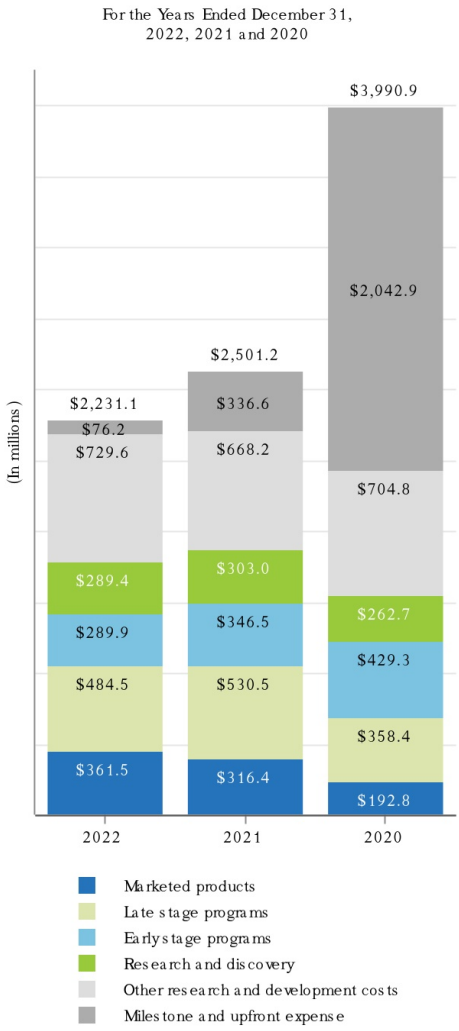
For additional information on our collaboration arrangements with Eisai, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Royalty Cost of Sales

For 2022 compared to 2021, the decrease in royalty cost of sales was primarily due to lower royalties payable on lower sales of SPINRAZA, TYSABRI and AVONEX, partially offset by higher royalties payable on higher sales of VUMERITY.

Research and Development





We support our drug discovery and development efforts through the commitment of significant resources to discovery, research and development programs and business development opportunities.

A significant amount of our research and development costs consist of indirect costs incurred in support of overall research and development activities and non-specific programs, including activities that benefit multiple programs, such as management costs, as well as depreciation, information technology and facility-based expenses. These costs are considered other research and development costs in the table above and are not allocated to a specific program or stage.

Research and development expense incurred in support of our marketed products includes costs associated with product lifecycle management activities including, if applicable, costs associated with the development of new indications for existing products. Late stage programs are programs in Phase 3 development or in registration stage. Early stage programs are programs in Phase 1 or Phase 2 development. Research and discovery represents costs incurred to support our discovery research and translational science efforts. Costs are reflected in the development stage based upon the program status when incurred. Therefore, the same program could be reflected in different development stages in the same year. For several of our programs, the research and development activities are part of our collaborative and other relationships. Our costs reflect our share of the total costs incurred.

For 2022 compared to 2021, the decrease in research and development expense was primarily due to higher milestone payments in 2021, partially offset by the advancement of BIIB059 (anti-BDCA2) for the potential treatment of SLE and CLE, the development of LUNSUMIO, a a bispecific antibody for the treatment of relapsed or refractory follicular lymphoma, the development of BIIB124 (SAGE-324) for the potential treatment of essential tremor, which we are developing in collaboration with Sage, the development of BIIB122 (DNL151) for the potential treatment of Parkinson's disease, which we are developing in collaboration with Denali, and the development of BIIB800, a proposed tocilizumab biosimilar referencing ACTEMRA.

Excluding upfront payments, we expect our core research and development expense to modestly increase in 2023, as we continue to invest in our pipeline. We intend to continue committing significant resources to targeted research and development opportunities where there is a significant unmet need and where a drug candidate has the potential to be highly differentiated.

Milestone and Upfront Expense

Research and development expense for 2022 includes:

- $37.0 million in charges to research and development expense in connection with milestone payments to Ionis;
- $15.0 million charge to research and development expense in connection with the upfront payment associated with entering into our collaboration with Alectos in the second quarter of 2022; and
- $10.0 million charge to research and development expense in connection with the upfront payment associated with entering into

our collaboration with Alcyone in the fourth quarter of 2022.

Research and development expense for 2021 includes:

- $125.0 million charge to research and development expense in connection with the upfront payment associated with entering into our collaboration with InnoCare in the third quarter of 2021;
- $60.0 million charge to research and development expense upon the exercise of our option under our collaboration agreement with Ionis to develop and commercialize BIIB115, an investigational ASO in development for SMA;
- $30.0 million charge to research and development expense related to the option exercise fee payable to Genentech to jointly develop and commercialize LUNSUMIO; and
- $30.0 million charge to research and development expense in connection with the upfront payment associated with entering into a commercialization and license agreement with Bio-Thera to develop, manufacture and commercialize BIIB800.

The upfront payments associated with these collaborations are classified as research and development expense as the programs they relate to had not achieved regulatory approval as of the payment date.

For additional information about these collaboration arrangements, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Early Stage Programs

For 2022 compared to 2021, the decrease in spending related to our early stage programs was primarily due to a decrease in costs associated with:

- the discontinuation of cinpanemab (BIIB054) in Parkinson's disease;
- the discontinuation of gosuranemab (BIIB092) in Alzheimer's disease;
- the discontinuation of cotoretigene toliparvovec (BIIB112) in X-linked retinitis pigmentosa;
- the advancement of litifilimab (BIIB059) for the potential treatment of SLE into late stage;
- the advancement of BIIB122 for the potential treatment of Parkinson's disease into late stage;
- the discontinuation of vixotrigine (BIIB074) in TGN and DPN; and
- the discontinuation of BIIB078 for the potential treatment of Alzheimer's disease.

The decrease was partially offset by an increase in costs associated with:

- an increase in spending in the development of BIIB124 for the potential treatment of essential tremor;
- an increase in spending in the development of litifilimab (BIIB059) for the potential treatment of CLE;
- an increase in spending in the development of BIIB113 for the potential treatment of Alzheimer's disease;
- an increase in spending in the development of BIIB131 for the potential treatment of acute ischemic stroke; and
- an increase in spending in the development of BIIB121 for the potential treatment of Angelman syndrome.

Late Stage Programs

For 2022 compared to 2021, the decrease in spending associated with our late stage programs was primarily due to a decrease in costs associated with:

- the advancement of ADUHELM from late stage to marketed upon the accelerated approval of ADUHELM in the U.S.; and
- the discontinuation of BIIB111 in choroideremia.

The decrease was partially offset by an increase in costs associated with:

- the advancement of litifilimab (BIIB059) for the potential treatment of SLE into late stage;
- the advancement of BIIB122 for the potential treatment of Parkinson's disease into late stage; and
- the advancement of BIIB800, a proposed tocilizumab biosimilar referencing ACTEMRA, into late stage.

Marketed Programs

For 2022 compared to 2021, the increase in spending associated with our marketed programs was primarily due to an increase in costs associated with:

- the advancement of ADUHELM from late stage to marketed upon the accelerated approval of ADUHELM in the U.S.; and
- the advancement of LUNSUMIO from late stage to marketed upon the accelerated approval of LUNSUMIO in the U.S.

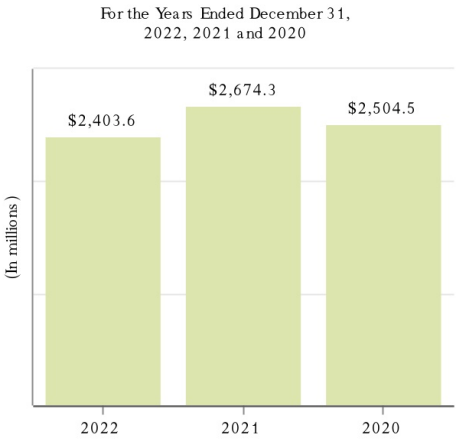
Other Research and Development

In March 2019 Eisai initiated a global Phase 3 trial for the development of LEQEMBI in early Alzheimer's disease. Under our collaboration arrangement, Eisai serves as the lead of LEQEMBI development and regulatory submissions globally with both companies co-commercializing and co-promoting the product, and Eisai having final decision-making authority. All costs, including research, development, sales and marketing expense, are shared equally between us and Eisai. In January 2023 the FDA granted accelerated approval of LEQEMBI. Additionally, in January 2023 Eisai completed the submission of a supplemental BLA to the FDA for approval under the traditional pathway for LEQEMBI.

As of December 31, 2022, we had approximately $89.8 million of work-in-process inventory related to LEQEMBI.

For additional information on our collaboration arrangements with Eisai, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Selling, General and Administrative



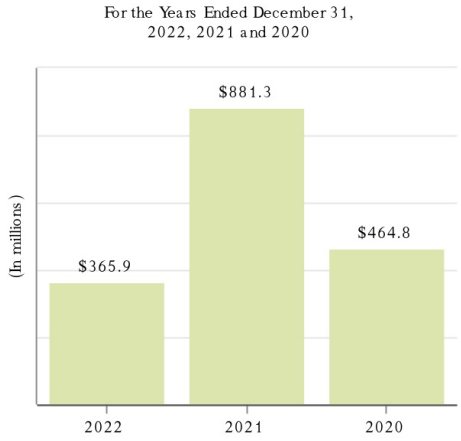
For 2022 compared to 2021, the decrease in selling, general and administrative expense was primarily due to cost-reduction measures realized during 2022.

As a result of the final NCD we have substantially eliminated our commercial infrastructure supporting ADUHELM, retaining minimal resources to manage patient access programs, including a continued free drug program for patients currently on treatment in the U.S.

Beginning in the second quarter of 2021 reimbursement from Eisai for its share of U.S. ADUHELM selling, general and administrative expense is recognized in collaboration profit (loss) sharing in our consolidated statements of income.

We expect selling, general and administrative costs to continue to decline in 2023 due to the implementation of our cost saving initiatives during 2022, which include the substantial elimination of our commercial infrastructure supporting ADUHELM as well as other cost-reduction measures.

Amortization and Impairment of Acquired Intangible Assets



Our amortization expense is based on the economic consumption and impairment of intangible assets. Our most significant amortizable intangible assets are related to our TYSABRI, AVONEX, SPINRAZA, VUMERITY and TECFIDERA (rest of world) products and other programs acquired through business combinations.

For 2022 compared to 2021, the decrease in amortization and impairment of acquired intangible assets was primarily due to higher impairment charges in 2021 of approximately $629.3 million, compared to impairment charges of approximately $119.6 million in 2022.

For the year ended December 31, 2022, amortization and impairment of acquired intangible assets reflects the impact of a $119.6 million impairment charge related to vixotrigine for the potential treatment of DPN.

For the year ended December 31, 2021, amortization and impairment of acquired intangible assets reflects the impact of a $365.0 million impairment charge related to BIIB111, a $220.0 million impairment charge related to BIIB112 and a $44.3 million impairment charge related to vixotrigine for the potential treatment of TGN.

Amortization of acquired intangible assets, excluding impairment charges, totaled $246.3 million, $252.0 million and $255.1 million for the years ended December 31, 2022, 2021 and 2020, respectively.

We monitor events and expectations regarding product performance. If new information indicates that the assumptions underlying our most recent analysis are substantially different than those utilized in our current estimates, our analysis would be updated and may result in a significant change in the anticipated lifetime revenue of the relevant products. The occurrence of an adverse event could substantially increase the amount of amortization expense related to our acquired intangible assets as compared to previous periods or our current expectations, which may result in a significant negative impact on our future results of operations.

IPR&D Related to Business Combinations

IPR&D represents the fair value assigned to research and development assets that we acquired as part of a business combination and had not yet reached technological feasibility at the date of acquisition. We review amounts capitalized as acquired IPR&D for impairment annually, as of October 31, and whenever events or changes in circumstances indicate to us that the carrying value of the assets might not be recoverable.

Overall, the value of our acquired IPR&D assets is dependent upon several variables, including estimates of future revenue and the effects of competition, our ability to secure sufficient pricing in a competitive market, our ability to confirm safety and efficacy based on data from clinical trials and regulatory feedback, the level of anticipated development costs and the probability and timing of successfully advancing a particular research program from one clinical trial phase to the next. We are continually reevaluating our estimates concerning these and other variables, including our life cycle management strategies, research and development priorities and development risk, changes in program and portfolio economics and related impact of foreign currency exchange rates and economic trends and evaluating industry and company data regarding the productivity of clinical research and the development process. Changes in our estimates may result in a significant change to our valuation of our IPR&D assets.

Vixotrigine

In the periods following our acquisition of vixotrigine, there were numerous delays in the initiation of Phase 3 studies for the potential treatment of TGN and for the potential treatment of DPN, another form of neuropathic pain. We engaged with the FDA regarding the design of the potential Phase 3 studies of vixotrigine for the potential treatment of TGN and DPN and performed an additional clinical trial of vixotrigine, which was completed during 2022.

The performance of this additional clinical trial delayed the initiation of the Phase 3 studies of vixotrigine for the potential treatment of TGN, and, as a result, we recognized an impairment charge of $44.3 million related to vixotrigine for the potential treatment of TGN during the first quarter of 2021.

During the fourth quarter of 2022 we discontinued further development of vixotrigine based on regulatory, development and commercialization challenges. For the year ended December 31, 2022, we recognized an impairment charge of approximately $119.6 million related to vixotrigine for the potential treatment of DPN, reducing the remaining book value of this IPR&D intangible asset to zero. We also adjusted the value of our contingent consideration obligations related to this asset resulting in a pre-tax gain of approximately $209.1 million, which was recognized in (gain) loss on fair value remeasurement of contingent consideration within our consolidated statements of income.

BIIB111 and BIIB112

During the second quarter of 2021 we announced that our Phase 3 STAR study of BIIB111 and our Phase 2/3 XIRIUS study of BIIB112 did not meet their primary endpoints. In the third quarter of 2021 we suspended further development on these programs based on the decision by management as part of its strategic review process. For the year ended December 31, 2021, we recognized an impairment charge of $365.0 million related to BIIB111 and an impairment charge of $220.0 million related to BIIB112, reducing the remaining book values of these IPR&D intangible assets to zero.

In addition, as a result of our decision to suspend further development of BIIB111 and BIIB112, we recorded charges of approximately $39.1 million during the third quarter of 2021 related to our manufacturing arrangements and other costs that we expect to incur as a result of suspending these programs. These charges were recognized in research and development expense in our consolidated statements of income for the year ended December 31, 2021.

For additional information on the amortization and impairment of our acquired intangible assets, please read *Note 7, Intangible Assets and Goodwill*, to our consolidated financial statements included in this report.

Collaboration Profit (Loss) Sharing

Collaboration profit (loss) sharing primarily includes Samsung Bioepis' 50.0% share of the profit or loss related to our biosimilars 2013 commercial agreement with Samsung Bioepis and, beginning in the second quarter of 2021, Eisai's 45.0% share of income and expense in the U.S. related to the ADUHELM Collaboration Agreement. Beginning January 1, 2023, Eisai receives only a tiered royalty based on net sales of ADUHELM, and will no longer share global profits and losses.

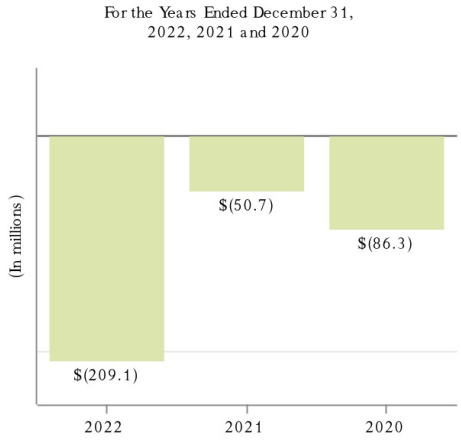
For the years ended December 31, 2022 and 2021, we recognized net profit-sharing expense of $217.4 million and $285.4 million, respectively, to reflect Samsung Bioepis' 50.0% sharing of the net collaboration profits.

For the years ended December 31, 2022 and 2021 we recognized net reductions to our operating expense of approximately $224.7 million and $233.2 million, respectively, to reflect Eisai's 45.0% share of net collaboration losses in the U.S.

For the year ended December 31, 2021, we also recognized net reductions to our operating expense of $45.0 million to reflect Eisai's 45.0% share of the $100.0 million milestone payment made to Neurimmune related to the launch of ADUHELM in the U.S. during the second quarter of 2021.

For additional information on our collaboration arrangements with Samsung Bioepis and Eisai, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

(Gain) Loss on Fair Value Remeasurement of Contingent Consideration

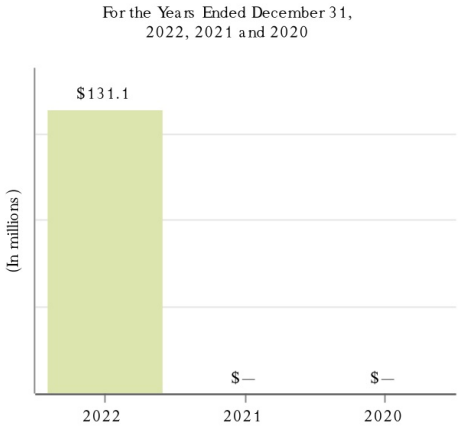


For the year ended December 31, 2022, the changes in fair value of our contingent consideration obligations were primarily due to the discontinuation of further development efforts related to vixotrigine for the potential treatment of TGN and DPN, resulting in a reduction of our contingent consideration obligations of approximately $195.4 million, and changes in the interest rates used to revalue our contingent consideration liabilities.

For the year ended December 31, 2021, the changes in fair value of our contingent consideration obligations were primarily due to reductions in the probability of technical and regulatory success and delays in the expected timing of the achievement of certain remaining developmental milestones related to our vixotrigine programs.

For additional information on our IPR&D intangible assets, please read *Note 7, Intangible Assets and Goodwill*, to our consolidated financial statements included in this report.

Restructuring Charges



2022 Cost Saving Initiatives

In December 2021 and May 2022 we announced our plans to implement a series of cost-reduction measures that when completed we expect may yield approximately $1.0 billion in expense savings. These savings are being achieved through a number of initiatives, including reductions to our workforce, the substantial elimination of our commercial ADUHELM infrastructure, the consolidation of certain real estate locations and operating efficiency gains across our selling, general and administrative and research and development functions.

Under these initiatives, we estimate we will incur total restructuring charges of approximately $131.0 million, primarily related to severance. These amounts were substantially incurred during 2022. As of December 31, 2022, approximately $35.9 million remained in our restructuring reserve and payments are expected to be made through 2026.

For the year ended December 31, 2022, we recognized approximately $131.1 million of net pre-tax restructuring charges related to our 2022 cost saving initiatives, of which approximately $112.6 million consisted of employee severance costs. Our restructuring reserve is included in accrued expense and other in our consolidated balance sheets.

In September 2022 we entered into an agreement to partially terminate a portion of our lease located at 300 Binney Street, as well as to reduce the lease term for the majority of the remaining space. This resulted in a gain of approximately $5.3 million, which was recorded within restructuring charges in our consolidated statements of income for the year ended December 31, 2022. For additional information on our 300 Binney Street lease modification, please read *Note 12, Leases*, to these consolidated financial statements included in this report.

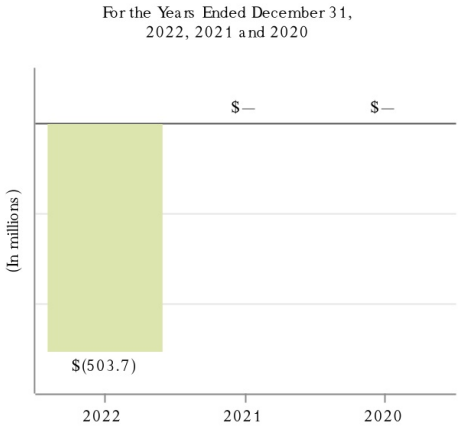
Following an evaluation of our current capacity needs, in March 2022 we ceased using a patient services office space in Durham, NC. Our decision to cease use of the facility resulted in the immediate expense of certain leasehold improvements and other assets at this facility. As a result, we recognized approximately $10.4 million of accelerated depreciation expense, which was recorded in restructuring charges in our consolidated statements of income for the year ended December 31, 2022. In May 2022 we entered into a lease assignment agreement whereby we assigned our remaining lease obligations to an external third party. As a result of the lease assignment, we derecognized the related operating lease obligation and right-of-use asset during the second quarter of 2022.

For the year ended December 31, 2022, we recognized other restructuring costs of approximately $13.2 million, which were recorded in restructuring charges in our consolidated statements of income. Other restructuring costs include items such as facility closure costs, employee non-severance expense, asset write-offs and other costs.

The following table summarizes the charges and spending related to our 2022 workforce reductions for the year ended December 31, 2022:

(In millions)	Total
Restructuring reserve, December 31, 2021	$ —
Expense	112.6
Payment	(78.0)
Foreign currency and other adjustments	1.3
Restructuring reserve, December 31, 2022	$ 35.9

Gain on Sale of Building

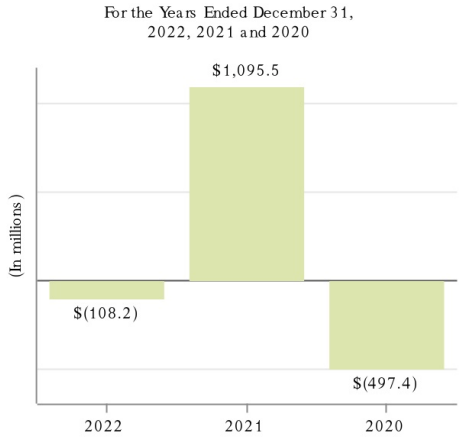


In September 2022 we completed the sale of our building and land parcel located at 125 Broadway for an aggregate sales price of approximately $603.0 million, which is inclusive of a $10.8 million tenant allowance. This sale resulted in a pre-tax gain on sale of approximately $503.7 million, net of transaction costs, for the year ended December 31, 2022.

Simultaneously, with the close of this transaction we leased back the building for a term of approximately 5.5 years, which resulted in the recognition of approximately $168.2 million in new lease liabilities and right-of-use assets recorded within our consolidated balance sheets as of December 31, 2022. The sale and immediate leaseback of this building qualified for sale and leaseback treatment and is classified as an operating lease.

For additional information on our 125 Broadway sale and leaseback transaction, please read *Note 11, Property, Plant and Equipment* and *Note 12, Leases*, to our consolidated financial statements included in this report.

Other (Income) Expense, Net



For 2022 compared to 2021, the change in other (income) expense, net primarily reflects a pre-tax gain during 2022 of approximately $1.5 billion related to the sale of our 49.9% equity interest in Samsung Bioepis, partially offset by a pre-tax charge of $900.0 million, plus settlement fees and expenses, related to a litigation settlement agreement to resolve a qui tam litigation relating to conduct prior to 2015.

For the year ended December 31, 2022, net unrealized losses and realized (gains) losses on our holdings in equity securities were approximately $264.7 million and zero, respectively, compared to net unrealized losses and realized gains of $831.4 million and $10.3 million, respectively, in 2021.

The net unrealized losses recognized during the year ended December 31, 2022, primarily reflect a decrease in the aggregate fair value of our investments in Denali and Sangamo common stock of approximately $278.0 million.

The net unrealized losses recognized during the year ended December 31, 2021, primarily reflect decreases in the aggregate fair value of our investments in Denali, Sage, Sangamo and Ionis common stock of approximately $819.6 million.

For the year ended December 31, 2022, net interest expense was $157.3 million, compared to $242.6 million in 2021. This decrease was primarily due to higher interest income earned on our investments in 2022, compared to 2021, and lower interest expense in 2022 due to the redemption of our 3.625% Senior Notes due September 15, 2022, with an aggregate principal amount of $1.0 billion.

For 2023 compared to 2022, we anticipate a decrease in net interest expense as a result of lower average debt balances in 2023 and an increase in

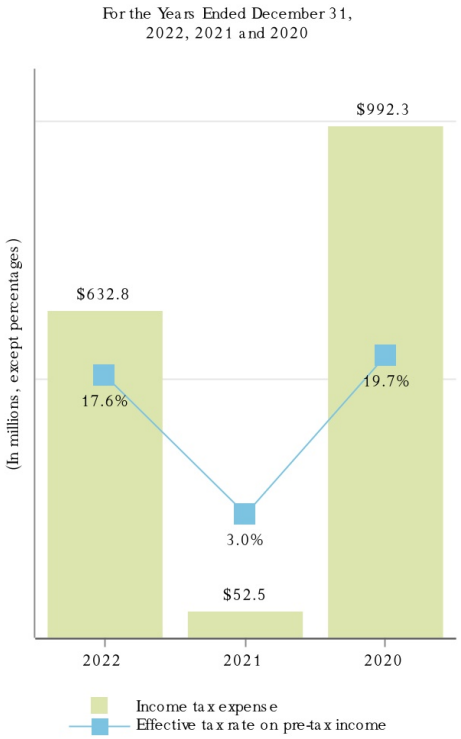
interest income driven by higher interest rates on our cash and marketable securities.

For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to our consolidated financial statements included in this report.

For additional information on the redemption of our Senior Notes, please read *Note 13, Indebtedness*, to our consolidated financial statements included in this report.

For additional information on the litigation settlement agreement, please read *Note 18, Other Consolidated Financial Statement Detail*, to our consolidated financial statements included in this report.

Income Tax Provision



Our effective tax rate fluctuates from year to year due to the global nature of our operations. The factors that most significantly impact our effective tax rate include changes in tax laws, variability in the allocation of our taxable earnings among multiple jurisdictions, the amount and characterization of our research and development expense, the levels of certain deductions and credits, acquisitions and licensing transactions.

For the year ended December 31, 2022, compared to 2021, the increase in our effective tax rate, excluding the impact of the net Neurimmune deferred tax asset, as discussed below, includes the tax impacts of the litigation settlement agreement and the sale of our building at 125 Broadway. These increases were partially offset by the impact of the current year tax benefits related to an international reorganization to align with global tax developments, the impacts of the sale of our equity interest in Samsung Bioepis and the tax impacts of the decision to discontinue development of vixotrigine. Further in 2021, our effective tax rate benefited from the tax effects of the BIIB111 and BIIB112 impairment charges and the non-cash tax effects of changes in the value of our equity instruments.

For additional information on the litigation settlement agreement, please read *Note 18, Other Consolidated Financial Statement Detail*, to our consolidated financial statements included in this report.

Neurimmune Deferred Tax Asset

During 2021 we recorded a net deferred tax asset in Switzerland of approximately $100.0 million on Neurimmune's tax basis in ADUHELM, the realization of which was dependent on future sales of ADUHELM.

During the first quarter of 2022, upon issuance of the final NCD related to ADUHELM, we recorded an increase in a valuation allowance of approximately $85.0 million to reduce the net value of this deferred tax asset to zero.

These adjustments to our net deferred tax asset are each recorded with an equal and offsetting amount assigned to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income, resulting in a zero net impact to net income attributable to Biogen Inc.

For additional information on our collaboration arrangement with Neurimmune, please read *Note 20, Investments in Variable Interest Entities*, to our consolidated financial statements included in this report.

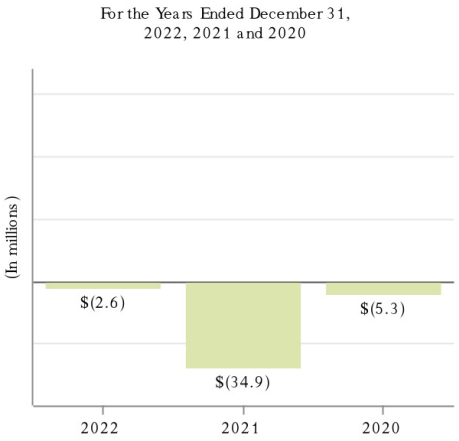
Inflation Reduction Act

In August 2022 the IRA was signed into law in the U.S. The IRA introduced new tax provisions, including a 15.0% corporate alternative minimum tax and a 1.0% excise tax on stock repurchases. The provisions of the IRA will be effective for periods after December 31, 2022. The enactment of the IRA did not result in any material adjustments to our income

tax provision or net deferred tax assets as of December 31, 2022.

For additional information on our income taxes, uncertain tax positions and income tax rate reconciliation, please read *Note 17, Income Taxes*, to our consolidated financial statements included in this report.

Equity in (Income) Loss of Investee, Net of Tax



In February 2012 we entered into a joint venture agreement with Samsung BioLogics establishing an entity, Samsung Bioepis, to develop, manufacture and market biosimilar products.

In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics. Following the sale of Samsung Bioepis we no longer recognize gains or losses associated with Samsung Bioepis' results of operations and amortization related to basis differences.

Prior to this sale, we recognized our share of the results of operations related to our investment in Samsung Bioepis under the equity method of accounting one quarter in arrears when the results of the entity became available, which was reflected as equity in (income) loss of investee, net of tax in our consolidated statements of income. We also recognized amortization on certain basis differences resulting from our November 2018 investment.

For the year ended December 31, 2022, we recognized net income on our investment of $2.6 million, reflecting our share of Samsung Bioepis' operating profits, net of tax, totaling $17.0 million offset by amortization of basis differences totaling $14.4 million. This amount reflects our share of results prior to the sale of Samsung Bioepis as the results are recognized one quarter in arrears.

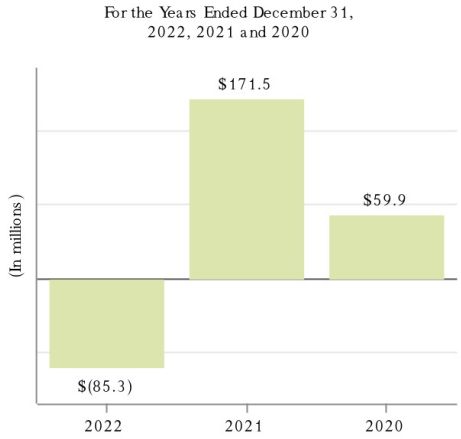
For the year ended December 31, 2021, we recognized net income on our investment of $34.9 million, reflecting our share of Samsung Bioepis' operating profits, net of tax, totaling $64.6 million offset by amortization of basis differences totaling $29.7 million.

Net income on our investment for the year ended December 31, 2021, reflects a $31.2 million benefit related to the release of a valuation allowance on deferred tax assets associated with Samsung Bioepis. The valuation allowance was released in the second quarter of 2021 based on a consideration of the positive and negative evidence, including the historic earnings of Samsung Bioepis.

For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to our consolidated financial statements included in this report.

For additional information on our collaboration arrangements with Samsung Bioepis, please read *Note 19, Collaborative and Other Relationships,* to our consolidated financial statements included in this report.

Noncontrolling Interests, Net of Tax



Our consolidated financial statements include the financial results of our variable interest entity, Neurimmune, as we determined that we are the primary beneficiary.

For 2022 compared to 2021, the change in net income (loss) attributable to noncontrolling interests, net of tax, was primarily due to a deferred tax benefit and milestone payment recorded in 2021, as discussed below.

During 2021 we recorded a net deferred tax asset in Switzerland of approximately $100.0 million on Neurimmune's tax basis in ADUHELM, the realization of which was dependent on future sales of ADUHELM.

During the first quarter of 2022, upon issuance of the final NCD related to ADUHELM, we recorded an increase in a valuation allowance of approximately $85.0 million to reduce the net value of this deferred tax asset to zero.

These adjustments to our net deferred tax asset are each recorded with an equal and offsetting amount assigned to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income, resulting in a zero net impact to net income attributable to Biogen Inc.

For 2021 the change in net income (loss) attributable to noncontrolling interests, net of tax, was also due to the $100.0 million milestone payment to Neurimmune related to the launch of ADUHELM in the U.S. during 2021.

For additional information on our collaboration agreement with Neurimmune, please read *Note 20, Investments in Variable Interest Entities,* to our consolidated financial statements included in this report.

For additional information on our income taxes please read *Note 17, Income Taxes*, to our consolidated financial statements included in this report.

FINANCIAL CONDITION, LIQUIDITY AND CAPITAL RESOURCES

Our financial condition is summarized as follows:

(In millions, except percentages)	As of December 31, 2022	2021	% Change	$ Change
Financial assets:				
Cash and cash equivalents	$ 3,419.3	$ 2,261.4	51.2 %	$ 1,157.9
Marketable securities — current	1,473.5	1,541.1	(4.4)	(67.6)
Marketable securities — non-current	705.7	892.0	(20.9)	(186.3)
Total cash, cash equivalents and marketable securities	$ 5,598.5	$ 4,694.5	19.3 %	$ 904.0
Borrowings:				
Current portion of notes payable	$ —	$ 999.1	nm	$ (999.1)
Notes payable	6,281.0	6,274.0	0.1	7.0
Total borrowings	$ 6,281.0	$ 7,273.1	(13.6)%	$ (992.1)
Working Capital:				
Current assets	$ 9,791.2	$ 7,856.5	24.6 %	$ 1,934.7
Current liabilities	(3,272.8)	(4,298.2)	(23.9)	1,025.4
Total working capital	$ 6,518.4	$ 3,558.3	83.2 %	$ 2,960.1

[nm] Not meaningful

Overview

We have historically financed and expect to continue to fund our operating and capital expenditures primarily through cash flow earned through our operations as well as our existing cash resources. We believe generic competition for TECFIDERA in the U.S. and other key markets and the impact of biosimilar competition on RITUXAN sales volumes will continue to reduce our cash flow from operations in 2023 and will have a significant adverse impact on our future cash flow from operations.

For the year ended December 31, 2022, certain significant cash flows were as follows:

- $1,384.3 million in net cash flow provided by operating activities;
- $990.3 million in net proceeds received from the sale of our equity interest in Samsung Bioepis;
- $582.6 million in net proceeds received from the sale of one of our buildings;
- $1.0 billion payment made for the redemption of our 3.625% Senior Notes due September 15, 2022;
- $917.0 million in total net payments for a litigation settlement agreement and settlement fees and expenses;
- $932.9 million in total net payments for income taxes;
- $750.0 million used for share repurchases; and
- $240.3 million used for purchases of property, plant and equipment.

For the year ended December 31, 2021, certain significant cash flows were as follows:

- $3,639.9 million in net cash flow provided by operating activities;
- $1.8 billion used for share repurchases;
- $170.0 million used in connection with our private offer to exchange (Exchange Offer) our tendered 5.200% Senior Notes due September 15, 2045 (2045 Senior Notes) for a new series of 3.250% Senior Notes due February 15, 2051 (2051 Senior Notes) and cash, and an offer to purchase our tendered 2045 Senior Notes for cash;
- $258.1 million used for purchases of property, plant and equipment;
- $247.9 million in total net payments for income taxes; and
- $100.0 million milestone payment to Neurimmune.

We believe that our existing funds, when combined with cash generated from operations and our access to additional financing resources, if needed, are sufficient to satisfy our operating, working capital, strategic alliance, milestone payment, capital expenditure and debt service requirements for the foreseeable future. In addition, we may choose to opportunistically return cash to shareholders and pursue other business initiatives, including acquisition and licensing activities. We may, from time to time, also seek additional funding through a combination of new collaborative agreements, strategic alliances and additional equity and debt financings or from other

sources should we identify a significant new opportunity.

For additional information on the litigation settlement agreement, please read *Note 18, Other Consolidated Financial Statement Detail*, to our consolidated financial statements included in this report.

For additional information on certain risks that could negatively impact our financial position or future results of operations, please read *Item 1A. Risk Factors* and *Item 7A. Quantitative and Qualitative Disclosures About Market Risk* included in this report.

Cash, Cash Equivalents and Marketable Securities

Until required for another use in our business, we typically invest our cash reserves in bank deposits, certificates of deposit, commercial paper, corporate notes, U.S. and foreign government instruments, overnight reverse repurchase agreements and other interest-bearing marketable debt instruments in accordance with our investment policy. It is our policy to mitigate credit risk in our cash reserves and marketable securities by maintaining a well-diversified portfolio that limits the amount of exposure as to institution, maturity and investment type.

As of December 31, 2022, we had cash, cash equivalents and marketable securities totaling approximately $5.6 billion compared to approximately $4.7 billion as of December 31, 2021. The change in cash, cash equivalents and marketable securities at December 31, 2022, from December 31, 2021, was primarily due to net cash flow provided by operating activities, which includes $917.0 million in total net payments for a litigation settlement agreement and settlement fees and expenses, and $990.3 million in net proceeds received from the sale of our equity interest in Samsung Bioepis and $582.6 million in net proceeds received from the sale of one of our buildings, partially offset by $1.0 billion of cash used for the redemption of our 3.625% Senior Notes due September 15, 2022 and $750.0 million used for share repurchases.

The following table summarizes the fair value of our significant common stock investments:

	As of December 31,	
(In millions)	2022	2021
Denali	$ 370.2	$ 550.7
Sage	238.0	231.9
Sangamo	74.3	173.7
Ionis	108.6	87.5
	$ 791.1	$ 1,043.8

Although the contractual holding period restrictions on our investments in Denali, Sage, Sangamo and Ionis have expired, our ability to liquidate these investments may be limited by the size of our interest, the volume of market related activity, our concentrated level of ownership and potential restrictions resulting from our status as a collaborator. Therefore, we may realize significantly less than the current value of such investments.

For additional information on our collaboration arrangements, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Investments and Other Assets

Investments and other assets in our consolidated balance sheet as of December 31, 2021, includes the carrying value of our investment in Samsung Bioepis of $599.9 million. In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics. Under the terms of this transaction, we received approximately $1.0 billion in cash at closing and expect to receive approximately $1.3 billion in cash to be deferred over two payments of approximately $812.5 million due at the first anniversary and approximately $437.5 million due at the second anniversary of the closing of this transaction.

As part of this transaction, we are also eligible to receive up to an additional $50.0 million upon the achievement of certain commercial milestones. If any payments due to us remain outstanding after the second anniversary of the closing of this transaction, we may elect to receive shares of Samsung BioLogics common stock at a 5.0% discount in lieu of a cash payment for the remaining amount due. Currently, we believe that the likelihood of Samsung BioLogics failing to make timely payments to us for the amounts due is remote.

For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to our consolidated financial statements included in this report.

Capital Expenditures

In March 2021 we announced our plans to build a new gene therapy manufacturing facility in RTP, NC to support our gene therapy pipeline across multiple therapeutic areas. The new manufacturing facility will be approximately 197,000 square feet and is expected to be operational by the end of 2023, with an estimated total investment of approximately $195.0 million. Construction for this new facility began during the fourth quarter of 2021.

Borrowings

In February 2021 we completed our Exchange Offer, consisting of the following:

- $624.6 million aggregate principal amount of our 2045 Senior Notes was exchanged for $700.7 million aggregate principal amount of our 2051 Senior Notes and approximately $151.8 million of aggregate cash payments; and
- $8.9 million aggregate principal amount of our 2045 Senior Notes was redeemed for approximately $12.1 million of aggregate cash payments, excluding accrued and unpaid interest.

The following is a summary of our currently outstanding senior unsecured notes issued in 2020 (2020 Senior Notes):

- $1.5 billion aggregate principal amount of 2.25% Senior Notes due May 1, 2030; and
- $1.5 billion aggregate principal amount of 3.15% Senior Notes due May 1, 2050.

The following is a summary of our currently outstanding senior unsecured notes issued in 2015 (2015 Senior Notes):

- $1.75 billion aggregate principal amount of 4.05% Senior Notes due September 15, 2025; and
- $1.12 billion aggregate principal amount of 5.20% Senior Notes due September 15, 2045.

Our 2020 Senior Notes and our 2015 Senior Notes were issued at a discount, which are amortized as additional interest expense over the period from issuance through maturity.

In July 2022 we redeemed our 3.625% Senior Notes due September 15, 2022, with an aggregate principal amount of $1.0 billion.

For additional information on our Senior Notes, please read *Note 13, Indebtedness*, to our consolidated financial statements included in this report.

For a summary of the fair values of our outstanding borrowings as of December 31, 2022 and 2021, please read *Note 8, Fair Value Measurements,* to our consolidated financial statements included in this report.

Credit Facility

In January 2020 we entered into a $1.0 billion, five-year senior unsecured revolving credit facility under which we are permitted to draw funds for working capital and general corporate purposes. The terms of the revolving credit facility include a financial covenant that requires us not to exceed a maximum consolidated leverage ratio.

As of December 31, 2022 and 2021, we had no outstanding borrowings and were in compliance with all covenants under this facility.

Working Capital

Working capital is defined as current assets less current liabilities. Working capital was $6.5 billion and $3.6 billion as of December 31, 2022 and 2021, respectively. The change in working capital reflects an increase in total current assets of approximately $1.9 billion and a decrease in total current liabilities of approximately $1.0 billion.

Current Assets

The increase in total current assets was primarily driven by the following:

- net increase in cash, cash equivalents and marketable securities due to net cash flow provided by operating activities of approximately $1,384.3 million;
- receipt of approximately $990.3 million in cash, net of expenses, from the sale of our equity interest in Samsung Bioepis;
- recording of a receivable from Samsung BioLogics for approximately $798.8 million as part of the sale of our equity interest in Samsung Bioepis; and
- cash receipt of approximately $582.6 million related to the sale of one of our buildings.

The increase was partially offset by cash used for the redemption of our 3.625% Senior Notes due September 15, 2022, of approximately $1.0 billion and share repurchases of $750.0 million and $917.0 million in total net payments for a litigation settlement agreement and settlement fees and expenses.

Current Liabilities

The decrease in total current liabilities was primarily due to the following:

- redemption of our 3.625% Senior Notes due September 15, 2022, of approximately $1.0 billion, which were classified within current liabilities in 2021; and
- a reduction in our accounts payable.

Share Repurchase Programs

In October 2020 our Board of Directors authorized our 2020 Share Repurchase Program, which is a program to repurchase up to $5.0 billion of our common stock. Our 2020 Share Repurchase Program does not have an expiration date. All share repurchases under our 2020 Share Repurchase

Program will be retired. Under our 2020 Share Repurchase Program, we repurchased and retired approximately 3.6 million, 6.0 million and 1.6 million shares of our common stock at a cost of approximately $750.0 million, $1.8 billion and $400.0 million during the years ended December 31, 2022, 2021 and 2020, respectively. Approximately $2.1 billion remained available under our 2020 Share Repurchase Program as of December 31, 2022.

In December 2019 our Board of Directors authorized our December 2019 Share Repurchase Program, which was a program to repurchase up to $5.0 billion of our common stock, which was completed as of September 30, 2020. All shares repurchased under our December 2019 Share Repurchase Program were retired. Under our December 2019 Share Repurchase Program, we repurchased and retired approximately 16.7 million shares of our common stock at a cost of approximately $5.0 billion during the year ended December 31, 2020.

In March 2019 our Board of Directors authorized our March 2019 Share Repurchase Program, which was a program to repurchase up to $5.0 billion of our common stock, which was completed as of March 31, 2020. All shares repurchased under our March 2019 Share Repurchase Program were retired. Under our March 2019 Share Repurchase Program, we repurchased and retired approximately 4.1 million shares of our common stock at a cost of approximately $1.3 billion during the year ended December 31, 2020.

In August 2022 the IRA was signed into law. Among other things, the IRA levies a 1.0% excise tax on net stock repurchases after December 31, 2022. Historically, we have made discretionary share repurchases.

Cash Flow

The following table summarizes our cash flow activity:

	For the Years Ended December 31,			% Change	
(In millions, except percentages)	2022	2021	2020	2022 vs. 2021	2021 vs. 2020
Net cash flow provided by (used in) operating activities	$ 1,384.3	$ 3,639.9	$ 4,229.8	(62.0)%	(13.9)%
Net cash flow provided by (used in) investing activities	1,576.6	(563.7)	(608.6)	379.7	(7.4)
Net cash flow provided by (used in) financing activities	(1,747.3)	(2,086.2)	(5,272.7)	(16.2)	(60.4)

Operating Activities

Cash flow from operating activities represents the cash receipts and disbursements related to all of our activities other than investing and financing activities. We expect cash provided from operating activities will continue to be our primary source of funds to finance operating needs and capital expenditures for the foreseeable future.

Operating cash flow is derived by adjusting our net income for:

- non-cash operating items such as depreciation and amortization, impairment charges, unrealized gain (loss) on strategic investments, acquired IPR&D and share-based compensation;
- changes in operating assets and liabilities, which reflect timing differences between the receipt and payment of cash associated with transactions and when they are recognized in results of operations; and
- changes in the fair value of contingent payments associated with our acquisitions of businesses and payments related to collaborations.

For 2022 compared to 2021, the decrease in net cash flow provided by operating activities was primarily due to lower revenue in 2022, net payments of $917.0 million for a litigation settlement agreement and settlement fees and expenses, timing of payments and higher net income tax payments in 2022. The higher tax payments are, in part, due to a change in the tax deductibility of payments made for research and development.

Investing Activities

For 2022 compared to 2021, the increase in net cash flow provided by investing activities was primarily due to proceeds received from the sale of our 49.9% equity interest in Samsung Bioepis of $990.3 million, net of expenses, during the second quarter of 2022 as well as $582.6 million in net proceeds received from the sale of one of our buildings during the third quarter of 2022.

Financing Activities

For 2022 compared to 2021, the decrease in net cash flow used in financing activities was primarily due to $1.1 billion in lower share repurchases in 2022, partially offset by $832.2 million in higher debt repayments in 2022.

Contractual Obligations and Off-Balance Sheet Arrangements

Contractual Obligations

The following table summarizes our contractual obligations as of December 31, 2022, excluding amounts related to uncertain tax positions, funding commitments, contingent development, regulatory and commercial milestone payments, contingent payments and contingent consideration related to our business combinations, as described below.

	Payments Due by Period				
(In millions)	Total	Less than 1 Year	1 to 3 Years	3 to 5 Years	After 5 Years
Non-cancellable operating leases [1][2][3]	$ 364.2	$ 82.7	$ 140.8	$ 110.3	$ 30.4
Long-term debt obligations [4]	10,262.4	232.7	2,197.7	323.7	7,508.3
Purchase and other obligations [5]	917.2	306.7	600.6	1.7	8.2
Defined benefit obligation	90.8	—	—	—	90.8
Total contractual obligations	$ 11,634.6	$ 622.1	$ 2,939.1	$ 435.7	$ 7,637.7

[1] We lease properties and equipment for use in our operations. Amounts reflected within the table above detail future minimum rental commitments under non-cancelable operating leases as of December 31 for each of the periods presented. In addition to the minimum rental commitments, these leases may require us to pay additional amounts for taxes, insurance, maintenance and other operating expenses.

[2] Obligations are presented net of sublease income expected to be received for our vacated portion of our Weston, MA facility and other facilities throughout the world.

[3] In September 2022 we completed the sale of our building and land parcel located at 125 Broadway. Simultaneously, with the close of this transaction we leased back the building for a term of approximately 5.5 years. For additional information on our 125 Broadway sale and leaseback transaction, please read *Note 11, Property, Plant and Equipment* and *Note 12, Leases*, to our consolidated financial statements included in this report.

[4] Long-term debt obligations are related to our 2015 Senior Notes, our 2020 Senior Notes and our 2021 Exchange Offer Senior Notes, including principal and interest payments.

[5] Purchase and other obligations include $558.0 million related to the remaining payments on a one-time mandatory deemed repatriation tax on accumulated foreign subsidiaries' previously untaxed foreign earnings (the Transition Toll Tax) and $26.0 million related to the fair value of net liabilities on derivative contracts.

Royalty Payments

TYSABRI

We are obligated to make contingent payments of 18.0% on annual worldwide net sales of TYSABRI up to $2.0 billion and 25.0% on annual worldwide net sales of TYSABRI that exceed $2.0 billion. Royalty payments are recognized as cost of sales in our consolidated statements of income.

SPINRAZA

We make royalty payments on annual worldwide net sales of SPINRAZA using a tiered royalty rate between 11.0% and 15.0%, which are recognized as cost of sales in our consolidated statements of income.

VUMERITY

We make royalty payments to Alkermes Pharma Ireland Limited, a subsidiary of Alkermes plc (Alkermes) on worldwide net sales of VUMERITY using a royalty rate of 15.0%, which are recognized as cost of sales in our consolidated statements of income.

In October 2019 we entered into a new supply agreement and amended our license and collaboration agreement with Alkermes for VUMERITY. We have elected to initiate a technology transfer and, following a transition period, to manufacture VUMERITY or have VUMERITY manufactured by a third party we have engaged in exchange for paying an increased royalty rate to Alkermes on any portion of future worldwide net commercial sales of VUMERITY that is manufactured by us or our designee.

For additional information on our collaboration arrangement with Alkermes, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Contingent Development, Regulatory and Commercial Milestone Payments

Based on our development plans as of December 31, 2022, we could trigger potential future milestone payments to third parties of up to approximately $9.3 billion, including approximately $2.0 billion in development milestones, approximately $0.5 billion in regulatory milestones and approximately $6.8 billion in commercial milestones, as part of our various collaborations, including licensing and development programs. Payments under these agreements generally become due and payable upon achievement of certain development, regulatory or commercial milestones. Because the achievement of these milestones was not considered probable as

of December 31, 2022, such contingencies have not been recorded in our financial statements. Amounts related to contingent milestone payments are not considered contractual obligations as they are contingent on the successful achievement of certain development, regulatory or commercial milestones.

If certain clinical and commercial milestones are met, we may pay up to $356.2 million in milestones in 2023 under our current agreements. This includes milestones totaling $225.0 million due to Sage upon the first commercial sale of zuranolone, for the potential treatment of MDD and PPD, in the U.S.

Other Funding Commitments

As of December 31, 2022, we have several ongoing clinical studies in various clinical trial stages. Our most significant clinical trial expenditures are to CROs. The contracts with CROs are generally cancellable, with notice, at our option. We recorded accrued expense of approximately $20.4 million in our consolidated balance sheets for expenditures incurred by CROs as of December 31, 2022. We have approximately $929.0 million in cancellable future commitments based on existing CRO contracts as of December 31, 2022.

Tax Related Obligations

We exclude liabilities pertaining to uncertain tax positions from our summary of contractual obligations as we cannot make a reliable estimate of the period of cash settlement with the respective taxing authorities. As of December 31, 2022, we have approximately $154.6 million of liabilities associated with uncertain tax positions.

As of December 31, 2022 and 2021, we have accrued income tax liabilities of approximately $558.0 million and $633.0 million, respectively, under the Transition Toll Tax. Of the amounts accrued as of December 31, 2022, approximately $137.8 million is expected to be paid within one year. The Transition Toll Tax will be paid in installments over an eight--year period, which started in 2018, and will not accrue interest.

Other Off-Balance Sheet Arrangements

We do not have any relationships with entities often referred to as structured finance or special purpose entities that were established for the purpose of facilitating off-balance sheet arrangements. As such, we are not exposed to any financing, liquidity, market or credit risk that could arise if we had engaged in such relationships. We consolidate variable interest entities if we are the primary beneficiary.

New Accounting Standards

For a discussion of new accounting standards please read *Note 1, Summary of Significant Accounting Policies,* to our consolidated financial statements included in this report.

Legal Matters

For a discussion of legal matters as of December 31, 2022, please read *Note 21, Litigation,* to our consolidated financial statements included in this report.

Critical Accounting Policies and Estimates

The preparation of our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the U.S. (U.S. GAAP), requires us to make estimates, judgments and assumptions that may affect the reported amounts of assets, liabilities, equity, revenue and expense and related disclosure of contingent assets and liabilities. On an ongoing basis we evaluate our estimates, judgments and assumptions. We base our estimates on historical experience and on various other assumptions that we believe are reasonable, the results of which form the basis for making judgments about the carrying values of assets, liabilities and equity and the amount of revenue and expense. Actual results may differ from these estimates. Other significant accounting policies are outlined in *Note 1, Summary of Significant Accounting Policies*, to our consolidated financial statements included in this report.

Revenue Recognition

We recognize revenue when our customer obtains control of promised goods or services, in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. We recognize revenue following the five-step model prescribed under Financial Accounting Standards Board (FASB) Accounting Standards Codification 606, *Revenue from Contracts with Customers*: (i) identify contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy the performance obligations.

Product Revenue

In the U.S., we sell our products primarily to wholesale and specialty distributors and specialty pharmacies. In other countries, we sell our products primarily to wholesale distributors, hospitals, pharmacies and other third-party distribution partners. These customers subsequently resell our products to

health care providers and patients. In addition, we enter into arrangements with health care providers and payors that provide for government-mandated or privately-negotiated discounts and allowances related to our products.

Product revenue is recognized when the customer obtains control of our product, which occurs at a point in time, typically upon delivery to the customer. We expense incremental costs of obtaining a contract as and when incurred if the expected amortization period of the asset that we would have recognized is one year or less or the amount is immaterial.

Reserves for Discounts and Allowances

Product revenue is recorded net of reserves established for applicable discounts and allowances that are offered within contracts with our customers, health care providers or payors, including those associated with the implementation of pricing actions in certain of the international markets in which we operate. Our process for estimating reserves established for these variable consideration components do not differ materially from our historical practices.

Product revenue reserves, which are classified as a reduction in product revenue, are generally characterized in the following categories: discounts, contractual adjustments and returns.

These reserves are based on estimates of the amounts earned or to be claimed on the related sales and are classified as reductions of accounts receivable (if the amount is payable to our customer) or a liability (if the amount is payable to a party other than our customer). Our estimates of reserves established for variable consideration are calculated based upon a consistent application of our methodology utilizing the expected value method. These estimates reflect our historical experience, current contractual and statutory requirements, specific known market events and trends, industry data and forecasted customer buying and payment patterns. The transaction price, which includes variable consideration reflecting the impact of discounts and allowances, may be subject to constraint and is included in the net sales price only to the extent that it is probable that a significant reversal of the amount of the cumulative revenue recognized will not occur in a future period. Actual amounts may ultimately differ from our estimates. If actual results vary, we adjust these estimates, which could have an effect on earnings in the period of adjustment.

As of December 31, 2022, a 10.0% change in our discounts, contractual adjustments and reserves would have resulted in a decrease of our pre-tax earnings by approximately $338.6 million.

In addition to discounts, rebates and product returns, we also maintain certain customer service contracts with distributors and other customers in the distribution channel that provide us with inventory management, data and distribution services, which are generally reflected as a reduction of revenue. To the extent we can demonstrate a separable benefit and fair value for these services we classify these payments in selling, general and administrative expense in our consolidated statements of income.

For additional information on our revenue, please read *Note 5, Revenue*, to our consolidated financial statements included in this report.

Inventory

At each reporting period we review our inventories for excess or obsolescence and write-down obsolete or otherwise unmarketable inventory to its estimated net realizable value. The determination of obsolete or excess inventory requires management to make estimates based on assumptions about the future demand of our products, product expiration dates, estimated future sales and our general future plans. If customer demand subsequently differs from our forecasts, we may be required to record additional charges for excess inventory.

Although we believe that the assumptions we use in estimating inventory write-downs are reasonable, no assurance can be given that significant future changes in these assumptions or changes in future events and market conditions could result in different estimates.

During 2021 we wrote-off approximately $120.0 million of inventory in excess of forecasted demand related to ADUHELM. During the first quarter of 2022 we wrote-off approximately $275.0 million, as a result of the final CMS decision.

As of December 31, 2022, the carrying value of our ADUHELM inventory was immaterial. As of December 31, 2021, we had approximately $223.0 million of ADUHELM inventory.

Acquired Intangible Assets, including IPR&D

When we purchase a business, the acquired IPR&D is measured at fair value, capitalized as an intangible asset and tested for impairment at least annually, as of October 31, until commercialization, after which time the IPR&D is amortized over its estimated useful life. If we acquire an asset or group of assets that do not meet the definition of a business under applicable accounting standards, the acquired IPR&D is expensed on its acquisition date. Future costs to develop these assets are recorded to

research and development expense as they are incurred.

We have acquired, and expect to continue to acquire, intangible assets through the acquisition of biotechnology companies or through the consolidation of variable interest entities. These intangible assets primarily consist of technology associated with human therapeutic products and IPR&D product candidates. When significant identifiable intangible assets are acquired, we generally engage an independent third-party valuation firm to assist in determining the fair values of these assets as of the acquisition date. Management will determine the fair value of less significant identifiable intangible assets acquired. Discounted cash flow models are typically used in these valuations, and these models require the use of significant estimates and assumptions including but not limited to:

- estimating the timing of and expected costs to complete the in-process projects;
- projecting regulatory approvals;
- estimating future cash flow from product sales resulting from completed products and in process projects; and
- developing appropriate discount rates and probability rates by project.

We believe the fair values assigned to the intangible assets acquired are based upon reasonable estimates and assumptions given available facts and circumstances as of the acquisition dates.

If these projects are not successfully developed, the sales and profitability of the company may be adversely affected in future periods. Additionally, the value of the acquired intangible assets may become impaired. No assurance can be given that the underlying assumptions used to estimate expected project sales, development costs or profitability, or the events associated with such projects, will transpire as estimated.

Impairment and Amortization of Long-lived Assets

Long-lived assets to be held and used include property, plant and equipment as well as intangible assets, including IPR&D and trademarks. Property, plant and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. We review our intangible assets with indefinite lives for impairment annually, as of October 31, and whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable.

When performing our impairment assessment, we calculate the fair value using the same methodology as described above under *Acquired Intangible Assets, including IPR&D*. If the carrying value of our acquired IPR&D exceeds its fair value, then the intangible asset is written down to its fair value. Changes in estimates and assumptions used in determining the fair value of our acquired IPR&D could result in an impairment. Impairments are recorded within amortization and impairment of acquired intangible assets in our consolidated statements of income.

Based on our most recent impairment assessment we incurred impairment charges of approximately $119.6 million and $629.3 million for the years ended December 31, 2022 and 2021, respectively, mainly related to the discontinuation of IPR&D programs. For additional information on our impairments, *Note 7, Intangible Assets and Goodwill*, to our consolidated financial statements included in this report.

Our most significant intangible assets are our acquired and in-licensed rights and patents. Acquired and in-licensed rights and patents primarily relate to our acquisition of all remaining rights to TYSABRI. We amortize the intangible assets related to our marketed products using the economic consumption method based on revenue generated from the products underlying the related intangible assets. An analysis of the anticipated lifetime revenue of our marketed products is performed annually during our long-range planning cycle and whenever events or changes in circumstances would significantly affect anticipated lifetime revenue of the relevant products.

For additional information on the impairment charges related to our long-lived assets during 2022, 2021 and 2020, please read *Note 7, Intangible Assets and Goodwill,* to our consolidated financial statements included in this report.

Contingent Consideration

We record contingent consideration resulting from a business combination at its fair value on the acquisition date. Each reporting period thereafter, we revalue the remaining obligations and record increases or decreases in their fair value as an adjustment to contingent consideration expense in our consolidated statements of income. Changes in the fair value of our contingent consideration obligations can result from changes to one or multiple inputs, including adjustments to the discount rates and achievement and timing of any cumulative sales-based and development milestones or changes in the probability of certain clinical events and changes in the assumed probability associated with regulatory approval. These fair value measurements represent Level 3 measurements as they are based on significant inputs not observable in the market.

Significant judgment is employed in determining the appropriateness of these assumptions as of the acquisition date and for each subsequent period. Accordingly, changes in assumptions described above, could have a material impact on the amount of contingent consideration expense we record in any given period.

Income Taxes

We prepare and file income tax returns based on our interpretation of each jurisdiction's tax laws and regulations. In preparing our consolidated financial statements, we estimate our income tax liability in each of the jurisdictions in which we operate by estimating our actual current tax expense together with assessing temporary differences resulting from differing treatment of items for tax and financial reporting purposes. These differences result in deferred tax assets and liabilities, which are included in our consolidated balance sheets. Upon our election in the fourth quarter of 2018 to record deferred taxes for global intangible low-taxed income (GILTI), we have included amounts related to GILTI taxes within temporary difference.

Significant management judgment is required in assessing the realizability of our deferred tax assets. In performing this assessment, we consider whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. In making this determination, under the applicable financial accounting standards, we are allowed to consider the scheduled reversal of deferred tax liabilities, projected future taxable income and the effects of tax planning strategies. In the event that actual results differ from our estimates, we adjust our estimates in future periods and we may need to establish a valuation allowance, which could materially impact our consolidated financial position and results of operations.

We account for uncertain tax positions using a "more likely than not" threshold for recognizing and resolving uncertain tax positions. We evaluate uncertain tax positions on a quarterly basis and consider various factors including, but not limited to, changes in tax law, the measurement of tax positions taken or expected to be taken in tax returns, the effective settlement of matters subject to audit, information obtained during in process audit activities and changes in facts or circumstances related to a tax position. We adjust the level of the liability to reflect any subsequent changes in the relevant facts surrounding the uncertain positions. Our liabilities for uncertain tax positions can be relieved only if the contingency becomes legally extinguished, through either payment to the taxing authority or the expiration of the statute of limitations, the recognition of the benefits associated with the position meet the "more likely than not" threshold or the liability becomes effectively settled through the examination process. We consider matters to be effectively settled once the taxing authority has completed all of its required or expected examination procedures, including all appeals and administrative reviews, we have no plans to appeal or litigate any aspect of the tax position and we believe that it is highly unlikely that the taxing authority would examine or re-examine the related tax position. We also accrue for potential interest and penalties related to unrecognized tax benefits in income tax expense.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are subject to certain risks that may affect our results of operations, cash flow and fair values of assets and liabilities, including volatility in foreign currency exchange rates, interest rate movements and equity price exposure as well as changes in economic conditions in the markets in which we operate as a result of the COVID-19 pandemic and the conflict in Ukraine. We manage the impact of foreign currency exchange rates and interest rates through various financial instruments, including derivative instruments such as foreign currency forward contracts, interest rate lock contracts and interest rate swap contracts. We do not enter into financial instruments for trading or speculative purposes. The counterparties to these contracts are major financial institutions, and there is no significant concentration of exposure with any one counterparty.

Foreign Currency Exchange Risk

Our results of operations are subject to foreign currency exchange rate fluctuations due to the global nature of our operations. As a result, our consolidated financial position, results of operations and cash flow can be affected by market fluctuations in foreign currency exchange rates, primarily with respect to the Euro, British pound sterling, Canadian dollar, Swiss franc and Japanese yen.

While the financial results of our global activities are reported in U.S. dollars, the functional currency for most of our foreign subsidiaries is their respective local currency. Fluctuations in the foreign currency exchange rates of the countries in which we do business will affect our operating results, often in ways that are difficult to predict. In particular, as the U.S. dollar strengthens versus other currencies, the value of the non-U.S. revenue will decline when reported in U.S. dollars. The impact to net income as a result of a strengthening U.S. dollar will be partially

mitigated by the value of non-U.S. expense, which will also decline when reported in U.S. dollars. As the U.S. dollar weakens versus other currencies, the value of the non-U.S. revenue and expense will increase when reported in U.S. dollars.

We have established revenue and operating expense hedging and balance sheet risk management programs to protect against volatility of future foreign currency cash flow and changes in fair value caused by volatility in foreign currency exchange rates.

During the second quarter of 2018 the International Practices Task Force of the Center for Audit Quality categorized Argentina as a country with a projected three-year cumulative inflation rate greater than 100.0%, which indicated that Argentina's economy is highly inflationary. This categorization did not have a material impact on our results of operations or financial position as of December 31, 2022, and is not expected to have a material impact on our results of operations or financial position in the future.

Revenue and Operating Expense Hedging Program

Our foreign currency hedging program is designed to mitigate, over time, a portion of the impact resulting from volatility in exchange rate changes on revenue and operating expense. We use foreign currency forward contracts and foreign currency options to manage foreign currency risk, with the majority of our forward contracts used to hedge certain forecasted revenue and operating expense transactions denominated in foreign currencies in the next 12 months. We do not engage in currency speculation. For a more detailed disclosure of our revenue and operating expense hedging program, please read *Note 10, Derivative Instruments,* to our consolidated financial statements included in this report.

Our ability to mitigate the impact of foreign currency exchange rate changes on revenue and net income diminishes as significant foreign currency exchange rate fluctuations are sustained over extended periods of time. In particular, devaluation or significant deterioration of foreign currency exchange rates are difficult to mitigate and likely to negatively impact earnings. The cash flow from these contracts are reported as operating activities in our consolidated statements of cash flow.

Balance Sheet Risk Management Hedging Program

We also use forward contracts to mitigate the foreign currency exposure related to certain balance sheet items. The primary objective of our balance sheet risk management program is to mitigate the exposure of foreign currency denominated net monetary assets and liabilities of foreign affiliates. In these instances, we principally utilize currency forward contracts. We have not elected hedge accounting for the balance sheet related items. The cash flow from these contracts are reported as operating activities in our consolidated statements of cash flow.

The following quantitative information includes the impact of currency movements on forward contracts used in our revenue, operating expense and balance sheet hedging programs. As of December 31, 2022 and 2021, a hypothetical adverse 10.0% movement in foreign currency exchange rates compared to the U.S. dollar across all maturities would result in a hypothetical decrease in the fair value of forward contracts of approximately $293.7 million and $333.1 million, respectively. The estimated fair value change was determined by measuring the impact of the hypothetical exchange rate movement on outstanding forward contracts. Our use of this methodology to quantify the market risk of such instruments is subject to assumptions and actual impact could be significantly different. The quantitative information about market risk is limited because it does not take into account all foreign currency operating transactions.

Interest Rate Risk

Our investment portfolio includes cash equivalents and short-term investments. The fair value of our marketable securities is subject to change as a result of potential changes in market interest rates. The potential change in fair value for interest rate sensitive instruments has been assessed on a hypothetical 100 basis point adverse movement across all maturities. As of December 31, 2022 and 2021, we estimate that such hypothetical 100 basis point adverse movement would result in a hypothetical loss in fair value of approximately $11.7 million and $14.3 million, respectively, to our interest rate sensitive instruments. The fair values of our investments were determined using third-party pricing services or other market observable data.

Credit Risk

Financial instruments that potentially subject us to concentrations of credit risk include cash and cash equivalents, investments, derivatives and accounts receivable. We attempt to minimize the risks related to cash and cash equivalents and investments by investing in a broad and diverse range of financial instruments. We have established guidelines related to credit ratings and maturities intended to safeguard principal balances and maintain liquidity. Our investment portfolio is maintained in accordance with our investment policy, which defines allowable investments, specifies credit quality standards and limits the credit exposure of any single issuer. We minimize credit risk resulting from derivative instruments by choosing only highly rated financial institutions as counterparties.

We operate in certain countries where weakness in economic conditions, including the effects of the COVID-19 pandemic and the conflict in Ukraine, can result in extended collection periods. We continue to monitor these conditions, including the volatility associated with international economies and the relevant financial markets, and assess their possible impact on our business. To date, we have not experienced any significant losses with respect to the collection of our accounts receivable.

We believe that our allowance for doubtful accounts was adequate as of December 31, 2022 and 2021.

Equity Price Risk

Our strategic investment portfolio includes investments in equity securities of certain biotechnology companies. While we are holding such securities, we are subject to equity price risk, and this may increase the volatility of our income in future periods due to changes in the fair value of equity investments. We may sell such equity securities based on our business considerations, which may include limiting our price risk.

Changes in the fair value of these equity securities are impacted by the volatility of the stock market and changes in general economic conditions, among other factors. The potential change in fair value for equity price sensitive instruments has been assessed on a hypothetical 10.0% adverse movement. As of December 31, 2022 and 2021, a hypothetical adverse 10.0% movement would result in a hypothetical decrease in fair value of approximately $79.1 million and $104.8 million, respectively.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The information required by this Item 8 is contained on pages F-1 through F-79 of this report and is incorporated herein by reference.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures and Internal Control over Financial Reporting

Controls and Procedures

We have carried out an evaluation, under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) or 15d-15(e) under the Securities Exchange Act of 1934, as amended), as of December 31, 2022. Based upon that evaluation, our principal executive officer and principal financial officer concluded that, as of the end of the period covered by this report, our disclosure controls and procedures are effective in ensuring that:

(a) the information required to be disclosed by us in the reports that we file or submit under the Securities Exchange Act is recorded, processed, summarized and reported within the time periods specified in the U.S. Securities and Exchange Commission's rules and forms; and

(b) such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure.

In designing and evaluating our disclosure controls and procedures, our management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during the quarter ended December 31, 2022, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over our financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act as a process designed by, or under the supervision of, a company's principal executive and principal financial officers and effected by a company's board of directors, management and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP. Our internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect our transactions and dispositions of our assets;

- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. GAAP, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2022. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in its 2013 Internal Control — Integrated Framework.

Based on our assessment, our management has concluded that, as of December 31, 2022, our internal control over financial reporting is effective based on those criteria.

The effectiveness of our internal control over financial reporting as of December 31, 2022, has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their attestation report, which is included herein.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not Applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information concerning our executive officers is set forth under the heading *Information about our Executive Officers* in Item 1 of this report. The text of our code of business conduct, which includes the code of ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller, and persons performing similar functions, is posted on our website, www.biogen.com, under the "*Corporate Governance*" subsection of the "*Investors*" section of the site. We intend to make all required disclosures regarding any amendments to, or waivers from, provisions of our code of business conduct at the same location of our website.

The response to the remainder of this item is incorporated by reference from the discussion responsive thereto in the sections entitled "*Proposal 1 - Election of Directors," "Corporate Governance at Biogen"* and "*Miscellaneous - Stockholder Proposals*" contained in the proxy statement for our 2023 annual meeting of stockholders.

ITEM 11. EXECUTIVE COMPENSATION

The response to this item is incorporated by reference from the discussion responsive thereto in the sections entitled "*Executive Compensation Matters*" and *"Corporate Governance at Biogen"* contained in the proxy statement for our 2023 annual meeting of stockholders.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The response to this item is incorporated by reference from the discussion responsive thereto in the sections entitled *"Stock Ownership"* and *"Equity Compensation Plan Information"* contained in the proxy statement for our 2023 annual meeting of stockholders.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The response to this item is incorporated by reference from the discussion responsive thereto in the sections entitled "*Certain Relationships and Related Person Transactions*" and *"Corporate Governance at Biogen*" contained in the proxy statement for our 2023 annual meeting of stockholders.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The response to this item is incorporated by reference from the discussion responsive thereto in the section entitled "*Proposal 2 - Ratification of the Selection of our Independent Registered Public Accounting Firm*" contained in the proxy statement for our 2023 annual meeting of stockholders.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

a. (1) Consolidated Financial Statements:

The following financial statements are filed as part of this report:

Certain totals may not sum due to rounding.

(2) Exhibits

The exhibits listed on the Exhibit Index beginning on page 85, which is incorporated herein by reference, are filed or furnished as part of this report or are incorporated into this report by reference.

(3) Financial Statement Schedules

Schedules are omitted because they are not applicable, or are not required, or because the information is included in the consolidated financial statements and notes thereto.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

EXHIBIT INDEX

Exhibit No.	Description
2.1†	Asset Purchase Agreement among Biogen Idec International Holding Ltd., Elan Pharma International Limited and Elan Pharmaceuticals, Inc., dated as of February 5, 2013. Filed as Exhibit 2.1 to our Current Report on Form 8-K/A filed on February 12, 2013.
2.2	Separation Agreement between Biogen Inc. and Bioverativ Inc. dated as of January 31, 2017. Filed as Exhibit 2.1 to our Current Report on Form 8-K filed on February 2, 2017.
3.1	Amended and Restated Certificate of Incorporation, as amended. Filed as Exhibit 3.1 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2012.
3.2	Certificate of Amendment to the Certificate of Incorporation. Filed as Exhibit 3.1 to our Current Report on Form 8-K filed on March 27, 2015.
3.3	Certificate of Amendment of Biogen Inc.'s Amended and Restated Certificate of Incorporation, as amended. Filed as Exhibit 3.1 to our Current Report on Form 8-K filed on June 8, 2021.
3.4	Fourth Amended and Restated Bylaws. Filed as Exhibit 3.1 to our Current Report on Form 8-K filed on June 9, 2017.
4.1	Second Supplemental Indenture, dated April 30, 2020, between Biogen Inc. and U.S. Bank National Association, including the forms of Global Notes attached as Exhibit A and Exhibit B, respectively, thereto. Filed as Exhibit 4.2 to our Current Report on Form 8-K filed on April 30, 2020.
4.2	Reference is made to Exhibit 3.1 for a description of the rights, preferences and privileges of our Series A Preferred Stock and Series X Junior Participating Preferred Stock.
4.3	Indenture between Biogen Inc. and U.S. Bank National Association, dated as of September 15, 2015. Filed as Exhibit 4.1 to our Current Report on Form 8-K filed on September 16, 2015.
4.4	First Supplemental Indenture between Biogen Inc. and U.S. Bank National Association, dated September 15, 2015. Filed as Exhibit 4.2 to our Current Report on Form 8-K filed on September 16, 2015.
4.5	Third Supplemental Indenture, dated February 16, 2021, between Biogen Inc. and U.S. Bank National Association. Filed as Exhibit 4.2 to our Current Report on Form 8-K filed on February 16, 2021.
4.6	Form of 3.250% Senior Notes due 2051, in the form of a Global Note bearing a private placement legend. Filed as Exhibit 4.3 to our Current Report on Form 8-K filed on February 16, 2021.
4.7	Form of 3.250% Senior Notes due 2051, in the form of a Global Note bearing a Regulation S legend. Filed as Exhibit 4.4 to our Current Report on Form 8-K filed on February 16, 2021.
4.8+	Description of Securities.
4.9	Registration Rights Agreement, dated February 16, 2021, between Biogen Inc. and Deutsche Bank Securities Inc. and Citigroup Global Markets, Inc. with respect to the 3.250% Senior Notes due 2051. Filed as Exhibit 4.5 to our Current Report on Form 8-K filed on February 16, 2021.
10.1	Credit Agreement between Biogen Inc., Bank of America, N.A., Goldman Sachs Bank USA and other lenders party thereto, dated August 28, 2015. Filed as Exhibit 10.1 to our Current Report on Form 8-K filed on September 1, 2015.
10.2	Credit Agreement, dated as of January 28, 2020, among Biogen Inc., Bank of America, N.A., as administrative agent, swing line lender and the L/C issuer, and the other lenders party thereto. Filed as Exhibit 10.1 to our Current Report on Form 8-K filed on February 3, 2020.
10.3+	Amendment to Credit Agreement, dated as of February 7, 2023, by and among Biogen Inc., Bank of America, N.A., as administrative agent, swing line lender and the L&C issuer, and the other lenders party thereto.
10.4†	Second Amended and Restated Collaboration Agreement between Biogen Idec Inc. and Genentech, Inc., dated as of October 18, 2010. Filed as Exhibit 10.5 to our Annual Report on Form 10-K for the year ended December 31, 2010.
10.5†	Letter Agreement regarding GA101 financial terms between Biogen Idec Inc. and Genentech, Inc., dated October 18, 2010. Filed as Exhibit 10.6 to our Annual Report on Form 10-K for the year ended December 31, 2010.
10.6	Settlement and License Agreement, dated January 17, 2017, between Biogen Swiss Manufacturing GmbH, Biogen International Holdings ltd., Forward Pharma A/S and other parties thereto. Filed as Exhibit 10.1 to our Current Report on Form 8-K filed on February 1, 2017.
10.7*	Biogen Inc. 2017 Omnibus Equity Plan. Filed as Appendix B to our Definitive Proxy Statement on Schedule 14A filed on April 26, 2017.
10.8*	Form of restricted stock unit award agreement under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017.
10.9*	Form of market stock unit award agreement under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.3 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017.
10.10*	Form of performance unit award agreement under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.4 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017.

Exhibit No.	Description
10.11*	Form of cash-settled performance unit award agreement under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.5 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017.
10.12*	Form of performance stock units award agreement (cash-settled) under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.10 to our Annual Report on Form 10-K for the year ended December 31, 2017.
10.13*	Form of performance stock units award agreement under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.11 to our Annual Report on Form 10-K for the year ended December 31, 2017.
10.14*	Form of performance stock units award agreement under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2018.
10.15*	Form of performance stock units award agreement (cash settled) under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2018.
10.16*	Form of restricted stock unit award agreement (2018 one-time transition grant) under the Biogen Inc. 2017 Omnibus Equity Plan. Filed as Exhibit 10.3 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2018.
10.17*	Form of market stock unit award agreement under the Biogen Inc. 2017 Omnibus Equity Plan (for grants commencing in July 2019). Filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2019.
10.18*	Form of performance stock units award agreement under the Biogen Inc. 2017 Omnibus Equity Plan (for grants commencing in July 2019). Filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2019.
10.19*	Form of performance stock units award agreement (cash settled) under the Biogen Inc. 2017 Omnibus Equity Plan (for grants commencing in July 2019). Filed as Exhibit 10.3 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2019.
10.20+	Form of nonqualified stock option award agreement under Biogen Inc. 2017 Omnibus Equity Plan.
10.21*	Biogen Idec Inc. 2008 Amended and Restated Omnibus Equity Plan. Filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2014.
10.22*	Form of performance unit award agreement under the Biogen Idec Inc. 2008 Omnibus Equity Plan. Filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2014.
10.23*	Form of market stock unit award agreement under the Biogen Idec Inc. 2008 Omnibus Equity Plan. Filed as Exhibit 10.3 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2014.
10.24*	Form of restricted stock unit award agreement under the Biogen Idec Inc. 2008 Omnibus Equity Plan. Filed as Exhibit 10.1 to our Current Report on Form 8-K filed on August 1, 2008.
10.25*	Form of nonqualified stock option award agreement under the Biogen Idec Inc. 2008 Omnibus Equity Plan. Filed as Exhibit 10.2 to our Current Report on Form 8-K filed on August 1, 2008.
10.26*	Form of cash-settled performance shares award agreement under the Biogen Idec Inc. 2008 Omnibus Equity Plan. Filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2010.
10.27*	Biogen Inc. 2006 Non-Employee Directors Equity Plan, as amended. Filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2022.
10.28*	Biogen Inc. 2015 Employee Stock Purchase Plan. Filed as Appendix A to our Definitive Proxy Statement on Schedule 14A filed on April 30, 2015.
10.29*	Biogen Idec Inc. 2008 Performance-Based Management Incentive Plan. Filed as Appendix B to our Definitive Proxy Statement on Schedule 14A filed on May 8, 2008.
10.30*	Biogen Inc. 2019 Form of Performance-Based Management Incentive Plan, as amended. Filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2021.
10.31*	Biogen Idec Inc. Voluntary Executive Supplemental Savings Plan, as amended and restated effective January 1, 2004. Filed as Exhibit 10.13 to our Annual Report on Form 10-K for the year ended December 31, 2003.
10.32*	Biogen Idec Inc. Supplemental Savings Plan, as amended. Filed as Exhibit 10.23 to our Annual Report on Form 10-K for the year ended December 31, 2015.
10.33*	Biogen Idec Inc. Voluntary Board of Directors Savings Plan, as amended. Filed as Exhibit 10.24 to our Annual Report on Form 10-K for the year ended December 31, 2015.
10.34*	Biogen Inc. Executive Severance Policy - U.S. Executive Vice President, as amended effective June 19, 2019. Filed as Exhibit 10.4 to our Quarterly Report on Form 10-Q for the quarter ended June 30, 2019.
10.35*	Biogen Inc. Executive Severance Policy - U.S. Executive Vice President, as amended effective July 13, 2020. Filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2020.
10.36*	Annual Retainer Summary for Board of Directors (effective January 1, 2020). Filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2019.

Exhibit No.	Description
10.37*	Form of indemnification agreement for directors and executive officers. Filed as Exhibit 10.1 to our Current Report on Form 8-K filed on June 7, 2011.
10.38*	Employment Agreement between Biogen Inc. and Michel Vounatsos dated December 18, 2016 and effective as of January 6, 2017. Filed as Exhibit 10.1 to our Current Report on Form 8-K filed on December 19, 2016.
10.39*	Letter regarding employment arrangement of Michel Vounatsos dated May 2, 2022. Filed as Exhibit 10.1 to our Current Report on Form 8-K filed on May 3, 2022.
10.40*	Employment Agreement, dated November 10, 2022, by and between Biogen Inc. and Christopher A. Viehbacher. Filed as Exhibit 10.1 to our Current Report on Form 8-K filed on November 10, 2022.
10.41*	Letter regarding employment arrangement of Michael McDonnell dated July 16, 2020. Filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q for the quarter ended September 30, 2020.
10.42*	Letter regarding employment arrangement of Susan Alexander dated December 13, 2005. Filed as Exhibit 10.58 to our Annual Report on Form 10-K for the year ended December 31, 2009.
10.43*	Letter regarding employment arrangement of Chirfi Guindo dated October 12, 2017. Filed as Exhibit 10.41 to our Annual Report on Form 10-K for the year ended December 31, 2020.
10.44	Joint Venture Agreement, dated December 6, 2011, by and between Samsung BioLogics Co., Ltd. and Biogen Therapeutics Inc. (f/k/a Biogen Idec Therapeutics Inc.), as amended February 28, 2012, September 29, 2014, and February 20, 2019. Filed as Exhibit 10.1 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2021.
10.45+	Amended and Restated Collaboration Agreement, dated October 22, 2017, between Biogen MA Inc. and Eisai Co., LTD.
10.46+	First Amendment to Amended and Restated Collaboration Agreement, dated March 13, 2022, between Biogen MA Inc. and Eisai Co., LTD.
21+	Subsidiaries.
23+	Consent of PricewaterhouseCoopers LLP, an Independent Registered Public Accounting Firm.
31.1+	Certification of the Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2+	Certification of the Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1++	Certification of the Chief Executive Officer and the Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101++	The following materials from Biogen Inc.'s Annual Report on Form 10-K for the year ended December 31, 2022, formatted in iXBRL (Inline Extensible Business Reporting Language): (i) the Consolidated Statements of Income, (ii) the Consolidated Statements of Comprehensive Income, (iii) the Consolidated Balance Sheets, (iv) the Consolidated Statements of Cash Flow, (v) the Consolidated Statements of Equity and (vi) Notes to Consolidated Financial Statements.

* Management contract or compensatory plan or arrangement.

† Confidential treatment has been granted or requested with respect to portions of this exhibit.

\+ Filed herewith.

++ Furnished herewith.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

BIOGEN INC.

By: /s/ CHRISTOPHER A. VIEHBACHER
Christopher A. Viehbacher
Chief Executive Officer

Date: February 15, 2023

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Name	Capacity	Date
/s/ CHRISTOPHER A. VIEHBACHER Christopher A. Viehbacher	Director and Chief Executive Officer (principal executive officer)	February 15, 2023
/s/ MICHAEL R. MCDONNELL Michael R. McDonnell	Executive Vice President and Chief Financial Officer (principal financial officer)	February 15, 2023
/s/ ROBIN C. KRAMER Robin C. Kramer	Senior Vice President, Chief Accounting Officer (principal accounting officer)	February 15, 2023
/s/ STELIOS PAPADOPOULOS Stelios Papadopoulos	Director and Chairman of the Board of Directors	February 15, 2023
/s/ ALEXANDER J. DENNER Alexander J. Denner	Director	February 15, 2023
/s/ CAROLINE D. DORSA Caroline D. Dorsa	Director	February 15, 2023
/s/ MARIA C. FREIRE Maria C. Freire	Director	February 15, 2023
/s/ WILLIAM A. HAWKINS William A. Hawkins	Director	February 15, 2023
/S/ WILLIAM D. JONES William D. Jones	Director	February 15, 2023
/s/ JESUS B. MANTAS Jesus B. Mantas	Director	February 15, 2023
/s/ RICHARD C. MULLIGAN Richard C. Mulligan	Director	February 15, 2023
/s/ ERIC K. ROWINSKY Eric K. Rowinsky	Director	February 15, 2023
/s/ STEPHEN A. SHERWIN Stephen A. Sherwin	Director	February 15, 2023

BIOGEN INC. AND SUBSIDIARIES
CONSOLIDATED FINANCIAL STATEMENTS

BIOGEN INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME
(In millions, except per share amounts)

	For the Years Ended December 31,		
	2022	2021	2020
Revenue:			
Product, net	$ 7,987.8	$ 8,846.9	$ 10,692.2
Revenue from anti-CD20 therapeutic programs	1,700.5	1,658.5	1,977.8
Other	485.1	476.3	774.6
Total revenue	10,173.4	10,981.7	13,444.6
Cost and expense:			
Cost of sales, excluding amortization and impairment of acquired intangible assets	2,278.3	2,109.7	1,805.2
Research and development	2,231.1	2,501.2	3,990.9
Selling, general and administrative	2,403.6	2,674.3	2,504.5
Amortization and impairment of acquired intangible assets	365.9	881.3	464.8
Collaboration profit (loss) sharing	(7.4)	7.2	232.9
(Gain) loss on divestiture of Hillerød, Denmark manufacturing operations	—	—	(92.5)
(Gain) loss on fair value remeasurement of contingent consideration	(209.1)	(50.7)	(86.3)
Acquired in-process research and development	—	18.0	75.0
Restructuring charges	131.1	—	—
Gain on sale of building	(503.7)	—	—
Other (income) expense, net	(108.2)	1,095.5	(497.4)
Total cost and expense	6,581.6	9,236.5	8,397.1
Income before income tax expense and equity in loss of investee, net of tax	3,591.8	1,745.2	5,047.5
Income tax (benefit) expense	632.8	52.5	992.3
Equity in (income) loss of investee, net of tax	(2.6)	(34.9)	(5.3)
Net income	2,961.6	1,727.6	4,060.5
Net income (loss) attributable to noncontrolling interests, net of tax	(85.3)	171.5	59.9
Net income attributable to Biogen Inc.	$ 3,046.9	$ 1,556.1	$ 4,000.6
Net income per share:			
Basic earnings per share attributable to Biogen Inc.	$ 20.96	$ 10.44	$ 24.86
Diluted earnings per share attributable to Biogen Inc.	$ 20.87	$ 10.40	$ 24.80
Weighted-average shares used in calculating:			
Basic earnings per share attributable to Biogen Inc.	145.3	149.1	160.9
Diluted earnings per share attributable to Biogen Inc.	146.0	149.6	161.3

See accompanying notes to these consolidated financial statements.

BIOGEN INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In millions)

	For the Years Ended December 31,		
	2022	2021	2020
Net income attributable to Biogen Inc.	$ 3,046.9	$ 1,556.1	$ 4,000.6
Other comprehensive income:			
Unrealized gains (losses) on securities available for sale, net of tax	(13.5)	(3.6)	(2.8)
Unrealized gains (losses) on cash flow hedges, net of tax	(38.7)	232.8	(186.8)
Gains (losses) on net investment hedges, net of tax	(25.5)	34.0	(33.6)
Unrealized gains (losses) on pension benefit obligation, net of tax	43.7	21.5	(33.5)
Currency translation adjustment	(24.2)	(92.4)	92.9
Total other comprehensive income (loss), net of tax	(58.2)	192.3	(163.8)
Comprehensive income (loss) attributable to Biogen Inc.	2,988.7	1,748.4	3,836.8
Comprehensive income (loss) attributable to noncontrolling interests, net of tax	(85.3)	172.1	60.9
Comprehensive income (loss)	$ 2,903.4	$ 1,920.5	$ 3,897.7

See accompanying notes to these consolidated financial statements.

BIOGEN INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(In millions, except per share amounts)

	As of December 31,	
	2022	2021
ASSETS		
Current assets:		
Cash and cash equivalents	$ 3,419.3	$ 2,261.4
Marketable securities	1,473.5	1,541.1
Accounts receivable, net	1,705.0	1,549.4
Due from anti-CD20 therapeutic programs	431.4	412.3
Inventory	1,344.4	1,351.5
Other current assets	1,417.6	740.8
Total current assets	9,791.2	7,856.5
Marketable securities	705.7	892.0
Property, plant and equipment, net	3,298.6	3,416.4
Operating lease assets	403.9	375.4
Intangible assets, net	1,850.1	2,221.3
Goodwill	5,749.0	5,761.1
Deferred tax asset	1,226.4	1,415.1
Investments and other assets	1,529.2	1,939.5
Total assets	$ 24,554.1	$ 23,877.3
LIABILITIES AND EQUITY		
Current liabilities:		
Current portion of notes payable	$ —	$ 999.1
Taxes payable	259.9	174.7
Accounts payable	491.5	589.2
Accrued expense and other	2,521.4	2,535.2
Total current liabilities	3,272.8	4,298.2
Notes payable	6,281.0	6,274.0
Deferred tax liability	334.7	694.5
Long-term operating lease liabilities	333.0	330.4
Other long-term liabilities	944.2	1,320.5
Total liabilities	11,165.7	12,917.6
Commitments, contingencies and guarantees (Notes 22 and 23)		
Equity:		
Biogen Inc. shareholders' equity		
Preferred stock, par value $0.001 per share	—	—
Common stock, par value $0.0005 per share	0.1	0.1
Additional paid-in capital	73.3	68.2
Accumulated other comprehensive loss	(164.9)	(106.7)
Retained earnings	16,466.5	13,911.7
Treasury stock, at cost; 23.8 million and 23.8 million shares, respectively	(2,977.1)	(2,977.1)
Total Biogen Inc. shareholders' equity	13,397.9	10,896.2
Noncontrolling interests	(9.5)	63.5
Total equity	13,388.4	10,959.7
Total liabilities and equity	$ 24,554.1	$ 23,877.3

See accompanying notes to these consolidated financial statements.

BIOGEN INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOW
(In millions)

	For the Years Ended December 31,		
	2022	2021	2020
Cash flow from operating activities:			
Net income	$ 2,961.6	$ 1,727.6	$ 4,060.5
Adjustments to reconcile net income to net cash flow from operating activities:			
Depreciation and amortization	518.4	487.7	457.2
Impairment of intangible assets	119.6	629.3	209.7
Excess and obsolescence charges related to inventory	336.2	167.6	26.6
Acquired in-process research and development	—	18.0	75.0
Share-based compensation	254.1	238.6	198.3
Contingent consideration	(209.1)	(50.7)	(86.3)
(Gain)/loss on divestiture of Hillerød, Denmark manufacturing operations	—	—	(92.5)
Deferred income taxes	(168.6)	(426.8)	149.0
(Gain) loss on strategic investments	265.9	826.8	(681.8)
(Gain) loss on equity method investment	(2.6)	(34.9)	(3.3)
Gain on sale of equity interest in Samsung Bioepis	(1,505.4)	—	—
Gain on sale of building	(503.7)	—	—
Other	208.2	202.2	104.6
Changes in operating assets and liabilities, net:			
Accounts receivable	(203.4)	324.8	2.8
Due from anti-CD20 therapeutic programs	(19.0)	1.2	176.7
Inventory	(320.2)	(462.4)	(316.3)
Accrued expense and other current liabilities	(113.4)	(95.4)	154.2
Income tax assets and liabilities	(142.3)	230.8	(67.5)
Other changes in operating assets and liabilities, net	(92.0)	(144.5)	(137.1)
Net cash flow provided by (used in) operating activities	1,384.3	3,639.9	4,229.8
Cash flow from investing activities:			
Purchases of property, plant and equipment	(240.3)	(258.1)	(424.8)
Proceeds from sales and maturities of marketable securities	3,671.0	3,405.4	7,299.4
Purchases of marketable securities	(3,448.5)	(3,808.7)	(6,397.7)
Proceeds from sale of equity interest in Samsung Bioepis	990.3	—	—
Proceeds from sale of building	582.6	—	—
Purchase of Sangamo Therapeutics, Inc. stock	—	—	(141.8)
Purchase of Denali Therapeutics Inc. stock	—	—	(423.7)
Purchase of Sage Therapeutics, Inc. stock	—	—	(441.0)
Proceeds from divestiture of Hillerød, Denmark manufacturing operations	—	28.1	—
Acquired in-process research and development	—	(18.0)	(75.0)
Acquisitions of intangible assets	(2.9)	(18.8)	(52.0)
Proceeds from sales of strategic investments	—	93.5	74.9
Other	24.4	12.9	(26.9)
Net cash flow provided by (used in) investing activities	1,576.6	(563.7)	(608.6)
Cash flow from financing activities:			
Purchase of treasury stock	(750.0)	(1,800.0)	(6,679.1)
Payments related to issuance of stock for share-based compensation arrangements, net	(1.9)	(0.7)	(4.6)
Repayments of borrowings and premiums paid on debt exchange	(1,002.2)	(170.0)	—
Proceeds from borrowings	—	—	2,967.4
Repayments of borrowings	—	—	(1,500.0)
Net (distribution) contribution to noncontrolling interest	12.4	(94.4)	(71.0)
Other	(5.6)	(21.1)	14.6
Net cash flow provided by (used in) financing activities	(1,747.3)	(2,086.2)	(5,272.7)
Net increase (decrease) in cash and cash equivalents	1,213.6	990.0	(1,651.5)
Effect of exchange rate changes on cash and cash equivalents	(55.7)	(59.8)	69.0
Cash and cash equivalents, beginning of the year	2,261.4	1,331.2	2,913.7
Cash and cash equivalents, end of the year	$ 3,419.3	$ 2,261.4	$ 1,331.2

See accompanying notes to these consolidated financial statements.

BIOGEN INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY
(In millions)

	Preferred stock		Common stock		Additional paid-in capital	Accumulated other comprehensive loss	Retained earnings	Treasury stock		Total Biogen Inc. shareholders' equity	Noncontrolling interests	Total equity
	Shares	Amount	Shares	Amount				Shares	Amount			
Balance, December 31, 2021	—	$ —	170.8	$ 0.1	$ 68.2	$ (106.7)	$ 13,911.7	(23.8)	$ (2,977.1)	$ 10,896.2	$ 63.5	$ 10,959.7
Net income	—	—	—	—	—	—	3,046.9	—	—	3,046.9	(85.3)	2,961.6
Other comprehensive income (loss), net of tax	—	—	—	—	—	(58.2)	—	—	—	(58.2)	—	(58.2)
Distribution to noncontrolling interest	—	—	—	—	—	—	—	—	—	—	—	—
Capital contribution from noncontrolling interest	—	—	—	—	—	—	—	—	—	—	12.3	12.3
Repurchase of common stock pursuant to the 2020 Share Repurchase Program, at cost	—	—	—	—	—	—	—	(3.6)	(750.0)	(750.0)	—	(750.0)
Retirement of common stock pursuant to the 2020 Share Repurchase Program, at cost	—	—	(3.6)	—	(257.9)	—	(492.1)	3.6	750.0	—	—	—
Issuance of common stock under stock option and stock purchase plans	—	—	0.2	—	44.2	—	—	—	—	44.2	—	44.2
Issuance of common stock under stock award plan	—	—	0.5	—	(46.0)	—	—	—	—	(46.0)	—	(46.0)
Compensation expense related to share-based payments	—	—	—	—	263.5	—	—	—	—	263.5	—	263.5
Other	—	—	—	—	1.3	—	—	—	—	1.3	—	1.3
Balance, December 31, 2022	—	$ —	167.9	$ 0.1	$ 73.3	$ (164.9)	$ 16,466.5	(23.8)	$ (2,977.1)	$ 13,397.9	$ (9.5)	$ 13,388.4

See accompanying notes to these consolidated financial statements.

BIOGEN INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY - (Continued)
(In millions)

	Preferred stock		Common stock		Additional paid-in capital	Accumulated other comprehensive loss	Retained earnings	Treasury stock		Total Biogen Inc. shareholders' equity	Noncontrolling interests	Total equity
	Shares	Amount	Shares	Amount				Shares	Amount			
Balance, December 31, 2020	—	$ —	176.2	$ 0.1	$ —	$ (299.0)	$ 13,976.3	(23.8)	$ (2,977.1)	$ 10,700.3	$ (14.2)	$ 10,686.1
Net income	—	—	—	—	—	—	1,556.1	—	—	1,556.1	171.5	1,727.6
Other comprehensive income (loss), net of tax	—	—	—	—	—	192.3	—	—	—	192.3	0.6	192.9
Distribution to noncontrolling interest	—	—	—	—	—	—	—	—	—	—	(100.0)	(100.0)
Capital contribution from noncontrolling interest	—	—	—	—	—	—	—	—	—	—	5.6	5.6
Repurchase of common stock pursuant to the 2020 Share Repurchase Program, at cost	—	—	—	—	—	—	—	(6.0)	(1,800.0)	(1,800.0)	—	(1,800.0)
Retirement of common stock pursuant to the 2020 Share Repurchase Program, at cost	—	—	(6.0)	—	(231.9)	—	(1,568.1)	6.0	1,800.0	—	—	—
Issuance of common stock under stock option and stock purchase plans	—	—	0.2	—	54.4	—	—	—	—	54.4	—	54.4
Issuance of common stock under stock award plan	—	—	0.4	—	(2.4)	—	(52.6)	—	—	(55.0)	—	(55.0)
Compensation expense related to share-based payments	—	—	—	—	246.6	—	—	—	—	246.6	—	246.6
Other	—	—	—	—	1.5	—	—	—	—	1.5	—	1.5
Balance, December 31, 2021	—	$ —	170.8	$ 0.1	$ 68.2	$ (106.7)	$ 13,911.7	(23.8)	$ (2,977.1)	$ 10,896.2	$ 63.5	$ 10,959.7

See accompanying notes to these consolidated financial statements.

BIOGEN INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY - (Continued)
(In millions)

	Preferred stock		Common stock		Additional paid-in capital	Accumulated other comprehensive loss	Retained earnings	Treasury stock		Total Biogen Inc. shareholders' equity	Noncontrolling interests	Total equity
	Shares	Amount	Shares	Amount				Shares	Amount			
Balance, December 31, 2019	—	$ —	198.0	$ 0.1	$ —	$ (135.2)	$ 16,455.4	(23.8)	$ (2,977.1)	$ 13,343.2	$ (4.1)	$ 13,339.1
Net income	—	—	—	—	—	—	4,000.6	—	—	4,000.6	59.9	4,060.5
Other comprehensive income (loss), net of tax	—	—	—	—	—	(163.8)	—	—	—	(163.8)	1.0	(162.8)
Distribution to noncontrolling interest	—	—	—	—	—	—	—	—	—	—	(75.0)	(75.0)
Capital contribution from noncontrolling interest	—	—	—	—	—	—	—	—	—	—	4.0	4.0
Repurchase of common stock pursuant to the 2020 Share Repurchase Program, at cost	—	—	—	—	—	—	—	(1.6)	(400.0)	(400.0)	—	(400.0)
Retirement of common stock pursuant to the 2020 Share Repurchase Program, at cost	—	—	(1.6)	—	(60.8)	—	(339.2)	1.6	400.0	—	—	—
Repurchase of common stock pursuant to the December 2019 Share Repurchase Program, at cost	—	—	—	—	—	—	—	(16.7)	(5,000.0)	(5,000.0)	—	(5,000.0)
Retirement of common stock pursuant to the December 2019 Share Repurchase Program, at cost	—	—	(16.7)	—	(121.3)	—	(4,878.7)	16.7	5,000.0	—	—	—
Repurchase of common stock pursuant to the March 2019 Share Repurchase Program, at cost	—	—	—	—	—	—	—	(4.1)	(1,279.1)	(1,279.1)	—	(1,279.1)
Retirement of common stock pursuant to the March 2019 Share Repurchase Program, at cost	—	—	(4.1)	—	(71.0)	—	(1,208.1)	4.1	1,279.1	—	—	—
Issuance of common stock under stock option and stock purchase plans	—	—	0.2	—	49.3	—	—	—	—	49.3	—	49.3
Issuance of common stock under stock award plan	—	—	0.4	—	—	—	(53.7)	—	—	(53.7)	—	(53.7)
Compensation expense related to share-based payments	—	—	—	—	204.5	—	—	—	—	204.5	—	204.5
Other	—	—	—	—	(0.7)	—	—	—	—	(0.7)	—	(0.7)
Balance, December 31, 2020	—	$ —	176.2	$ 0.1	$ —	$ (299.0)	$ 13,976.3	(23.8)	$ (2,977.1)	$ 10,700.3	$ (14.2)	$ 10,686.1

See accompanying notes to these consolidated financial statements.

Note 1: Summary of Significant Accounting Policies

References in these notes to "Biogen," the "company," "we," "us" and "our" refer to Biogen Inc. and its consolidated subsidiaries.

Business Overview

Biogen is a global biopharmaceutical company focused on discovering, developing and delivering innovative therapies for people living with serious and complex diseases worldwide. We have a broad portfolio of medicines to treat multiple sclerosis (MS), have introduced the first approved treatment for spinal muscular atrophy (SMA) and co-developed two treatments to address a defining pathology of Alzheimer’s disease.We are focused on advancing our pipeline in neurology, neuropsychiatry, specialized immunology and rare diseases. We support our drug discovery and development efforts through internal research and development programs and external collaborations.

Our marketed products include TECFIDERA, VUMERITY, AVONEX, PLEGRIDY, TYSABRI and FAMPYRA for the treatment of MS; SPINRAZA for the treatment of SMA; ADUHELM for the treatment of Alzheimer's disease; and FUMADERM for the treatment of severe plaque psoriasis. We also collaborate with Eisai Co., Ltd. (Eisai) on the commercialization of LEQEMBI for the treatment of Alzheimer's disease, which was granted accelerated approval by the U.S. Food and Drug Administration (FDA) in January 2023. We have certain business and financial rights with respect to RITUXAN for the treatment of non-Hodgkin's lymphoma, chronic lymphocytic leukemia (CLL) and other conditions; RITUXAN HYCELA for the treatment of non-Hodgkin's lymphoma and CLL; GAZYVA for the treatment of CLL and follicular lymphoma; OCREVUS for the treatment of primary progressive MS (PPMS) and relapsing MS (RMS); LUNSUMIO (mosunetuzumab), which was granted accelerated approval in the U.S. during the fourth quarter of 2022 for the treatment of relapsed or refractory follicular lymphoma; glofitamab, an investigational bispecific antibody for the potential treatment of non-Hodgkin's lymphoma; and have the option to add other potential anti-CD20 therapies, pursuant to our collaboration arrangements with Genentech, Inc. (Genentech), a wholly-owned member of the Roche Group.

In addition to continuing to invest in new potential innovation in MS and SMA we are advancing our mid-to-late stage programs including zuranolone for major depressive disorder (MDD) and postpartum depression (PPD), BIIB080 for Alzheimer's disease, tofersen for amyotrophic lateral sclerosis (ALS) and both litifilimab and dapirolizumab pegol for certain forms of lupus.

We also commercialize biosimilars of advanced biologics including BENEPALI, an etanercept biosimilar referencing ENBREL, IMRALDI, an adalimumab biosimilar referencing HUMIRA, and FLIXABI, an infliximab biosimilar referencing REMICADE, in certain countries in Europe, as well as BYOOVIZ, a ranibizumab biosimilar referencing LUCENTIS, in the U.S. We continue to develop potential biosimilar products including BIIB800, a proposed tocilizumab biosimilar referencing ACTEMRA, and SB15, a proposed aflibercept biosimilar referencing EYLEA.

For additional information on our collaboration arrangements, please read *Note 19, Collaborative and Other Relationships*, to our consolidated financial statements included in this report.

Consolidation

Our consolidated financial statements reflect our financial statements, those of our wholly-owned subsidiaries and variable interest entities where we are the primary beneficiary. For consolidated entities where we own or are exposed to less than 100.0% of the economics, we record net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income equal to the percentage of the economic or ownership interest retained in such entities by the respective noncontrolling parties. Intercompany balances and transactions are eliminated in consolidation.

In determining whether we are the primary beneficiary of a variable interest entity, we apply a qualitative approach that determines whether we have both (1) the power to direct the economically significant activities of the entity and (2) the obligation to absorb losses of, or the right to receive benefits from, the entity that could potentially be significant to that entity. We continuously assess whether we are the primary beneficiary of a variable interest entity as changes to existing relationships or future transactions may result in us consolidating or deconsolidating one or more of our collaborators or partners.

Use of Estimates

The preparation of our consolidated financial statements requires us to make estimates, judgments and assumptions that may affect the reported amounts of assets, liabilities, equity, revenue and expense and related disclosure of contingent assets and liabilities. On an ongoing basis we evaluate our estimates, judgments and assumptions. We base our estimates on historical experience and on various other assumptions that we believe are reasonable, the results of which form the basis for making judgments about the carrying values of assets, liabilities and equity and the amount of revenue and expense. Actual results may differ from these estimates.

The length of time and full extent to which the COVID-19 pandemic directly or indirectly impacts our business, results of operations and financial condition, including sales, expense, reserves and allowances, the supply chain, manufacturing, clinical trials, research and development costs and employee-related costs, depends on future developments that are highly uncertain, subject to change and are difficult to predict, including as a result of new information that may emerge concerning COVID-19 and the actions taken to contain or treat COVID-19 as well as the economic impact on local, regional, national and international customers and markets. Additionally, the ongoing geopolitical tensions related to the conflict in Ukraine, and the related sanctions and other penalties imposed, are creating substantial uncertainty in the global economy. The extent and duration of the conflict, sanctions and resulting market disruptions are highly unpredictable. We have made estimates of the impact of the COVID-19 pandemic and the ongoing geopolitical conflict in Ukraine within our consolidated financial statements and there may be changes to those estimates in future periods.

Revenue Recognition

We recognize revenue when our customer obtains control of promised goods or services, in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. We recognize revenue following the five-step model prescribed under Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) 606, *Revenue from Contracts with Customers*: (i) identify contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy the performance obligations.

Product Revenue

In the U.S., we sell our products primarily to wholesale and specialty distributors and specialty pharmacies. In other countries, we sell our products primarily to wholesale distributors, hospitals, pharmacies and other third-party distribution partners. These customers subsequently resell our products to health care providers and patients. In addition, we enter into arrangements with health care providers and payors that provide for government-mandated or privately-negotiated discounts and allowances related to our products.

Product revenue is recognized when the customer obtains control of our product, which occurs at a point in time, typically upon delivery to the customer. We expense incremental costs of obtaining a contract as and when incurred if the expected amortization period of the asset that we would have recognized is one year or less or the amount is immaterial.

Reserves for Discounts and Allowances

Product revenue is recorded net of reserves established for applicable discounts and allowances that are offered within contracts with our customers, health care providers or payors, including those associated with the implementation of pricing actions in certain of the international markets in which we operate.

Product revenue reserves, which are classified as a reduction in product revenue, are generally characterized in the following categories: discounts, contractual adjustments and returns.

These reserves are based on estimates of the amounts earned or to be claimed on the related sales and are classified as reductions of accounts receivable (if the amount is payable to our customer) or a liability (if the amount is payable to a party other than our customer). Our estimates of reserves established for variable consideration are calculated based upon a consistent application of our methodology utilizing the expected value method. These estimates reflect our historical experience, current contractual and statutory requirements, specific known market events and trends, industry data and forecasted customer buying and payment patterns. The transaction price, which includes variable consideration reflecting the impact of discounts and allowances, may be subject to constraint and is included in the net sales price only to the extent that it is probable that a significant reversal of the amount of the cumulative revenue recognized will not occur in a future period. Actual amounts may ultimately differ from our

estimates. If actual results vary, we adjust these estimates, which could have an effect on earnings in the period of adjustment.

Discounts include trade term discounts and wholesaler incentives. Trade term discounts and wholesaler incentives primarily relate to estimated obligations for credits to be granted to wholesalers for remitting payment on their purchases within established incentive periods and credits to be granted to wholesalers for compliance with various contractually-defined inventory management practices, respectively. We determine these reserves based on our historical experience, including the timing of customer payments.

Contractual adjustments primarily relate to Medicaid and managed care rebates in the U.S., pharmacy rebates, co-payment (copay) assistance, Veterans Administration (VA) and Public Health Service (PHS) discounts, specialty pharmacy program fees and other governmental rebates or applicable allowances.

- *Medicaid rebates:* relate to our estimated obligations to states under established reimbursement arrangements. Rebate accruals are recorded in the same period the related revenue is recognized, resulting in a reduction of product revenue and the establishment of a liability which is included in accrued expense and other current liabilities in our consolidated balance sheets. Our liability for Medicaid rebates consists of estimates for claims that a state will make for the current quarter, claims for prior quarters that have been estimated for which an invoice has not been received, invoices received for claims from the prior quarters that have not been paid and an estimate of potential claims that will be made for inventory that exists in the distribution channel at period end.
- *Governmental rebates:* or chargebacks, including VA and PHS discounts, represent our estimated obligations resulting from contractual commitments to sell products to qualified healthcare providers at prices lower than the list prices we charge to wholesalers which provide those products. The wholesaler charges us for the difference between what the wholesaler pays for the products and the ultimate selling price to the qualified healthcare providers. Rebate and chargeback reserves are established in the same period as the related revenue is recognized, resulting in a reduction of product revenue and a reduction in the net accounts receivable. Chargeback amounts are generally determined at the time of resale to the qualified healthcare provider from the wholesaler, and we generally issue credits for such amounts within a few weeks of the wholesaler notifying us about the resale. Our reserves for VA, PHS and other chargebacks consist of amounts for inventory that exists at the wholesalers that we expect will be sold to qualified healthcare providers and chargebacks that wholesalers have claimed for which we have not issued a credit.
- *Managed care rebates:* represent our estimated obligations to third-parties, primarily pharmacy benefit managers. Rebate accruals are recorded in the same period the related revenue is recognized, resulting in a reduction of product revenue and the establishment of a liability which is included in accrued expense and other current liabilities in our consolidated balance sheets. These rebates result from performance-based goals, formulary position and price increase limit allowances (price protection). The calculation of the accrual for these rebates is based on an estimate of the coverage patterns and the resulting applicable contractual rebate rate(s) to be earned over a contractual period.
- *Copay assistance:* represents financial assistance to qualified patients, assisting them with prescription drug co-payments required by insurance. The calculation of the accrual for copay is based on an estimate of claims and the cost per claim that we expect to receive associated with inventory that exists in the distribution channel at period end.
- *Pharmacy rebates:* represent our estimated obligations resulting from contractual commitments to sell products to specific pharmacies. Rebate accruals are recorded in the same period the related revenue is recognized, resulting in a reduction of product revenue and the establishment of a liability which is included in accrued expense and other current liabilities in our consolidated balance sheets. These rebates result from contracted discounts on product purchased or product dispensed. The calculation of the accrual for these rebates is based on an estimate of the pharmacy's buying or dispensing patterns and the resulting applicable contractual rebate rate(s) to be earned over the contractual period.
- *Other governmental rebates:* non-U.S. pharmaceutical taxes or applicable allowances primarily relate to mandatory rebates and discounts in international markets where government-sponsored healthcare systems are the primary payors for healthcare.

Product return reserves are established for returns made by wholesalers and are recorded in the period the related revenue is recognized, resulting in a reduction to product revenue. In accordance with contractual terms, wholesalers are permitted to return product for reasons such as damaged or expired product. The majority of

wholesaler returns are due to product expiration. Expired product return reserves are estimated through a comparison of historical return data to their related sales on a production lot basis. Historical rates of return are determined for each product and are adjusted for known or expected changes in the marketplace specific to each product.

In addition to discounts, rebates and product returns, we also maintain certain customer service contracts with distributors and other customers in the distribution channel that provide us with inventory management, data and distribution services, which are generally reflected as a reduction of revenue. To the extent we can demonstrate a separable benefit and fair value for these services we classify these payments in selling, general and administrative expense in our consolidated statements of income.

Revenue from Anti-CD20 Therapeutic Programs

Our collaboration with Genentech is within the scope of ASC 808, *Collaborative Agreements*, which provides guidance on the presentation and disclosure of collaborative arrangements. For purposes of this footnote, we refer to RITUXAN and RITUXAN HYCELA collectively as RITUXAN.

Our share of the pre-tax co-promotion profits on RITUXAN and GAZYVA and royalty revenue on the sale of OCREVUS resulted from an exchange of a license. As we do not have future performance obligations under the license or collaboration agreement, revenue is recognized as the underlying sales occur.

Revenue from anti-CD20 therapeutic programs consist of:

(i) our share of pre-tax profits and losses in the U.S. for RITUXAN and GAZYVA;

(ii) royalty revenue on sales of OCREVUS; and

(ii) other revenue from anti-CD20 therapeutic programs, which consists of our share of pre-tax co-promotion profits on RITUXAN in Canada.

Pre-tax co-promotion profits on RITUXAN and GAZYVA are calculated and paid to us by Genentech and the Roche Group. Pre-tax co-promotion profits consist of net sales to third-party customers less applicable costs to manufacture, third-party royalty expense, distribution, selling and marketing expense and joint development expense incurred by Genentech and the Roche Group. Our share of the pre-tax profits on RITUXAN and GAZYVA include estimates that are based on information received from Genentech and the Roche Group. These estimates are subject to change and actual results may differ.

We recognize royalty revenue on sales of OCREVUS based on our estimates from third party and market research data of OCREVUS sales occurring during the corresponding period. Differences between actual and estimated royalty revenue will be adjusted for in the period in which they become known, which is generally expected to be the following quarter.

In January 2022 we exercised our option with Genentech to participate in the joint development and commercialization of LUNSUMIO, which was later approved by the FDA in December 2022. Under our collaboration with Genentech, we will be entitled to co-promotion operating profits and losses in the U.S. for LUNSUMIO.

Prior to regulatory approval, we record our share of the expense incurred by the collaboration for the development of anti-CD20 products within research and development expense and pre-commercialization costs within selling, general and administrative expense in our consolidated statements of income. After an anti-CD20 product is approved, we record our share of the development and sales and marketing expense related to that product as a reduction of our share of pre-tax profits in revenue from anti-CD20 therapeutic programs.

Accordingly, Biogen recorded its share of the expense incurred in connection with the development of LUNSUMIO within research and development expense and its share of pre-commercialization costs within selling, general and administrative expense through December 2022, when regulatory approval was granted by the FDA. Beginning in January 2023, our share of any pre-tax profits and losses in the U.S. for LUNSUMIO will be reflected as a component of revenue from anti-CD20 therapeutic programs within our consolidated statements of income.

For additional information on our relationship with Genentech, please read *Note 19, Collaborative and Other Relationships,* to these consolidated financial statements.

Other Revenue

Contract Manufacturing and Other Revenue

We record contract manufacturing and other revenue primarily from amounts earned under contract manufacturing agreements. Revenue under contract manufacturing agreements is recognized when the customer obtains control of the product, which may occur at a point in time or over time depending on the terms and conditions of the agreement.

Royalty Revenue

Royalty revenue reflects the royalties we receive from net sales on products related to patents that we have out-licensed, as well as royalty revenue on biosimilar products from our collaboration arrangements with Samsung Bioepis Co., Ltd. (Samsung Bioepis). These arrangements resulted from an exchange of a license and utilize the sales and usage based royalty exception. Therefore, royalties received are recognized as the underlying sales occur.

Collaborative and Other Relationships

We also have a number of significant collaborative and other third-party relationships for revenue and for the development, regulatory approval, commercialization and marketing of certain of our products and product candidates. Where we are the principal on sales transactions with third parties, we recognize revenue, cost of sales and operating expense on a gross basis in their respective lines in our consolidated statements of income. Where we are not the principal on sales transactions with third parties, our share of the revenue, cost of sales and operating expense is recorded as a component of other revenue in our consolidated statements of income.

Our development and commercialization arrangements with Genentech, Eisai and Samsung Bioepis represent collaborative arrangements as each party is an active participant in one or more joint operating activities and is exposed to significant risks and rewards of these arrangements. These arrangements resulted from an exchange of a license and utilize the sales and usage based royalty exception, as applicable. Therefore, revenue relating to royalties or profit-sharing amounts received is recognized as the underlying sales occur.

For additional information on our collaboration arrangements with Genentech, Eisai and Samsung Bioepis, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

Fair Value Measurements

We have certain financial assets and liabilities recorded at fair value which have been classified as Level 1, 2 or 3 within the fair value hierarchy as described in the accounting standards for fair value measurements.

- *Level 1* — Fair values are determined utilizing quoted prices (unadjusted) in active markets for identical assets or liabilities that we have the ability to access;
- *Level 2* — Fair values are determined by utilizing quoted prices for identical or similar assets and liabilities in active markets or other market observable inputs such as interest rates, yield curves, foreign currency spot rates and option pricing valuation models; and
- *Level 3* — Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable.

The majority of our financial assets have been classified as Level 2. Our financial assets (which typically include our cash equivalents, marketable debt securities and certain of our marketable equity securities, derivative contracts and plan assets for deferred compensation) have been initially valued at the transaction price and subsequently valued, at the end of each reporting period, utilizing third-party pricing services or option pricing valuation models. The pricing services utilize industry standard valuation models, including both income and market-based approaches and observable market inputs to determine value. These observable market inputs include reportable trades, benchmark yields, credit spreads, broker/dealer quotes, bids, offers, current spot rates and other industry and economic events.

We validate the prices provided by our third-party pricing services by understanding the models used, obtaining market values from other pricing sources and analyzing pricing data in certain instances. The option pricing valuation models use assumptions within the model, including the term, stock price volatility, constant maturity risk-free interest rate and dividend yield. After completing our validation procedures, we did not adjust or override any fair value measurements provided by our pricing services as of December 31, 2022 and 2021.

Other Assets and Liabilities

The carrying amounts reflected in our consolidated balance sheets for current accounts receivable, due from anti-CD20 therapeutic programs, other current assets, accounts payable and accrued expense and other, approximate fair value due to their short-term maturities.

Cash and Cash Equivalents

We consider only those investments that are highly liquid, readily convertible to cash and that mature within three months from date of purchase to be cash equivalents. As of December 31, 2022 and 2021, cash equivalents were comprised of money market funds, commercial paper, overnight reverse repurchase agreements and other debt securities with maturities less than three months from the date of purchase.

Accounts Receivable

The majority of our accounts receivable arise from product sales and primarily represent amounts due from our wholesale and other third-party distributors, public hospitals, pharmacies and other government entities and have standard payment terms that generally require payment within 30 to 90 days.

We do not adjust our receivables for the effects of a significant financing component at contract inception if we expect to collect the receivables in one year or less from the time of sale.

We provide reserves against accounts receivable for estimated losses that may result from a customer's inability to pay. Amounts determined to be uncollectible are charged or written-off against the reserve.

Receivables from Samsung BioLogics

In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics Co., Ltd (Samsung BioLogics), which resulted in a receivable of approximately $1.3 billion in cash to be deferred over two payments of approximately $812.5 million due at the first anniversary and approximately $437.5 million due at the second anniversary of the closing of this transaction. The payments due to us from Samsung BioLogics have been recorded at their estimated fair values through the use of risk-adjusted discount rates. For additional information on the accounting for the sale of our equity interest in Samsung Bioepis and these receivables, please read *Note 3, Dispositions*, to these consolidated financial statements.

Concentration of Credit Risk

Financial instruments that potentially subject us to concentrations of credit risk include cash and cash equivalents, investments, derivatives and accounts receivable. We attempt to minimize the risks related to cash and cash equivalents and investments by investing in a broad and diverse range of financial instruments as previously defined by us. We have established guidelines related to credit ratings and maturities intended to safeguard principal balances and maintain liquidity. Our investment portfolio is maintained in accordance with our investment policy, which defines allowable investments, specifies credit quality standards and limits the credit exposure of any single issuer. We minimize credit risk resulting from derivative instruments by choosing only highly rated financial institutions as counterparties.

Concentrations of credit risk with respect to receivables, which are typically unsecured, are somewhat mitigated due to the wide variety of customers and markets using our products, as well as their dispersion across many different geographic areas. We monitor the financial performance and creditworthiness of our customers so that we can properly assess and respond to changes in their credit profile. We continue to monitor these conditions and assess their possible impact on our business.

Marketable Securities and Other Investments

Marketable Debt Securities

Available-for-sale marketable debt securities are recorded at fair market value and unrealized gains and losses are included in accumulated other comprehensive income (loss) in equity, net of related tax effects, unless the security has experienced a credit loss, we have determined that we have the intent to sell the security or we have determined that it is more likely than not that we will have to sell the security before its expected recovery. Realized gains and losses are reported in other (income) expense, net on a specific identification basis.

Marketable Equity Securities and Venture Capital Funds

Our marketable equity securities are recorded at fair market value and unrealized gains and losses are included in other (income) expense, net in our consolidated statements of income. Our marketable equity securities represent investments in publicly traded equity securities and are included in investments and other assets in our consolidated balance sheets.

Our investments in venture capital funds are recorded at net asset value, which approximates fair value, and unrealized gains and losses are included in other (income) expense, net in our consolidated statements of income. The underlying investments of the venture capital funds in which we invest are in equity securities of certain biotechnology companies and are included in investments and other assets in our consolidated balance sheets.

Non-Marketable Equity Securities

We also invest in equity securities of companies whose securities are not publicly traded and where fair value is not readily available. These investments are recorded using either the equity method of accounting or the cost minus impairment adjusted for observable price changes, depending on our ownership percentage and other factors that suggest we have significant influence. We monitor these investments to evaluate whether any increase or decline in their value has occurred, based on the implied value of recent company financings, public market prices of comparable companies and general market conditions. These investments are included in investments and other assets in our consolidated balance sheets.

Evaluating Marketable Debt Securities for Other-than-Temporary Impairments

We conduct periodic reviews to identify and evaluate each investment that has an unrealized loss, in accordance with the meaning of other-than-temporary impairment. An unrealized loss exists when the current fair value of an individual security is less than its amortized cost basis. Unrealized losses on available-for-sale debt securities that are determined to be temporary, and not related to credit loss, are recorded, net of tax, in accumulated other comprehensive income (loss).

For available-for-sale debt securities with unrealized losses, management performs an analysis to assess whether we intend to sell or whether we would more likely than not be required to sell the security before the expected recovery of the amortized cost basis. Where we intend to sell a security, or may be required to do so, the security's decline in fair value is deemed to be other-than-temporary and the full amount of the unrealized loss is reflected in earnings as an impairment loss.

Regardless of our intent to sell a security, we perform additional analysis on all securities with unrealized losses to evaluate losses associated with the creditworthiness of the security. Credit losses are identified where we do not expect to receive cash flows sufficient to recover the amortized cost basis of a security.

Equity Method of Accounting

In circumstances where we have the ability to exercise significant influence over the operating and financial policies of a company in which we have an investment, we utilize the equity method of accounting for recording investment activity. In assessing whether we exercise significant influence, we consider the nature and magnitude of our investment, the voting and protective rights we hold, any participation in the governance of the other company and other relevant factors such as the presence of a collaborative or other business relationship. Under the equity method of accounting, we record in our consolidated statements of income our share of income or loss of the other company. If our share of losses exceeds the carrying value of our investment, we will suspend recognizing additional losses and will continue to do so unless we commit to providing additional funding.

Inventory

Inventories are stated at the lower of cost or net realizable value with cost based on the first-in, first-out method. We classify our inventory costs as long-term when we expect to utilize the inventory beyond our normal operating cycle and include these costs in investments and other assets in our consolidated balance sheets. Inventory that can be used in either the production of clinical or commercial products is expensed as research and development costs when identified for use in a clinical manufacturing campaign.

Capitalization of Inventory Costs

We capitalize inventory costs associated with our products prior to regulatory approval, when, based on management's judgment, future commercialization is considered probable and the future economic benefit is

expected to be realized. We consider numerous attributes in evaluating whether the costs to manufacture a particular product should be capitalized as an asset. We assess the regulatory approval process and where the particular product stands in relation to that approval process, including any known safety or efficacy concerns, potential labeling restrictions and other impediments to approval. We evaluate our anticipated research and development initiatives and constraints relating to the product and the indication in which it will be used. We consider our manufacturing environment including our supply chain in determining logistical constraints that could hamper approval or commercialization. We consider the shelf life of the product in relation to the expected timeline for approval and we consider patent related or contract issues that may prevent or delay commercialization. We also base our judgment on the viability of commercialization, trends in the marketplace and market acceptance criteria. Finally, we consider the reimbursement strategies that may prevail with respect to the product and assess the economic benefit that we are likely to realize. We expense previously capitalized costs related to pre-approval inventory upon changes in such judgments, due to, among other potential factors, a denial or significant delay of approval by necessary regulatory bodies.

Obsolescence and Unmarketable Inventory

At each reporting period we review our inventories for excess or obsolescence and write-down obsolete or otherwise unmarketable inventory to its estimated net realizable value. If the actual net realizable value is less than that estimated by us, or if it is determined that inventory utilization will further diminish based on estimates of demand, additional inventory write-downs may be required. Additionally, our products are subject to strict quality control and monitoring that we perform throughout the manufacturing process. In the event that certain batches or units of product no longer meet quality specifications, we will record a charge to cost of sales to write-down any unmarketable inventory to its estimated net realizable value. In all cases, product inventory is carried at the lower of cost or its estimated net realizable value. Amounts written-down due to unmarketable inventory are charged to cost of sales in our consolidated statements of income.

Property, Plant and Equipment

Property, plant and equipment are carried at cost, subject to reviews for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. The cost of normal, recurring or periodic repairs and maintenance activities related to property, plant and equipment are expensed as incurred. The cost for planned major maintenance activities, including the related acquisition or construction of assets, is capitalized if the repair will result in future economic benefits.

Interest costs incurred during the construction of major capital projects are capitalized until the underlying asset is ready for its intended use, at which point the interest costs are amortized as depreciation expense over the life of the underlying asset. We also capitalize certain direct and incremental costs associated with the validation effort required for licensing by regulatory agencies of new manufacturing equipment for the production of a commercially approved drug. These costs primarily include direct labor and material and are incurred in preparing the equipment for its intended use. The validation costs are either amortized over the life of the related equipment or expensed as cost of sales when the product produced in the validation process is sold.

In addition, we capitalize certain internal use computer software development costs. If the software is an integral part of production assets, these costs are included in machinery and equipment and are amortized on a straight-line basis over the estimated useful lives of the related software, which generally range from three to five years.

We generally depreciate or amortize the cost of our property, plant and equipment using the straight-line method over the estimated useful lives of the respective assets, which are summarized as follows:

Asset Category	Useful Lives
Land	Not depreciated
Buildings	15 to 40 years
Leasehold Improvements	Lesser of the useful life or the term of the respective lease
Furniture and Fixtures	5 to 7 years
Machinery and Equipment	5 to 20 years
Computer Software and Hardware	3 to 5 years

When we dispose of property, plant and equipment, we remove the associated cost and accumulated depreciation from the related accounts in our consolidated balance sheets and include any resulting gain or loss in our consolidated statements of income.

Leases

We determine if an arrangement is a lease at contract inception. Operating lease assets represent our right to use an underlying asset for the lease term and operating lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease assets and liabilities are recognized at the commencement date of the lease based upon the present value of lease payments over the lease term. When determining the lease term, we include options to extend or terminate the lease when it is reasonably certain that they will be exercised.

We use the implicit rate when readily determinable and use our incremental borrowing rate when the implicit rate is not readily determinable based upon the information available at the commencement date in determining the present value of the lease payments. Our incremental borrowing rate is determined using a secured borrowing rate for the same currency and term as the associated lease.

The lease payments used to determine our operating lease assets may include lease incentives, stated rent increases and escalation clauses linked to rates of inflation when determinable and are recognized in our operating lease assets in our consolidated balance sheets. Our lease agreements may include both lease and non-lease components, which we account for as a single lease component when the payments are fixed. Variable payments included in the lease agreement are expensed as incurred. For certain equipment leases, such as vehicles, we apply a portfolio approach to effectively account for the operating lease assets and liabilities.

Our operating leases are reflected in operating lease assets, accrued expense and other and in long-term operating lease liabilities in our consolidated balance sheets. Lease expense for minimum lease payments is recognized on a straight-line basis over the lease term.

We also have real estate lease agreements which are subleased to third-parties. Operating leases for which we are the sublessor are included in accrued expense and other and other long-term liabilities in our consolidated balance sheets. We recognize sublease income on a straight-line basis over the lease term in our consolidated statements of income.

For additional information on our leases, please read *Note 12, Leases*, to these consolidated financial statements.

Intangible Assets

Our intangible assets consist of completed technology (comprised of acquired and in-licensed rights and patents, developed technology, out-licensed patents), in-process research and development (IPR&D) acquired after January 1, 2009, trademarks and trade names. Our intangible assets are recorded at fair value at the time of their acquisition and are stated in our consolidated balance sheets net of accumulated amortization and impairments, if applicable.

Intangible assets related to acquired and in-licensed rights and patents, developed technology and out-licensed patents are amortized over their estimated useful lives using the economic consumption method if anticipated future revenue can be reasonably estimated. The straight-line method is used when revenue cannot be reasonably estimated. Amortization is recorded within amortization and impairment of acquired intangible assets in our consolidated statements of income.

We amortize the intangible assets related to our marketed products using the economic consumption method based on revenue generated from the products underlying the related intangible assets. An analysis of the anticipated lifetime revenue of our marketed products is performed annually during our long-range planning cycle and whenever events or changes in circumstances would significantly affect anticipated lifetime revenue of the relevant products.

Intangible assets related to trademarks, trade names and IPR&D prior to commercialization are not amortized because they have indefinite lives; however, they are subject to review for impairment. We review our intangible assets with indefinite lives for impairment annually, as of October 31, and whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable.

Acquired In-process Research and Development (IPR&D)

Acquired IPR&D represents the fair value assigned to research and development assets that have not reached technological feasibility. The value assigned to acquired IPR&D is determined by estimating the costs to develop the acquired technology into commercially viable products, estimating the resulting revenue from the projects and discounting the net cash flow to present value. The revenue and cost projections used to value acquired IPR&D are, as applicable, reduced based on the probability of success of developing a new drug. Additionally, the projections consider the relevant market sizes and growth factors, expected trends in technology and the nature and expected timing of new product introductions by us and our competitors. The rates utilized to discount the net cash flow to present value are commensurate with the stage of development of the projects and uncertainties in the economic estimates used in the projections. Upon the acquisition of IPR&D, we complete an assessment of whether our acquisition constitutes the purchase of a single asset or a group of assets. We consider multiple factors in this assessment, including the nature of the technology acquired, the presence or absence of separate cash flow, the development process and stage of completion, quantitative significance and our rationale for entering into the transaction.

If we acquire a business as defined under applicable accounting standards, then the acquired IPR&D is capitalized as an intangible asset. If we acquire an asset or group of assets that do not meet the definition of a business under applicable accounting standards, then the acquired IPR&D is expensed on its acquisition date. Future costs to develop these assets are recorded to research and development expense in our consolidated statements of income as they are incurred.

When performing our impairment assessment, we calculate the fair value using the same methodology as described above. If the carrying value of our acquired IPR&D exceeds its fair value, then the intangible asset is written down to its fair value. Changes in estimates and assumptions used in determining the fair value of our acquired IPR&D could result in an impairment. Impairments are recorded within amortization and impairment of acquired intangible assets in our consolidated statements of income.

Goodwill

Goodwill represents the difference between the purchase price and the fair value of the identifiable tangible and intangible net assets when accounted for using the purchase method of accounting. Goodwill is not amortized, but is reviewed for impairment annually, as of October 31, and whenever events or changes in circumstances indicate that the carrying value of the goodwill may not be recoverable.

We compare the fair value of our reporting unit to its carrying value. If the carrying value of the net assets assigned to the reporting unit exceeds the fair value of our reporting unit, we would record an impairment loss equal to the difference. As described in *Note 25, Segment Information,* to these consolidated financial statements, we operate as one operating segment, which is our only reporting unit.

Impairment of Long-Lived Assets

Long-lived assets to be held and used, including property, plant and equipment, and definite-lived intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets or asset group may not be recoverable.

Determination of recoverability is based on an estimate of undiscounted future cash flow resulting from the use of the asset and its eventual disposition. In the event that such cash flow is not expected to be sufficient to recover the carrying amount of the assets, the assets are written-down to their fair values. Long-lived assets to be disposed of are carried at fair value less costs to sell.

Contingent Consideration

The consideration for our acquisitions often includes future payments that are contingent upon the occurrence of a particular event or events. We record an obligation for such contingent payments at fair value on the acquisition date. We estimate the fair value of contingent consideration obligations through valuation models that incorporate probability-adjusted assumptions related to the achievement of the milestones and thus likelihood of making related payments. We revalue our contingent consideration obligations each reporting period. Changes in the fair value of our contingent consideration obligations are recognized in our consolidated statements of income. Changes in the fair value of the contingent consideration obligations can result from changes to one or multiple inputs, including adjustments to the discount rates, changes in the amount or timing of expected expenditures associated with product development, changes in the amount or timing of cash flow and reserves associated with products upon

commercialization, changes in the assumed achievement or timing of any cumulative sales-based and development milestones, changes in the probability of certain clinical events and changes in the assumed probability associated with regulatory approval.

Discount rates in our valuation models represent a measure of the credit risk associated with settling the liability. The period over which we discount our contingent obligations is based on the current development stage of the product candidates, our specific development plan for that product candidate adjusted for the probability of completing the development step and when the contingent payments would be triggered. In estimating the probability of success, we utilize data regarding similar milestone events from several sources, including industry studies and our own experience. These fair value measurements are based on significant inputs not observable in the market. Significant judgment is employed in determining the appropriateness of these assumptions as of the acquisition date and for each subsequent period.

Derivative Instruments and Hedging Activities

Cash Flow and Fair Value Derivative Instruments

We recognize all derivative instruments as either assets or liabilities at fair value in our consolidated balance sheets. Changes in the fair value of our derivative instruments are recognized each period in current earnings or accumulated other comprehensive income (loss), depending on whether the derivative instrument is designated as part of a hedge transaction and, if so, the type of hedge transaction. We classify the cash flow from these instruments in the same category as the cash flow from the hedged items. We do not hold or issue derivative instruments for trading or speculative purposes.

We assess at inception and on an ongoing basis, whether the derivative instruments that are used in hedging transactions are highly effective in offsetting the changes in cash flow or fair values of the hedged items. We exclude the forward points portion of the derivative instruments used in a hedging transaction from the effectiveness test and record the fair value gain or loss related to this portion each period in our consolidated statements of income in the same line as the underlying hedged item. If we determine that a forecasted transaction is no longer probable of occurring, we discontinue hedge accounting for the affected portion of the hedge instrument, and any related unrealized gain or loss on the contract is recognized in current earnings.

Net Investment Derivative Instruments

Designated net investment hedges are recognized as either assets or liabilities, at fair value, in our consolidated balance sheets. We hedge the changes in the spot exchange rate in accumulated other comprehensive income (loss) and exclude changes to the forward rate and amortize the forward points in other (income) expense, net in our consolidated statements of income over the term of the contract. We classify the cash flow from these instruments in the same category as the cash flow from the hedged items.

Beginning in the second quarter of 2022 we no longer held net investment hedges as they were closed with the sale of our 49.9% equity interest in Samsung Bioepis in April 2022. For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to these consolidated financial statements.

For additional information on our derivative instruments and hedging activities, please read *Note 10, Derivative Instruments*, to these consolidated financial statements.

Translation of Foreign Currencies

The functional currency for most of our foreign subsidiaries is their local currency. For our non-U.S. subsidiaries that transact in a functional currency other than the U.S. dollar, assets and liabilities are translated at current rates of exchange at the balance sheet date. Income and expense items are translated at the average foreign currency exchange rates for the period. Adjustments resulting from the translation of the financial statements of our foreign operations into U.S. dollars are excluded from the determination of net income and are recorded in accumulated other comprehensive income (loss), as a separate component of equity. For subsidiaries where the functional currency of the assets and liabilities differ from the local currency, non-monetary assets and liabilities are translated at the rate of exchange in effect on the date assets were acquired while monetary assets and liabilities are translated at current rates of exchange as of the balance sheet date. Income and expense items are translated at the average foreign currency rates for the period. Translation adjustments of these subsidiaries are included in other (income) expense, net in our consolidated statements of income.

Royalty Cost of Sales

We make royalty payments to a number of third-parties under license or purchase agreements associated with our acquisition of intellectual property. These royalty payments are typically calculated as a percentage (royalty rate) of the sales of our products in a particular year. That royalty rate may remain constant, increase or decrease within each year based on the total amount of sales during the annual period. Each quarterly period, we estimate our total royalty obligation for the full year and recognize the proportional amount as cost of sales based on actual quarterly sales as a percentage of full year estimated sales. For example, if the level of net sales in any calendar year increases the royalty rate within the year, we will record our cost of sales at an even rate over the year, based on the estimated blended royalty rate.

Accounting for Share-Based Compensation

Our share-based compensation programs grant awards that have included stock options, restricted stock units that vest based on stock performance known as market stock units (MSUs), performance-vested restricted stock units that settle in cash (CSPUs), time-vested restricted stock units (RSUs), performance-vested restricted stock units that can be settled in cash or shares of our common stock (PUs) at the sole discretion of the Compensation and Management Development Committee of our Board of Directors, performance-vested stock units that settle in stock or cash (PSUs) and shares issued under our employee stock purchase plan (ESPP). Compensation expense is recognized based on the estimated fair value of the awards at grant date. We recognize compensation expense for the number of awards expected to vest after taking into consideration an estimate of award forfeitures over the requisite service period, which is generally the vesting period. Where awards are made with non-substantive vesting periods (for instance, where a portion of the award vests upon retirement eligibility), we estimate and recognize expense based on the period from the grant date to the date the employee becomes retirement eligible.

The fair values of our stock option grants are estimated as of the date of grant using a Black-Scholes option valuation model. The estimated fair values of the stock options are then expensed over the options' vesting periods.

The fair values of our MSUs are estimated using a lattice model with a Monte Carlo simulation. We apply an accelerated attribution method to recognize share-based compensation expense over the applicable service period for our MSUs. The probability of actual shares expected to be earned is considered in the grant date valuation, therefore the expense is not adjusted to reflect the actual units earned.

The fair values of our RSUs are based on the market value of our stock on the date of grant. Compensation expense for RSUs is recognized straight-line over the applicable service period.

We apply an accelerated attribution method to recognize share-based compensation expense when accounting for our CSPUs, PUs and PSUs that settle in cash, and the fair value of the liability is remeasured at the end of each reporting period through expected settlement. Compensation expense associated with CSPUs, PUs and PSUs that settle in cash are based upon the stock price and the number of units expected to be earned after assessing the probability that certain performance criteria will be met and the targeted payout level associated with the performance criteria expected to be achieved. Cumulative adjustments are recorded each quarter to reflect changes in the stock price and estimated outcome of the performance-related conditions until the date results are determined and settled. If performance criteria are not met or not expected to be met, any compensation expense previously recognized to date associated with the awards will be reversed.

The fair values of PSUs that settle in stock are based upon the stock price on the date of grant. Compensation expense is recognized for the number of units expected to be earned after assessing the probability that certain performance criteria will be met and the targeted payout level associated with the performance criteria expected to be achieved. Cumulative adjustments are recorded each quarter to reflect the estimated outcome of the performance-related conditions until the date results are determined and settled. If performance criteria are not met or not expected to be met, any compensation expense previously recognized to date associated with the awards will be reversed.

Research and Development Expense

Research and development expense consists of expenses incurred in performing research and development activities, which include compensation and benefits, facilities and overhead expense, clinical trial expense and fees paid to contract research organizations (CROs), clinical supply and manufacturing expense, write-offs of inventory that was previously capitalized in anticipation of product launch and determined to no longer be realizable and other outside expense and upfront fees and milestones paid to third-party collaborators. Research and development

expense is expensed as incurred. Upfront and milestone payments made to third-party collaborators are expensed as incurred up to the point of regulatory approval. Milestone payments made upon regulatory approval are capitalized and amortized over the remaining useful life of the related product. Payments we make for research and development services prior to the services being rendered are recorded as prepaid assets in our consolidated balance sheets and are expensed as the services are provided. We also accrue the costs of ongoing clinical trials associated with programs that have been terminated or discontinued for which there is no future economic benefit at the time the decision is made to terminate or discontinue the program.

From time to time, we enter into development agreements in which we share expenses with a collaborative partner. We record payments received from our collaborative partners for their share of the development costs as a reduction of research and development expense, except as discussed in *Note 19, Collaborative and Other Relationships,* to these consolidated financial statements. Expenses incurred by Genentech in the ongoing development of RITUXAN, GAZYVA and other products for which an initial indication has been approved are not recorded as research and development expense, but rather reduce our share of profits recorded as a component of revenue from anti-CD20 therapeutic programs.

For collaborations with commercialized products, if we are the principal, we record revenue and the corresponding operating costs in their respective line items in our consolidated statements of income. If we are not the principal, we record operating costs as a reduction of revenue.

Selling, General and Administrative Expense

Selling, general and administrative expense is primarily comprised of compensation and benefits associated with sales and marketing, finance, human resources, legal, information technology and other administrative personnel, outside marketing, advertising and legal expense and other general and administrative costs.

Advertising costs are expensed as incurred. For the years ended December 31, 2022, 2021 and 2020, advertising costs totaled $54.1 million, $98.7 million and $111.8 million, respectively.

Income Taxes

The provision for income taxes includes federal, state, local and foreign taxes. Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the estimated future tax consequences of temporary differences between the financial statement carrying amounts and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the year in which the temporary differences are expected to be recovered or settled. We evaluate the realizability of our deferred tax assets and establish a valuation allowance when it is more likely than not that all or a portion of deferred tax assets will not be realized. We recognize deferred taxes associated with our global intangible low-taxed income (GILTI) tax calculations.

The income tax consequences from the intra-entity transfers of inventory within our consolidated group, both current and deferred, are recorded as a prepaid tax or deferred charge and recognized through our consolidated statements of income when the inventory is sold to a third-party. The income tax consequences from the intra-entity transfer of assets other than inventory and associated changes to deferred taxes are recognized when the transfer occurs.

We account for uncertain tax positions using a “more likely than not” threshold for recognizing and resolving uncertain tax positions. We evaluate uncertain tax positions on a quarterly basis and consider various factors including, but not limited to, changes in tax law, the measurement of tax positions taken or expected to be taken in tax returns, the effective settlement of matters subject to audit, information obtained during in process audit activities and changes in facts or circumstances related to a tax position. We also accrue for potential interest and penalties related to unrecognized tax benefits in income tax (benefit) expense in our consolidated statements of income.

Contingencies

We are currently involved in various claims and legal proceedings. Loss contingency provisions are recorded if the potential loss from any claim, asserted or unasserted, or legal proceeding is considered probable and the amount can be reasonably estimated or a range of loss can be determined. These accruals represent management’s best estimate of probable loss. Disclosure also is provided when it is reasonably possible that a loss will be incurred or when it is reasonably possible that the amount of a loss will exceed the recorded provision. On a quarterly basis, we review the status of each significant matter and assess its potential financial exposure. Significant judgment is

required in both the determination of probability and as to whether an exposure is reasonably estimable. Because of uncertainties related to these matters, accruals are based only on the best information available at the time. As additional information becomes available, we reassess the potential liability related to pending claims and litigation and may change our estimates. Legal costs associated with legal proceedings are expensed when incurred.

Earnings per Share

Basic earnings per share is computed by dividing undistributed net income attributable to Biogen Inc. by the weighted-average number of common shares outstanding during the period. Diluted earnings per share is computed based on the treasury method by dividing net income by the weighted-average number of common shares outstanding during the period plus potentially dilutive common equivalent shares outstanding.

New Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies that we adopt as of the specified effective date. Unless otherwise discussed below, we do not believe that the adoption of recently issued standards have or may have a material impact on our consolidated financial statements or disclosures.

Fair Value Measurements

In June 2022 the FASB issued Accounting Standards Update (ASU) No. 2022-03, *Fair Value Measurement* (Topic 820): *Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions*. This standard clarifies that a contractual restriction on the sale of an equity security is not considered part of the unit of account of the equity security and, therefore, is not considered in measuring fair value. This standard becomes effective for us on January 1, 2024. We elected to early adopt this standard on a prospective basis during the third quarter of 2022. Upon adoption, we recorded an immaterial amount in other (income) expense, net in our consolidated statements of income, as a result of removing the impact of the remaining contractual sale restrictions from the fair value measurement of certain shares in Sage Therapeutics, Inc. (Sage).

Income Taxes

In December 2019 the FASB issued ASU No. 2019-12, *Income Taxes* (Topic 740): *Simplifying the Accounting for Income Taxes*. This standard removes certain exceptions to the general principles in Topic 740 and simplifies certain other aspects of the accounting for income taxes. This standard became effective for us on January 1, 2021, and did not have a material impact on our consolidated financial statements and related disclosures.

Note 2: Acquisitions

BIIB118 Acquisition

In March 2020 we acquired BIIB118 (CK1 inhibitor) for the potential treatment of patients with behavioral and neurological symptoms across various psychiatric and neurological diseases from Pfizer Inc. (Pfizer). In connection with this acquisition, we made an upfront payment of $75.0 million to Pfizer, which was accounted for as an asset acquisition and recorded as acquired IPR&D in our consolidated statements of income for the year ended December 31, 2020. **In 2022 we discontinued further development of BIIB118 based on the decision by management as part of its strategic review process.**

Note 3: Dispositions

Sale of Joint Venture Equity Interest in Samsung Bioepis

In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics. Under the terms of this transaction, we received approximately $1.0 billion in cash at closing and expect to receive approximately $1.3 billion in cash to be deferred over two payments of approximately $812.5 million due at the first anniversary and approximately $437.5 million due at the second anniversary of the closing of this transaction.

Prior to the sale, the carrying value of our investment in Samsung Bioepis totaled $581.6 million. For the year ended December 31, 2022, we recognized a pre-tax gain of approximately $1.5 billion related to this transaction, which was recorded in other (income) expense, net in our consolidated statements of income. This pre-tax gain included reclassifications from accumulated other comprehensive income (loss) to net income of approximately $58.9 million in cumulative translation losses, partially offset by approximately $57.0 million in gains resulting from the termination of our net investment hedge.

We have concluded that the divestment of Samsung Bioepis does not meet the criteria to be reported as discontinued operations in our consolidated financial statements, as our decision to divest this business does not represent a strategic shift that will have a major effect on our operations and financial results.

We elected the fair value option and measured the payments due to us from Samsung BioLogics at fair value. As of December 31, 2022, the estimated fair values of the first and second payments using risk-adjusted discount rates of 5.7% and 5.9%, respectively, were approximately $798.8 million and $405.4 million, respectively. These payments have been classified as level 3 measurements and are reflected in other current assets and investments and other assets, respectively, in our consolidated balance sheets.

For the year ended December 31, 2022, we recognized a gain of approximately $10.7 million and a loss of approximately $1.4 million to reflect the changes in fair value related to our first and second payments, respectively. These changes were recorded in other (income) expense, net in our consolidated statements of income.

As part of this transaction, we are also eligible to receive up to an additional $50.0 million upon the achievement of certain commercial milestones. Our policy for contingent payments of this nature is to recognize the payments in the period that they become realizable, which is generally the same period in which the payments are earned.

If any payments due to us remain outstanding after the second anniversary of the closing of this transaction, we may elect to receive shares of Samsung BioLogics common stock at a 5.0% discount in lieu of a cash payment for the remaining amount due. Currently, we believe that the likelihood of Samsung BioLogics failing to make timely payments to us for the amounts due is remote.

Additionally, for the year ended December 31, 2022, we recorded a discrete tax expense of approximately $257.9 million related to this transaction, which is reflected in income tax (benefit) expense in our consolidated statements of income.

Note 4: Restructuring

2022 Cost Saving Initiatives

In December 2021 and May 2022 we announced our plans to implement a series of cost-reduction measures during 2022. These savings are being achieved through a number of initiatives, including reductions to our workforce, the substantial elimination of our commercial ADUHELM infrastructure, the consolidation of certain real estate locations and operating efficiency gains across our selling, general and administrative and research and development functions.

Under these initiatives, we estimate we will incur total restructuring charges of approximately $131.0 million, primarily related to severance. These amounts were substantially incurred during 2022. As of December 31, 2022, approximately $35.9 million remained in our restructuring reserve and payments are expected to be made through 2026.

For the year ended December 31, 2022, we recognized approximately $131.1 million of net pre-tax restructuring charges related to our 2022 cost saving initiatives, of which approximately $112.6 million consisted of employee severance costs. These costs were recorded in restructuring charges in our consolidated statements of income. Our restructuring reserve is included in accrued expense and other in our consolidated balance sheets.

In September 2022 we entered into an agreement to partially terminate a portion of our lease located at 300 Binney Street, Cambridge, MA (300 Binney Street), as well as to reduce the lease term for the majority of the remaining space. This resulted in a gain of approximately $5.3 million, which was recorded within restructuring charges in our consolidated statements of income for the year ended December 31, 2022. For additional information on our 300 Binney Street lease modification, please read *Note 12, Leases*, to these consolidated financial statements.

Following an evaluation of our current capacity needs, in March 2022 we ceased using a patient services office space in Durham, NC. Our decision to cease use of the facility resulted in the immediate expense of certain leasehold improvements and other assets at this facility. As a result, we recognized approximately $10.4 million of accelerated depreciation expense, which was recorded in restructuring charges in our consolidated statements of income for the year ended December 31, 2022. In May 2022 we entered into a lease assignment agreement whereby we assigned our remaining lease obligations to an external third party. As a result of the lease assignment, we derecognized the related operating lease obligation and right-of-use asset during the second quarter of 2022.

For the year ended December 31, 2022, we recognized other restructuring costs of approximately $13.2 million, which were recorded in restructuring charges in our consolidated statements of income. Other restructuring costs include items such as facility closure costs, employee non-severance expense, asset write-offs and other costs.

The following table summarizes the charges and spending related to our 2022 workforce reductions for the year ended December 31, 2022:

(In millions)	Total
Restructuring reserve, December 31, 2021	$ —
Expense	112.6
Payment	(78.0)
Foreign currency and other adjustments	1.3
Restructuring reserve, December 31, 2022	$ 35.9

Note 5: Revenue

Product Revenue

Revenue by product are summarized as follows:

	For the Years Ended December 31,								
	2022			2021			2020		
(In millions)	United States	Rest of World	Total	United States	Rest of World	Total	United States	Rest of World	Total
Multiple Sclerosis (MS):									
TECFIDERA	$ 417.7	$ 1,026.2	$ 1,443.9	$ 680.6	$ 1,271.3	$ 1,951.9	$ 2,677.7	$ 1,163.4	$ 3,841.1
VUMERITY[1]	521.3	32.1	553.4	408.9	1.5	410.4	64.3	—	64.3
Total Fumarate	939.0	1,058.3	1,997.3	1,089.5	1,272.8	2,362.3	2,742.0	1,163.4	3,905.4
AVONEX	649.2	324.3	973.5	830.2	378.5	1,208.7	1,083.4	408.5	1,491.9
PLEGRIDY	148.4	183.5	331.9	152.9	204.5	357.4	190.1	195.5	385.6
Total Interferon	797.6	507.8	1,305.4	983.1	583.0	1,566.1	1,273.5	604.0	1,877.5
TYSABRI	1,123.4	907.5	2,030.9	1,142.2	920.9	2,063.1	1,096.8	849.3	1,946.1
FAMPYRA	—	96.6	96.6	—	105.2	105.2	—	103.1	103.1
Subtotal: MS	2,860.0	2,570.2	5,430.2	3,214.8	2,881.9	6,096.7	5,112.3	2,719.8	7,832.1
Spinal Muscular Atrophy:									
SPINRAZA	600.2	1,193.3	1,793.5	587.9	1,317.2	1,905.1	787.8	1,264.3	2,052.1
Biosimilars:									
BENEPALI	—	441.0	441.0	—	498.3	498.3	—	481.6	481.6
IMRALDI	—	224.5	224.5	—	233.4	233.4	—	216.3	216.3
FLIXABI	—	81.3	81.3	—	99.4	99.4	—	97.9	97.9
BYOOVIZ[2]	4.3	—	4.3	—	—	—	—	—	—
Subtotal: Biosimilars	4.3	746.8	751.1	—	831.1	831.1	—	795.8	795.8
Other:									
FUMADERM	—	8.2	8.2	—	11.0	11.0	—	12.2	12.2
ADUHELM	4.8	—	4.8	3.0	—	3.0	—	—	—
Total product revenue	$ 3,469.3	$ 4,518.5	$ 7,987.8	$ 3,805.7	$ 5,041.2	$ 8,846.9	$ 5,900.1	$ 4,792.1	$ 10,692.2

[1] VUMERITY became commercially available in the E.U. during the fourth quarter of 2021.
[2] BYOOVIZ launched in the U.S. in June 2022 and became commercially available during the third quarter of 2022.

We recognized revenue from two wholesalers accounting for 26.8% and 11.1% of gross product revenue in 2022, 28.8% and 10.1% of gross product revenue in 2021 and 30.5% and 15.3% of gross product revenue in 2020, respectively.

As of December 31, 2022, two wholesale distributors individually accounted for approximately 22.7% and 10.9% of net accounts receivable associated with our product sales, as compared to 21.9% and 10.2% as of December 31, 2021, respectively.

An analysis of the change in reserves for discounts and allowances is summarized as follows:

	December 31, 2022			
(In millions)	Discounts	Contractual Adjustments	Returns	Total
Beginning balance	$ 137.7	$ 759.6	$ 38.0	$ 935.3
Current provisions relating to sales in current year	666.6	2,715.5	12.3	3,394.4
Adjustments relating to prior years	(2.8)	1.4	(7.2)	(8.6)
Payments/credits relating to sales in current year	(514.9)	(2,060.7)	(1.2)	(2,576.8)
Payments/credits relating to sales in prior years	(132.8)	(558.1)	(18.4)	(709.3)
Ending balance	$ 153.8	$ 857.7	$ 23.5	$ 1,035.0

	December 31, 2021			
(In millions)	Discounts	Contractual Adjustments	Returns	Total
Beginning balance	$ 141.4	$ 1,093.0	$ 41.6	$ 1,276.0
Current provisions relating to sales in current year	736.7	2,948.7	15.2	3,700.6
Adjustments relating to prior years	(4.0)	(96.1)	(3.3)	(103.4)
Payments/credits relating to sales in current year	(599.3)	(2,283.1)	(0.4)	(2,882.8)
Payments/credits relating to sales in prior years	(137.1)	(902.9)	(15.1)	(1,055.1)
Ending balance	$ 137.7	$ 759.6	$ 38.0	$ 935.3

	December 31, 2020			
(In millions)	Discounts	Contractual Adjustments	Returns	Total
Beginning balance	$ 131.1	$ 1,027.3	$ 40.5	$ 1,198.9
Current provisions relating to sales in current year	774.7	3,308.8	19.0	4,102.5
Adjustments relating to prior years	(1.0)	(54.0)	1.3	(53.7)
Payments/credits relating to sales in current year	(635.1)	(2,426.1)	—	(3,061.2)
Payments/credits relating to sales in prior years	(128.3)	(763.0)	(19.2)	(910.5)
Ending balance	$ 141.4	$ 1,093.0	$ 41.6	$ 1,276.0

The total reserves above, which are included in our consolidated balance sheets, are summarized as follows:

	As of December 31,	
(In millions)	2022	2021
Reduction of accounts receivable	$ 143.4	$ 133.2
Component of accrued expense and other	891.6	802.1
Total revenue-related reserves	$ 1,035.0	$ 935.3

Revenue from Anti-CD20 Therapeutic Programs

Revenue from anti-CD20 therapeutic programs is summarized in the table below. For purposes of this footnote, we refer to RITUXAN and RITUXAN HYCELA collectively as RITUXAN.

	For the Years Ended December 31,		
(In millions)	2022	2021	2020
Royalty revenue on sales of OCREVUS	$ 1,136.3	$ 991.7	$ 845.4
Biogen's share of pre-tax profits in the U.S. for RITUXAN and GAZYVA	547.0	647.7	1,080.2
Other revenue from anti-CD20 therapeutic programs	17.2	19.1	52.2
Total revenue from anti-CD20 therapeutic programs	$ 1,700.5	$ 1,658.5	$ 1,977.8

Approximately 16.7%, 15.1% and 14.7% of our total revenue in 2022, 2021 and 2020, respectively, was derived from our collaboration arrangements with Genentech. For additional information on our collaboration

arrangements with Genentech, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

Other Revenue

Other revenue consists of royalty revenue and contract manufacturing and other revenue and is summarized as follows:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Contract manufacturing and other revenue	$ 417.7	$ 427.7	$ 719.1
Royalty revenue	67.4	48.6	55.5
Total other revenue	$ 485.1	$ 476.3	$ 774.6

Contract Manufacturing and Other Revenue

Contract manufacturing and other revenue primarily reflects amounts earned under contract manufacturing agreements with our strategic customers.

During the third quarter of 2019, we amended our agreement with a contract manufacturing customer pursuant to which we licensed certain of our manufacturing-related intellectual property to the customer. In the second quarter of 2020, the customer received regulatory approval for its product that is being manufactured using certain of our manufacturing-related intellectual property. As a result we were entitled to $500.0 million in a series of three payments. The first payment became due upon a regulatory approval of such product and was received during the second quarter of 2020. The second payment became due upon the first anniversary of the regulatory approval and was received during the second quarter of 2021. The third payment became due upon the second anniversary of the regulatory approval and was received during the second quarter of 2022.

Contract manufacturing and other revenue for the year ended December 31, 2020, reflects $346.2 million related to the delivery of the license for certain of our manufacturing-related intellectual property under the amended agreement, as discussed above, and the performance of manufacturing product supply services for such customer. We allocated the remaining $153.8 million of the $500.0 million transaction price to the performance of manufacturing product supply services for the customer, which we expect to perform through 2026. The value allocated to the manufacturing services was based on expected demand for supply and the fair value of comparable manufacturing and development services.

Royalty Revenue

Royalty revenue reflects the royalties we receive from net sales on products related to patents that we have out-licensed, as well as royalty revenue on biosimilar products from our collaboration arrangements with Samsung Bioepis.

For additional information on our collaboration arrangements with Samsung Bioepis, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

Note 6: Inventory

The components of inventory are summarized as follows:

(In millions)	As of December 31, 2022	2021
Raw materials	$ 413.2	$ 349.6
Work in process[1]	751.9	814.0
Finished goods	200.4	187.9
Total inventory	$ 1,365.5	$ 1,351.5
Balance Sheet Classification:		
Inventory	$ 1,344.4	$ 1,351.5
Investments and other assets	21.1	—
Total inventory	$ 1,365.5	$ 1,351.5

[1] Work in process inventory as of December 31, 2022, includes approximately $89.8 million related to LEQEMBI.

Long-term inventory is included in investments and other assets in our consolidated balance sheets.

Inventory amounts written down as a result of excess, obsolescence or unmarketability are charged to cost of sales, and totaled $336.2 million, $167.6 million and $26.6 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Inventory Write-Offs

In April 2022 the Centers for Medicare and Medicaid Services (CMS) released the final National Coverage Decision (NCD) for the class of anti-amyloid treatments in Alzheimer's disease, including ADUHELM. The final NCD confirmed coverage with evidence development, in which patients with Medicare can only access treatment if they are part of an approved clinical trial. We expect that this decision will reduce future demand for ADUHELM to a minimal level. During the first quarter of 2022 we wrote-off approximately $275.0 million of inventory related to ADUHELM, as a result of this CMS decision, which was recognized in cost of sales within our consolidated statements of income for the year ended December 31, 2022. We have recognized approximately $136.0 million related to Eisai's 45.0% share of these charges in collaboration profit (loss) sharing within our consolidated statements of income for the year ended December 31, 2022.

During the fourth quarter of 2021 we wrote-off approximately $120.0 million of inventory in excess of forecasted demand related to ADUHELM, which was recognized in cost of sales within our consolidated statements of income for the year ended December 31, 2021. We have recognized approximately $59.0 million related to Eisai's 45.0% share of these charges in collaboration profit (loss) sharing within our consolidated statements of income for the year ended December 31, 2021.

As of December 31, 2022, the carrying value of our ADUHELM inventory was immaterial. As of December 31, 2021, we had approximately $223.0 million of ADUHELM inventory. For additional information please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

Note 7: Intangible Assets and Goodwill

Intangible Assets

Intangible assets, net of accumulated amortization, impairment charges and adjustments are summarized as follows:

		As of December 31, 2022			As of December 31, 2021		
(In millions)	Estimated Life	Cost	Accumulated Amortization	Net	Cost	Accumulated Amortization	Net
Completed technology	4-28 years	$ 7,415.3	$ (5,629.2)	$ 1,786.1	$ 7,413.1	$ (5,388.5)	$ 2,024.6
In-process research and development	Indefinite until commercialization	—	—	—	132.7	—	132.7
Trademarks and trade names	Indefinite	64.0	—	64.0	64.0	—	64.0
Total intangible assets		$ 7,479.3	$ (5,629.2)	$ 1,850.1	$ 7,609.8	$ (5,388.5)	$ 2,221.3

Amortization and Impairments

Amortization and impairment of acquired intangible assets totaled $365.9 million, $881.3 million and $464.8 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Amortization of acquired intangible assets, excluding impairment charges, totaled $246.3 million, $252.0 million and $255.1 million for the years ended December 31, 2022, 2021 and 2020, respectively. The decrease in amortization of acquired intangible assets, excluding impairment charges, over the three years was primarily due to a lower rate of amortization for acquired intangible assets.

For the year ended December 31, 2022, amortization and impairment of acquired intangible assets reflects the impact of a $119.6 million impairment charge related to vixotrigine (BIIB074) for the potential treatment of diabetic painful neuropathy (DPN).

For the year ended December 31, 2021, amortization and impairment of acquired intangible assets reflects the impact of a $365.0 million impairment charge related to BIIB111 (timrepigene emparvovec), a $220.0 million impairment charge related to BIIB112 (cotoretigene toliparvovec) and a $44.3 million impairment charge related to vixotrigine for the potential treatment of trigeminal neuralgia (TGN).

For the year ended December 31, 2020, amortization and impairment of acquired intangible assets reflects the impact of a $115.0 million impairment charge related to BIIB111, a $75.4 million impairment charge related to BIIB054 (cinpanemab) and a $19.3 million impairment charge related to one of our other IPR&D intangible assets.

Completed Technology

Completed technology primarily relates to our other marketed products and programs acquired through asset acquisitions, licenses and business combinations.

IPR&D Related to Business Combinations

IPR&D represents the fair value assigned to research and development assets that we acquired as part of a business combination and had not yet reached technological feasibility at the date of acquisition. Included in IPR&D balances are adjustments related to foreign currency exchange rate fluctuations. We review amounts capitalized as acquired IPR&D for impairment annually, as of October 31, and whenever events or changes in circumstances indicate to us that the carrying value of the assets might not be recoverable. The carrying value associated with our IPR&D assets as of December 31, 2021, relates to the IPR&D programs we acquired in connection with our acquisition of Convergence Pharmaceuticals Holdings Ltd. (Convergence). As of December 31, 2022, as a result of our decision to discontinue development of vixotrigine, we recognized an impairment charge reducing the remaining book value to zero.

Vixotrigine

In connection with our acquisition of Convergence, we recognized $424.6 million of acquired IPR&D intangible assets for vixotrigine. In the periods following our acquisition of vixotrigine, there were numerous delays in the initiation of Phase 3 studies for the potential treatment of TGN and for the potential treatment of DPN, another form of neuropathic pain. We engaged with the FDA regarding the design of the potential Phase 3 studies of vixotrigine for the potential treatment of TGN and DPN and performed an additional clinical trial of vixotrigine, which was completed during 2022.

The performance of this additional clinical trial delayed the initiation of the Phase 3 studies of vixotrigine for the potential treatment of TGN, and, as a result, we recognized an impairment charge of $44.3 million related to vixotrigine for the potential treatment of TGN during the first quarter of 2021.

During the fourth quarter of 2022 we discontinued further development of vixotrigine based on regulatory, development and commercialization challenges. For the year ended December 31, 2022, we recognized an impairment charge of approximately $119.6 million related to vixotrigine for the potential treatment of DPN, reducing the remaining book value of this IPR&D intangible asset to zero. We also adjusted the value of our contingent consideration obligations related to this asset resulting in a pre-tax gain of approximately $209.1 million, which was recognized in (gain) loss on fair value remeasurement of contingent consideration within our consolidated statements of income.

BIIB111 and BIIB112

In connection with our acquisition of Nightstar Therapeutics plc, we recognized $480.0 million and $220.0 million of acquired IPR&D intangible assets for BIIB111 and BIIB112, respectively. During the fourth quarter of 2020 we recognized an impairment charge of $115.0 million related to BIIB111 as a result of third-party manufacturing delays that impacted the timing and increased the costs associated with advancing BIIB111 through Phase 3 development.

During the second quarter of 2021 we announced that our Phase 3 STAR study of BIIB111 and our Phase 2/3 XIRIUS study of BIIB112 did not meet their primary endpoints. In the third quarter of 2021 we suspended further development on these programs based on the decision by management as part of its strategic review process. For the year ended December 31, 2021, we recognized an impairment charge of $365.0 million related to BIIB111 and an impairment charge of $220.0 million related to BIIB112, reducing the remaining book values of these IPR&D intangible assets to zero.

In addition, as a result of our decision to suspend further development of BIIB111 and BIIB112, we recorded charges of approximately $39.1 million during the third quarter of 2021 related to our manufacturing arrangements and other costs that we expect to incur as a result of suspending these programs. These charges were recognized in research and development expense in our consolidated statements of income for the year ended December 31, 2021.

BIIB054

In connection with our acquisition of Biogen International Neuroscience GmbH (BIN), we recognized a $110.9 million acquired IPR&D intangible asset. In February 2021 we announced that we discontinued development of BIIB054 as a potential treatment of Parkinson's disease as our Phase 2 SPARK study did not meet its primary or secondary endpoints. Although we made this determination in February 2021, it was based on conditions that existed as of December 31, 2020. As a result, we recognized an impairment charge of approximately $75.4 million during the fourth quarter of 2020 to reduce the fair value of the related IPR&D intangible asset to zero.

The IPR&D impairment charges were included in amortization and impairment of acquired intangible assets and the gain resulting from the remeasurement of our contingent consideration obligation was recorded in (gain) loss on fair value remeasurement of contingent consideration in our consolidated statements of income. The fair value of the intangible assets and contingent consideration obligations were based on a probability-adjusted discounted cash flow calculation using Level 3 fair value measurements and inputs including estimated revenue, costs and probabilities of success.

Estimated Future Amortization of Intangible Assets

The estimated future amortization of finite-lived intangible assets for the next five years is expected to be as follows:

(In millions)	As of December 31, 2022
2023	$ 215.0
2024	195.0
2025	190.0
2026	175.0
2027	165.0

Goodwill

The following table provides a roll forward of the changes in our goodwill balance:

	As of December 31,	
(In millions)	2022	2021
Goodwill, beginning of year	$ 5,761.1	$ 5,762.1
Other	(12.1)	(1.0)
Goodwill, end of year	$ 5,749.0	$ 5,761.1

As of December 31, 2022, we had no accumulated impairment losses related to goodwill. Other includes adjustments related to foreign currency exchange rate fluctuations.

Note 8: Fair Value Measurements

The tables below present information about our assets and liabilities that are regularly measured and carried at fair value and indicate the level within the fair value hierarchy of the valuation techniques we utilized to determine such fair value:

	As of December 31, 2022			
(In millions)	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents	$ 2,847.6	$ —	$ 2,847.6	$ —
Marketable debt securities:				
Corporate debt securities	1,231.6	—	1,231.6	—
Government securities	810.3	—	810.3	—
Mortgage and other asset backed securities	137.3	—	137.3	—
Marketable equity securities	791.1	791.1	—	—
Other current assets:				
Receivable from Samsung BioLogics[1]	798.8	—	—	798.8
Other assets:				
Derivative contracts	63.0	—	63.0	—
Plan assets for deferred compensation	32.8	—	32.8	—
Receivable from Samsung BioLogics[1]	405.4	—	—	405.4
Total	$ 7,117.9	$ 791.1	$ 5,122.6	$ 1,204.2
Liabilities:				
Derivative contracts	$ 26.0	$ —	$ 26.0	$ —
Total	$ 26.0	$ —	$ 26.0	$ —

[1] Represents the fair value of the current and non-current payments due from Samsung BioLogics as a result of the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics during the second quarter of 2022, for which we elected the fair value option. For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to these consolidated financial statements.

	As of December 31, 2021			
(In millions)	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents	$ 1,632.2	$ —	$ 1,632.2	$ —
Marketable debt securities:				
Corporate debt securities	1,108.2	—	1,108.2	—
Government securities	1,192.7	—	1,192.7	—
Mortgage and other asset backed securities	132.2	—	132.2	—
Marketable equity securities	1,048.5	181.7	866.8	—
Derivative contracts	80.9	—	80.9	—
Plan assets for deferred compensation	33.4	—	33.4	—
Total	$ 5,228.1	$ 181.7	$ 5,046.4	$ —
Liabilities:				
Derivative contracts	$ 10.8	$ —	$ 10.8	$ —
Contingent consideration obligations	209.1	—	—	209.1
Total	$ 219.9	$ —	$ 10.8	$ 209.1

The fair value of Level 2 instruments classified as cash equivalents and marketable debt securities was determined through third-party pricing services. In the third quarter of 2022 we elected to early adopt ASU 2022-03 on a prospective basis, which resulted in removing the impact of contractual sale restrictions from the fair value measurement of our remaining Sage common stock subject to certain holding period restrictions. As of December 31, 2022, our entire investment in the common stock of Sage was classified as a Level 1 measurement. Prior to the adoption of this standard, the fair value of Level 2 instruments classified as marketable equity securities represented a portion of our investment in the common stock of Sage and was valued using an option pricing valuation model.

Our investments in the common stock of Sangamo Therapeutics, Inc. (Sangamo) and Denali Therapeutics Inc. (Denali) had holding period restrictions that expired during 2022. As of December 31, 2022, the fair values of our investments in Sangamo and Denali common stock were classified as Level 1 measurements. Prior to the expiration of these holding period restrictions the investments were classified as Level 2 measurements.

Although the contractual holding period restrictions on our investments in Denali, Sage and Sangamo have expired, our ability to liquidate these investments may be limited by the size of our interest, the volume of market related activity, our concentrated level of ownership and potential restrictions resulting from our status as a collaborator. Therefore, we may realize significantly less than the current value of such investments.

For additional information on our investments in Denali, Sangamo and Sage common stock, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

There have been no material impairments of our assets measured and carried at fair value as of December 31, 2022 and 2021. In addition, there have been no changes in valuation techniques as of December 31, 2022 and 2021.

For a description of our validation procedures related to prices provided by third-party pricing services and our option pricing valuation model, please read the *Fair Value Measurements section* within *Note 1, Summary of Significant Accounting Policies,* to these consolidated financial statements.

Level 3 Assets and Liabilities Held at Fair Value

The following table presents quantitative information, as of the dates indicated, about the valuation techniques and significant unobservable inputs used in the valuation of our level 3 financial assets and liabilities measured at fair value on a recurring basis:

	Quantitative Information about Level 3 Fair Value Measurements						
	Fair Value				Range	Weighted Average	
(In millions)	2022[1]	2021	Valuation Technique	Significant Unobservable Input(s)	2021	2022[1]	2021
Liabilities:							
Contingent consideration obligations	$ —	$ 209.1	Discounted cash flow	Discount rate	1.30%	— %	1.30 %
				Expected timing of achievement of development milestones	2023 to 2027	—	—

[1] During the year ended December 31, 2022, we discontinued the development of vixotrigine and as a result we adjusted the fair value of our contingent consideration obligations to zero.

The weighted average discount rates were calculated based on the relative fair value of our contingent consideration obligations. In addition, we apply various probabilities of technological and regulatory success to the valuation models to estimate the fair values of our contingent consideration obligations, which ranged from 10.9% to certain probability as of December 31, 2021.

There were no transfers of assets or liabilities into or out of Level 3 as of December 31, 2022 and 2021.

Contingent Consideration Obligations

In connection with our acquisitions of Convergence and BIN, we agreed to make additional payments based upon the achievement of certain milestone events. The following table provides a roll forward of the fair values of our contingent consideration obligations, which are classified as Level 3 measurements:

	As of December 31,	
(In millions)	**2022**	**2021**
Fair value, beginning of year	$ 209.1	$ 259.8
Changes in fair value	(209.1)	(50.7)
Fair value, end of year	$ —	$ 209.1

As of December 31, 2021, approximately $209.1 million of the fair value of our total contingent consideration obligations was reflected as a component of other long-term liabilities in our consolidated balance sheets. Changes in the fair values of our contingent consideration obligations are recorded in (gain) loss on fair value remeasurement of contingent consideration in our consolidated statements of income.

For the year ended December 31, 2022, the changes in fair value of our contingent consideration obligations were primarily due to the discontinuation of further development efforts related to vixotrigine for the potential treatment of TGN and DPN, resulting in a reduction of our contingent consideration obligations of approximately $195.4 million, and changes in the interest rates used to revalue our contingent consideration liabilities.

For the year ended December 31, 2021, the changes in fair value of our contingent consideration obligations were primarily due to reductions in the probability of technical and regulatory success and delays in the expected timing of the achievement of certain remaining developmental milestones related to our vixotrigine programs.

The fair values of the contingent consideration liabilities were based on a probability-adjusted discounted cash flow calculation using Level 3 fair value measurements and inputs. For additional information on the valuation techniques and inputs utilized in the valuation of our financial assets and liabilities, please read *Note 1, Summary of Significant Accounting Policies,* to these consolidated financial statements.

Convergence Pharmaceuticals Holdings Limited

In connection with our acquisition of Convergence in February 2015 we recorded a contingent consideration obligation of $274.5 million. As of December 31, 2021, the fair value of this contingent consideration obligation was $209.1 million. During the fourth quarter of 2022 we discontinued further development of vixotrigine based on regulatory, development and commercialization challenges. As a result, the fair value of the contingent consideration obligations related to Convergence has been adjusted to zero, resulting in a pre-tax gain of approximately $209.1 million for the year ended December 31, 2022. This pre-tax gain was recorded in (gain) loss on fair value remeasurement of contingent consideration within our consolidated statements of income.

Biogen International Neuroscience GmbH

In connection with our acquisition of BIN in December 2010 we recorded a contingent consideration obligation of $81.2 million. We discontinued further development of BIIB054 for the potential treatment of Parkinson's disease based on the results of a Phase 2 study of BIIB054. Additionally, during the third and fourth quarters of 2020 we discontinued other programs related to our acquisition of BIN for which we had immaterial contingent consideration obligations. As a result, the fair value of the contingent consideration obligations related to our acquisition of BIN was adjusted to zero, resulting in a gain of $101.5 million for the year ended December 31, 2020. This pre-tax gain was recorded in (gain) loss on fair value remeasurement of contingent consideration within our consolidated statements of income.

Nonrecurring Fair Value Measurements

For the year ended December 31, 2022, we recorded impairment charges of $119.6 million related to vixotrigine. As a result, the remaining book values associated with these programs were reduced to zero. For the year ended December 31, 2021, we recorded impairment charges of $365.0 million related to BIIB111 and $220.0 million related to BIIB112. As a result, the remaining book values associated with these programs were reduced to zero.

For additional information on our impairments for intangible assets, please read *Note 7, Intangible Assets and Goodwill*, to these consolidated financial statements.

Financial Instruments Not Carried at Fair Value

Other Financial Instruments

Due to the short-term nature of certain financial instruments, the carrying value reflected in our consolidated balance sheets for current accounts receivable, due from anti-CD20 therapeutic programs, other current assets, accounts payable and accrued expense and other, approximates fair value.

Debt Instruments

The fair values of our debt instruments, which are Level 2 liabilities, are summarized as follows:

	Fair Value As of December 31,	
(In millions)	**2022**	**2021**
3.625% Senior Notes due September 15, 2022[1]	$ —	$ 1,020.0
4.050% Senior Notes due September 15, 2025	1,699.9	1,895.2
2.250% Senior Notes due May 1, 2030	1,219.0	1,475.9
5.200% Senior Notes due September 15, 2045	1,033.2	1,463.0
3.150% Senior Notes due May 1, 2050	989.0	1,457.7
3.250% Senior Notes due February 15, 2051	469.1	692.9
Total	$ 5,410.2	$ 8,004.7

[1] In July 2022 we redeemed our 3.625% Senior Notes due September 15, 2022 in full. For additional information on the redemption, please read *Note 13, Indebtedness*, to these consolidated financial statements.

The fair values of each of our series of Senior Notes were determined through market, observable and corroborated sources. The changes in the fair values of our Senior Notes as of December 31, 2022, compared to 2021, are primarily related to increases in U.S. treasury yields used to value our Senior Notes since December 31, 2021. For additional information related to our Senior Notes, please read *Note 13, Indebtedness*, to these consolidated financial statements.

Note 9: Financial Instruments

The following table summarizes our financial assets with maturities of less than three months from the date of purchase included in cash and cash equivalents in our consolidated balance sheets:

	As of December 31,	
(In millions)	**2022**	**2021**
Commercial paper	$ 177.2	$ 247.6
Overnight reverse repurchase agreements	59.0	200.0
Money market funds	2,581.5	901.6
Short-term debt securities	29.9	283.0
Total	$ 2,847.6	$ 1,632.2

The carrying values of our commercial paper, including accrued interest, overnight reverse repurchase agreements, money market funds and short-term debt securities approximate fair value due to their short-term maturities.

Our marketable equity securities gains (losses) are recorded in other (income) expense, net in our consolidated statements of income. The following tables summarize our marketable debt and equity securities, classified as available for sale:

	As of December 31, 2022			
(In millions)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Marketable debt securities:				
Corporate debt securities:				
Current	$ 936.2	$ —	$ (4.9)	$ 931.3
Non-current	305.3	0.1	(5.1)	300.3
Government securities:				
Current	547.1	0.1	(5.0)	542.2
Non-current	271.4	—	(3.3)	268.1
Mortgage and other asset backed securities:				
Current	—	—	—	—
Non-current	139.1	0.1	(1.9)	137.3
Total marketable debt securities	$ 2,199.1	$ 0.3	$ (20.2)	$ 2,179.2
Marketable equity securities:				
Marketable equity securities, current	$ 1,133.8	$ —	$ (342.7)	$ 791.1
Total marketable equity securities	$ 1,133.8	$ —	$ (342.7)	$ 791.1

	As of December 31, 2021			
(In millions)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Marketable debt securities:				
Corporate debt securities:				
Current	$ 723.6	$ 0.1	$ (0.3)	$ 723.4
Non-current	385.4	0.2	(0.8)	384.8
Government securities:				
Current	817.0	—	(0.4)	816.6
Non-current	377.0	0.1	(1.0)	376.1
Mortgage and other asset backed securities:				
Current	1.1	—	—	1.1
Non-current	131.8	—	(0.7)	131.1
Total marketable debt securities	$ 2,435.9	$ 0.4	$ (3.2)	$ 2,433.1
Marketable equity securities:				
Marketable equity securities, current	$ 33.9	$ 9.9	$ —	$ 43.8
Marketable equity securities, non-current	1,133.1	151.0	(279.4)	1,004.7
Total marketable equity securities	$ 1,167.0	$ 160.9	$ (279.4)	$ 1,048.5

Summary of Contractual Maturities: Available-for-Sale Debt Securities

The estimated fair value and amortized cost of our marketable debt securities classified as available-for-sale by contractual maturity are summarized as follows:

	As of December 31,			
	2022		2021	
(In millions)	Estimated Fair Value	Amortized Cost	Estimated Fair Value	Amortized Cost
Due in one year or less	$ 1,473.5	$ 1,483.3	$ 1,541.1	$ 1,541.7
Due after one year through five years	694.4	703.7	868.2	870.2
Due after five years	11.3	12.1	23.8	24.0
Total marketable debt securities	$ 2,179.2	$ 2,199.1	$ 2,433.1	$ 2,435.9

The average maturity of our marketable debt securities classified as available-for-sale as of December 31, 2022 and 2021, was approximately 8 months and 10 months, respectively.

Proceeds from Marketable Debt Securities

The proceeds from maturities and sales of marketable debt securities and resulting realized gains and losses are summarized as follows:

	For the Years Ended December 31,		
(In millions)	2022	2021	2020
Proceeds from maturities and sales	$ 3,671.0	$ 3,405.4	$ 7,299.4
Realized gains	—	0.2	17.7
Realized losses	12.6	4.0	26.0

Realized losses for the year ended December 31, 2022, 2021 and 2020, primarily relate to sales of corporate bonds, agency mortgage-backed securities and other asset-backed securities.

Strategic Investments

As of December 31, 2022, our strategic investment portfolio comprised of investments totaling $846.0 million which are included in investments and other assets in our consolidated balance sheets. As of December 31, 2021, our strategic investment portfolio comprised of investments totaling $1,110.3 million, which are included in other current assets and investments and other assets in our consolidated balance sheets.

Our strategic investment portfolio includes investments in equity securities of certain biotechnology companies, which are reflected within our disclosures included in *Note 8, Fair Value Measurements*, to these consolidated financial statements, venture capital funds where the underlying investments are in equity securities of certain biotechnology companies and non-marketable equity securities.

The decrease in our strategic investment portfolio for the year ended December 31, 2022, was primarily due to a decrease in the fair value of our investments in Denali and Sangamo common stock.

For additional information on our investments in Denali, Sangamo, Sage and Ionis common stock, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

Note 10: Derivative Instruments

Foreign Currency Forward Contracts - Hedging Instruments

Due to the global nature of our operations, portions of our revenue and operating expense are recorded in currencies other than the U.S. dollar. The value of revenue and operating expense measured in U.S. dollars is therefore subject to changes in foreign currency exchange rates. We enter into foreign currency forward contracts and foreign currency options with financial institutions with the primary objective to mitigate the impact of foreign currency exchange rate fluctuations on our international revenue and operating expense.

Foreign currency forward contracts and foreign currency options in effect as of December 31, 2022 and 2021, had durations of 1 to 12 months and 1 to 15 months, respectively. These contracts have been designated as cash

flow hedges and unrealized gains and losses on the portion of these foreign currency forward contracts and foreign currency options that are included in the effectiveness test are reported in accumulated other comprehensive income (loss) (referred to as AOCI in the table below). Realized gains and losses of such contracts are recognized in revenue when the sale of product in the currency being hedged is recognized and in operating expense when the expense in the currency being hedged is recorded. We recognize all cash flow hedge reclassifications from accumulated other comprehensive income (loss) and fair value changes of excluded portions in the same line item in our consolidated statements of income that have been impacted by the hedged item.

The notional amount of foreign currency forward contracts and foreign currency options that were entered into to hedge forecasted revenue and operating expense is summarized as follows:

	Notional Amount As of December 31,	
(In millions)	2022	2021
Euro	$ 1,495.5	$ 1,828.0
British pound	162.8	166.2
Japanese yen	—	72.7
Canadian dollar	57.2	59.9
Total foreign currency forward contracts	$ 1,715.5	$ 2,126.8

The pre-tax portion of the fair value of these foreign currency forward contracts and foreign currency options that were included in accumulated other comprehensive income (loss) in total equity is summarized as follows:

	For the Years Ended December 31,		
(In millions)	2022	2021	2020
Unrealized gains	$ 29.9	$ 60.8	$ —
Unrealized (losses)	(21.3)	(7.0)	(212.5)
Net unrealized gains (losses)	$ 8.6	$ 53.8	$ (212.5)

We expect the net unrealized gains of approximately $8.6 million to be settled over the next 12 months, with any amounts in accumulated other comprehensive income (loss) to be reported as an adjustment to revenue or operating expense. We consider the impact of our and our counterparties' credit risk on the fair value of the contracts as well as the ability of each party to execute its contractual obligations. As of December 31, 2022 and 2021, credit risk did not materially change the fair value of our foreign currency forward contracts.

The following table summarizes the effect of foreign currency forward contracts designated as hedging instruments in our consolidated statements of income:

For the Years Ended December 31,							
Net Gains/(Losses) Reclassified from AOCI into Operating Income (in millions)				Net Gains/(Losses) Recognized in Operating Income (in millions)			
Location	2022	2021	2020	Location	2022	2021	2020
Revenue	$ 201.6	$ (60.0)	$ 18.3	Revenue	$ (8.6)	$ (8.4)	$ (9.9)
Operating expense	(5.5)	(0.8)	3.3	Operating expense	—	—	—

Interest Rate Contracts - Hedging Instruments

We have entered into interest rate lock contracts or interest rate swap contracts on certain borrowing transactions to manage our exposure to interest rate changes and to reduce our overall cost of borrowing.

Interest Rate Swap Contracts

In connection with the issuance of our 2.90% Senior Notes due September 15, 2020, we entered into interest rate swaps with an aggregate notional amount of $675.0 million, which were originally set to expire on September 15, 2020. The interest rate swap contracts were designated as hedges of the fair value changes in our 2.90% Senior Notes attributable to changes in interest rates. In May 2020 we settled our interest rate swap contracts, in conjunction with our early redemption of our 2.90% Senior Notes, resulting in a gain of approximately $3.3 million, which was recorded as a component of interest expense in our consolidated statements of income during the year ended December 31, 2020.

Net Investment Hedges - Hedging Instruments

In February 2012 we entered into a joint venture agreement with Samsung BioLogics establishing an entity, Samsung Bioepis, to develop, manufacture and market biosimilar products. In June 2018 we exercised our option under our joint venture agreement to increase our ownership percentage in Samsung Bioepis from approximately 5.0% to approximately 49.9%. The share purchase transaction was completed in November 2018 and, upon closing, we paid 759.5 billion South Korean won ($676.6 million) to Samsung BioLogics. Our investment in the equity of Samsung Bioepis related to this transaction was exposed to the currency fluctuations in the South Korean won.

In order to mitigate these currency fluctuations between the U.S. dollar and South Korean won, we entered into foreign currency forward contracts. These contracts were designated as net investment hedges. In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics and closed these foreign currency forward contracts. Upon completing this sale, the cumulative gains on our net investment hedges of $57.0 million were reclassified from accumulated other comprehensive income (loss) and reflected within the total pre-tax gain recognized from the sale, which was recorded in other (income) expense, net in our consolidated statements of income. For additional information on the sale of our equity interest in Samsung Bioepis please read *Note 3, Dispositions*, to these consolidated financial statements.

Prior to the sale of our 49.9% equity interest in Samsung Bioepis, we recognized changes in the spot exchange rate of these foreign currency forward contracts in accumulated other comprehensive income (loss). The pre-tax portion of the fair value of these foreign currency forward contracts that were included in accumulated other comprehensive income (loss) in total equity reflected net gains of $10.6 million as of December 31, 2021. We excluded fair value changes related to the forward rate from our hedging relationship and amortized the forward points in other (income) expense, net in our consolidated statements of income over the term of the contract. The pre-tax portion of the fair value of the forward points that were included in accumulated other comprehensive income (loss) in total equity reflected net losses of $3.6 million as of December 31, 2021.

The following table summarizes the effect of our net investment hedges in our consolidated financial statements:

	For the Years Ended December 31,											
	Net Gains/(Losses) Recognized in Other Comprehensive Income (Effective Portion) (in millions)				Net Gains/(Losses) Recognized in Other Comprehensive Income (Amounts Excluded from Effectiveness Testing) (in millions)				Net Gains/(Losses) Recognized in Net Income (Amounts Excluded from Effectiveness Testing) (in millions)			
Location	2022	2021	2020		Location	2022	2021	2020	Location	2022	2021	2020
Gains (losses) on net investment hedge[1]	$ 20.4	$ 46.0	$ (35.1)		Gains (losses) on net investment hedge[1]	$ (3.2)	$ (3.2)	$ 4.5	Other (income) expense[1]	$ (4.6)	$ (0.6)	$ 2.9

[1] Beginning in the second quarter of 2022 we no longer held net investment hedges as they were closed with the sale of our 49.9% equity interest in Samsung Bioepis in April 2022. For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to these consolidated financial statements.

For additional information on our collaboration arrangements with Samsung Bioepis, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

Foreign Currency Forward Contracts - Other Derivative Instruments

We also enter into other foreign currency forward contracts, usually with durations of one month or less, to mitigate the foreign currency risk related to certain balance sheet positions. We have not elected hedge accounting for these transactions.

The aggregate notional amount of these outstanding foreign currency forward contracts was $1,238.8 million and $1,268.0 million as of December 31, 2022 and 2021, respectively. Net losses of $34.7 million, net losses of $43.3 million and net gains of $30.1 million related to these contracts were recorded as a component of other (income) expense, net for the years ended December 31, 2022, 2021 and 2020, respectively.

Summary of Derivative Instruments

While certain of our derivative instruments are subject to netting arrangements with our counterparties, we do not offset derivative assets and liabilities in our consolidated balance sheets. The amounts in the table below would not be substantially different if the derivative assets and liabilities were offset.

The following table summarizes the fair value and presentation in our consolidated balance sheets of our outstanding derivative instruments, including those designated as hedging instruments:

(In millions)	Balance Sheet Location	As of December 31, 2022	As of December 31, 2021
Cash Flow Hedging Instruments:			
Asset derivative instruments	Other current assets	$ 37.9	$ 66.2
	Investments and other assets	—	5.5
Liability derivative instruments	Accrued expense and other	18.4	6.6
Net Investment Hedging Instruments:[1]			
Asset derivative instruments	Other current assets	—	4.1
Other Derivative Instruments:			
Asset derivative instruments	Other current assets	25.1	5.1
Liability derivative instruments	Accrued expense and other	7.6	4.2

[1] Beginning in the second quarter of 2022 we no longer held net investment hedges as they were closed with the sale of our 49.9% equity interest in Samsung Bioepis in April 2022. For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to these consolidated financial statements.

Note 11: Property, Plant and Equipment

Property, plant and equipment are recorded at historical cost, net of accumulated depreciation. Components of property, plant and equipment, net are summarized as follows:

(In millions)	As of December 31, 2022	As of December 31, 2021
Land	$ 202.4	$ 207.5
Buildings	1,592.9	1,699.7
Leasehold improvements	107.7	121.0
Machinery and equipment	1,611.5	1,585.5
Computer software and hardware	999.9	971.6
Furniture and fixtures	61.1	67.4
Construction in progress	888.8	770.3
Total cost	5,464.3	5,423.0
Less: accumulated depreciation	(2,165.7)	(2,006.6)
Total property, plant and equipment, net	$ 3,298.6	$ 3,416.4

Depreciation expense totaled $272.4 million, $235.3 million and $201.9 million for the years ended December 31, 2022, 2021 and 2020, respectively.

For the years ended December 31, 2022, 2021 and 2020, we capitalized interest costs related to construction in progress totaling approximately $17.1 million, $36.3 million and $65.2 million, respectively.

Solothurn, Switzerland Manufacturing Facility

In order to support our future growth and drug development pipeline, we are building a large-scale biologics manufacturing facility in Solothurn, Switzerland. Upon completion, this facility will include 393,000 square feet related to a large-scale biologics manufacturing facility, 290,000 square feet of warehouse, utilities and support space and 51,000 square feet of administrative space. As of December 31, 2022 and 2021, we had approximately $711.1 million and $677.0 million, respectively, capitalized as construction in progress related to this facility. In the second quarter of 2021 a portion of the facility received a Good Manufacturing Practice multi-product license from the Swiss Agency for Therapeutic Products, resulting in approximately $1.2 billion of fixed assets being placed in service during the second quarter of 2021. Solothurn has been approved for the manufacture of ADUHELM and

LEQEMBI by the FDA. We estimate the second manufacturing suite at the Solothurn facility will be operational by the end of 2023.

125 Broadway Building Sale

In September 2022 we completed the sale of our building and land parcel located at 125 Broadway for an aggregate sales price of approximately $603.0 million, which is inclusive of a $10.8 million tenant allowance. This sale resulted in a pre-tax gain on sale of approximately $503.7 million, net of transaction costs, which is reflected within gain on sale of building in our consolidated statements of income for the year ended December 31, 2022. This transaction included approximately $79.2 million of property, plant and equipment, net, which comprised of approximately $72.6 million for buildings, approximately $1.6 million for land and approximately $5.0 million for machinery and equipment.

Note 12: Leases

We lease real estate, including laboratory and office space, and certain equipment.

Our leases have remaining lease terms ranging from less than one year to eight years. Certain leases include one or more options to renew, exercised at our sole discretion, with renewal terms that can extend the lease term from one year to six years.

In addition, we sublease certain real estate to third parties. Our sublease portfolio consists of operating leases, with remaining lease terms ranging from two years to six years. Our subleases do not include an option to renew as they are coterminous with our operating leases.

All of our leases qualify as operating leases. The following table summarizes the presentation in our consolidated balance sheets of our operating leases:

		As of December 31,	
(In millions)	**Balance sheet location**	**2022**	**2021**
Assets:			
Operating lease assets	Operating lease assets	$ 403.9	$ 375.4
Liabilities			
Current operating lease liabilities	Accrued expense and other	$ 97.2	$ 89.1
Non-current operating lease liabilities	Long-term operating lease liabilities	333.0	330.4
Total operating lease liabilities		$ 430.2	$ 419.5

The following table summarizes the effect of lease costs in our consolidated statements of income:

		For the Years Ended December 31,		
(In millions)	**Income Statement Location**	**2022**	**2021**	**2020**
Operating lease cost	Research and development	$ 2.0	$ 3.4	$ 5.2
	Selling, general and administrative	95.9	95.9	93.1
Variable lease cost	Research and development	0.4	0.8	1.1
	Selling, general and administrative	25.4	25.7	21.1
Sublease income	Selling, general and administrative	(24.0)	(23.9)	(24.2)
	Other (income) expense, net	(4.1)	(4.0)	(3.9)
Net lease cost		$ 95.6	$ 97.9	$ 92.4

Variable lease cost primarily related to operating expense, taxes and insurance associated with our operating leases. As these costs are generally variable in nature, they are not included in the measurement of the operating lease asset and related lease liability.

The minimum lease payments for the next five years and thereafter is expected to be as follows:

(In millions)	As of December 31, 2022
2023	$ 111.0
2024	107.0
2025	80.5
2026	65.7
2027	69.5
Thereafter	36.6
Total lease payments	$ 470.3
Less: interest	40.1
Present value of operating lease liabilities	$ 430.2

The weighted average remaining lease term and weighted average discount rate of our operating leases are as follows:

	As of December 31,	
	2022	2021
Weighted average remaining lease term in years	4.64	5.43
Weighted average discount rate	3.7 %	2.9 %

Supplemental disclosure of cash flow information related to our operating leases included in cash flow provided by operating activities in our consolidated statements of cash flow is as follows:

	As of December 31,		
(In millions)	2022	2021	2020
Cash paid for amounts included in the measurement of lease liabilities	$ 107.4	$ 105.8	$ 100.2
Operating lease assets obtained in exchange for lease obligations	108.3	18.1	59.0

125 Broadway Building Sale and Leaseback Transaction

In connection with the sale of our building at 125 Broadway, we simultaneously leased back the building for a term of approximately 5.5 years, which resulted in the recognition of approximately $168.2 million in new lease liabilities and right-of-use assets recorded within our consolidated balance sheets as of December 31, 2022. The sale and immediate leaseback of this building qualified for sale and leaseback treatment and is classified as an operating lease. For additional information on the sale of our building, please read *Note 11, Property, Plant and Equipment*, to these consolidated financial statements.

300 Binney Street Lease Modification

In September 2022 we entered into an agreement to partially terminate a portion of our lease located at 300 Binney Street, Cambridge MA, as well as to reduce the lease term for the majority of the remaining space. The agreement was driven by our 2022 efforts to reduce costs by consolidating real estate locations. The transaction was treated as a lease modification as of the effective date and resulted in the derecognition of right of use assets of approximately $47.4 million and lease liabilities of approximately $52.7 million, which resulted in a gain of approximately $5.3 million, which was recorded within restructuring charges in our consolidated statements of income for the year ended December 31, 2022.

Note 13: Indebtedness

Our indebtedness is summarized as follows:

(In millions)	As of December 31, 2022	2021
Current portion:		
3.625% Senior Notes due September 15, 2022[1]	$ —	$ 999.1
Current portion of notes payable	$ —	$ 999.1
Non-current portion:		
4.050% Senior Notes due September 15, 2025	$ 1,744.7	$ 1,742.9
2.250% Senior Notes due May 1, 2030	1,492.9	1,492.0
5.200% Senior Notes due September 15, 2045	1,100.3	1,099.9
3.150% Senior Notes due May 1, 2050	1,473.8	1,473.2
3.250% Senior Notes due February 15, 2051	469.3	466.0
Non-current portion of notes payable	$ 6,281.0	$ 6,274.0

[1] Our 3.625% Senior Notes due September 15, 2022, were redeemed in full in July 2022.

Exchange Offer

In February 2021 we completed our private offer to exchange (Exchange Offer) our tendered 5.200% Senior Notes due September 15, 2045 (2045 Senior Notes) for a new series of 3.250% Senior Notes due February 15, 2051 (2051 Senior Notes) and cash, and an offer to purchase our tendered 2045 Senior Notes for cash.

An aggregate principal amount of approximately $624.6 million of our 2045 Senior Notes was exchanged for an aggregate principal amount of approximately $700.7 million of our 2051 Senior Notes and aggregate cash payments of approximately $151.8 million. Our Exchange Offer has been accounted for as a debt modification; as such, the cash component has been reflected as additional debt discount and is amortized as an adjustment to interest expense over the term of our 2051 Senior Notes.

In addition, we redeemed an aggregate principal amount of approximately $8.9 million of our 2045 Senior Notes for aggregate cash payments of approximately $12.1 million, excluding accrued and unpaid interest. The redemption has been accounted for as a debt extinguishment; as such, we recognized a pre-tax charge of $3.2 million upon the extinguishment of such 2045 Senior Notes. This charge, which was recognized in interest expense in other (income) expense, net in our consolidated statements of income for the year ended December 31, 2021, reflects the payment of an early call premium and the write-off of the remaining unamortized original debt issuance costs and discount balances associated with such 2045 Senior Notes.

Upon settlement, we also made aggregate cash payments of approximately $13.8 million to settle all accrued and unpaid interest from the last interest payment date on our 2045 Senior Notes that were exchanged or redeemed. We incurred approximately $6.1 million of costs associated with our Exchange Offer, which was recognized in interest expense in other (income) expense, net in our consolidated statements of income for the year ended December 31, 2021.

2020 Senior Notes

On April 30, 2020, we issued senior unsecured notes for an aggregate principal amount of $3.0 billion (2020 Senior Notes), consisting of the following:

- $1.5 billion aggregate principal amount of 2.25% Senior Notes due May 1, 2030, valued at 99.973% of par; and
- $1.5 billion aggregate principal amount of 3.15% Senior Notes due May 1, 2050, valued at 99.174% of par.

Our 2020 Senior Notes are senior unsecured obligations and may be redeemed at our option at any time at 100.0% of the principal amount plus accrued interest and, until a specified period before maturity, a specified make-whole amount. Our 2020 Senior Notes contain a change-of-control provision that, under certain circumstances, may require us to purchase our 2020 Senior Notes at a price equal to 101.0% of the principal amount plus accrued and unpaid interest to the date of repurchase.

We incurred approximately $24.4 million of costs associated with this offering, which have been recorded as a reduction to the carrying amount of the debt on our consolidated balance sheet. These costs will be amortized as additional interest expense using the effective interest rate method over the period from issuance through maturity. The discounts will be amortized as additional interest expense over the period from issuance through maturity using the effective interest rate method. Interest on our 2020 Senior Notes is payable May 1 and November 1 of each year, commencing November 1, 2020.

2015 Senior Notes

The following is a summary of our currently outstanding senior unsecured notes issued in 2015 (the 2015 Senior Notes), consisting of the following:

- $1.75 billion aggregate principal amount of 4.05% Senior Notes due September 15, 2025, valued at 99.764% of par; and
- $1.12 billion aggregate principal amount of 5.20% Senior Notes due September 15, 2045, valued at 99.294% of par.

The original costs associated with this offering of approximately $47.5 million have been recorded as a reduction to the carrying amount of the debt in our consolidated balance sheets. These costs along with the discounts will be amortized as additional interest expense using the effective interest rate method over the period from issuance through maturity.

Our 2015 Senior Notes are senior unsecured obligations and may be redeemed at our option at any time at 100.0% of the principal amount plus accrued interest and a specified make-whole amount. Our 2015 Senior Notes contain a change of control provision that may require us to purchase the notes at a price equal to 101.0% of the principal amount plus accrued and unpaid interest to the date of purchase under certain circumstances.

On September 15, 2015, we issued $1.5 billion aggregate principal amount of 2.90% Senior Notes due September 15, 2020, at 99.792% of par. Our 2.90% Senior Notes were senior unsecured obligations. In connection with the 2.90% Senior Notes, we entered into interest rate swap contracts where we received a fixed rate and paid a variable rate. In May 2020 we used the net proceeds from the sale of our 2020 Senior Notes to redeem our 2.90% Senior Notes prior to their maturity and recognized a net pre-tax charge of $9.4 million upon the extinguishment of these notes. This charge, which was recognized in interest expense in other (income) expense, net in our consolidated statements of income for the year ended December 31, 2020, reflects the payment of a $12.7 million early call premium and the write off of remaining unamortized original debt issuance costs and discount balances, partially offset by a $3.3 million gain related to the settlement of the associated interest rate swap contracts. For additional information on our interest rate contracts, please read *Note 10, Derivative Instruments,* to these consolidated financial statements.

3.625% Senior Notes due September 15, 2022

On September 15, 2015, we issued $1.0 billion aggregate principal amount of our 3.625% Senior Notes due September 15, 2022, at 99.920% of par. Our 3.625% Senior Notes were senior unsecured obligations. In July 2022 we redeemed our 3.625% Senior Notes prior to their maturity and recognized a net pre-tax charge of approximately $2.4 million upon the extinguishment of these Senior Notes, which primarily reflects the payment of an early call premium as well as the write-off of remaining unamortized original debt issuance costs and discount balances.

These charges were recognized as interest expense in other (income) expense, net in our consolidated statements of income for the year ended December 31, 2022.

2020 Credit Facility

In January 2020 we entered into a $1.0 billion, five-year senior unsecured revolving credit facility under which we are permitted to draw funds for working capital and general corporate purposes. The terms of the revolving credit facility include a financial covenant that requires us not to exceed a maximum consolidated leverage ratio. This revolving credit facility replaced the revolving credit facility that we entered into in August 2015. As of December 31, 2022, we had no outstanding borrowings and were in compliance with all covenants under this facility.

Debt Maturity

The total gross payments due under our debt arrangements are as follows:

(In millions)	As of December 31, 2022
2023	$ —
2024	—
2025	1,750.0
2026	—
2027	—
2028 and thereafter	4,817.3
Total debt	$ 6,567.3
Less: debt discount and issuance fees	(286.3)
Total long-term debt	$ 6,281.0

The fair value of our debt is disclosed in *Note 8, Fair Value Measurements,* to these consolidated financial statements.

Note 14: Equity

Preferred Stock

We have 8.0 million shares of Preferred Stock authorized, of which 1.75 million shares are authorized as Series A, 1.0 million shares are authorized as Series X junior participating and 5.25 million shares are undesignated. Shares may be issued without a vote or action of shareholders from time to time in classes or series with the designations, powers, preferences and the relative, participating, optional or other special rights of the shares of each such class or series and any qualifications, limitations or restrictions thereon as set forth in the instruments governing such shares. Any such Preferred Stock may rank prior to common stock as to dividend rights, liquidation preference or both, and may have full or limited voting rights and may be convertible into shares of common stock. No shares of Preferred Stock were issued and outstanding during 2022, 2021 and 2020.

Common Stock

The following table describes the number of shares authorized, issued and outstanding of our common stock as of December 31, 2022, 2021 and 2020:

	As of December 31, 2022			As of December 31, 2021			As of December 31, 2020		
(In millions)	Authorized	Issued	Outstanding	Authorized	Issued	Outstanding	Authorized	Issued	Outstanding
Common stock	1,000.0	167.9	144.0	1,000.0	170.8	147.0	1,000.0	176.2	152.4

Share Repurchases

In October 2020 our Board of Directors authorized a program to repurchase up to $5.0 billion of our common stock (2020 Share Repurchase Program). Our 2020 Share Repurchase Program does not have an expiration date. All share repurchases under our 2020 Share Repurchase Program will be retired. Under our 2020 Share Repurchase Program, we repurchased and retired approximately 3.6 million, 6.0 million and 1.6 million shares of our common stock at a cost of approximately $750.0 million, $1.8 billion and $400.0 million during the years ended December

31, 2022, 2021 and 2020, respectively. Approximately $2.1 billion remained available under our 2020 Share Repurchase Program as of December 31, 2022.

In December 2019 our Board of Directors authorized a program to repurchase up to $5.0 billion of our common stock (December 2019 Share Repurchase Program), which was completed as of September 30, 2020. All shares repurchased under our December 2019 Share Repurchase Program were retired. Under our December 2019 Share Repurchase Program, we repurchased and retired approximately 16.7 million shares of our common stock at a cost of approximately $5.0 billion during the year ended December 31, 2020.

In March 2019 our Board of Directors authorized a program to repurchase up to $5.0 billion of our common stock (March 2019 Share Repurchase Program), which was completed as of March 31, 2020. All shares repurchased under our March 2019 Share Repurchase Program were retired. Under our March 2019 Share Repurchase Program, we repurchased and retired approximately 4.1 million shares of our common stock at a cost of approximately $1.3 billion during the year ended December 31, 2020.

In August 2022 the Inflation Reduction Act of 2022 (the IRA) was signed into law. Among other things, the IRA levies a 1.0% excise tax on net stock repurchases after December 31, 2022. Historically, we have made discretionary share repurchases.

Amounts paid to repurchase shares in excess of their par value are allocated between additional paid-in capital and retained earnings, with payments in excess of our additional paid-in-capital balance recorded as a reduction to retained earnings.

Accumulated Other Comprehensive Income (Loss)

The following tables summarize the changes in accumulated other comprehensive income (loss), net of tax by component:

	December 31, 2022					
(In millions)	Unrealized Gains (Losses) on Securities Available for Sale, Net of Tax	Unrealized Gains (Losses) on Cash Flow Hedges, Net of Tax	Gains (Losses) on Net Investment Hedges, Net of Tax[1]	Unrealized Gains (Losses) on Pension Benefit Obligation, Net of Tax	Currency Translation Adjustments	Total
Balance, December 31, 2021	$ (2.2)	$ 53.8	$ 25.5	$ (44.8)	$ (139.0)	$ (106.7)
Other comprehensive income (loss) before reclassifications	(23.5)	137.3	12.6	43.7	(83.1)	87.0
Amounts reclassified from accumulated other comprehensive income (loss)	10.0	(176.0)	(38.1)	—	58.9	(145.2)
Net current period other comprehensive income (loss)	(13.5)	(38.7)	(25.5)	43.7	(24.2)	(58.2)
Balance, December 31, 2022	$ (15.7)	$ 15.1	$ —	$ (1.1)	$ (163.2)	$ (164.9)

[1] Beginning in the second quarter of 2022 we no longer held net investment hedges as they were closed with the sale of our 49.9% equity interest in Samsung Bioepis in April 2022. For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to these consolidated financial statements.

	December 31, 2021					
(In millions)	Unrealized Gains (Losses) on Securities Available for Sale, Net of Tax	Unrealized Gains (Losses) on Cash Flow Hedges, Net of Tax	Gains (Losses) on Net Investment Hedges, Net of Tax	Unrealized Gains (Losses) on Pension Benefit Obligation, Net of Tax	Currency Translation Adjustments	Total
Balance, December 31, 2020	$ 1.4	$ (179.0)	$ (8.5)	$ (66.3)	$ (46.6)	$ (299.0)
Other comprehensive income (loss) before reclassifications	(6.6)	178.2	33.4	21.5	(92.4)	134.1
Amounts reclassified from accumulated other comprehensive income (loss)	3.0	54.6	0.6	—	—	58.2
Net current period other comprehensive income (loss)	(3.6)	232.8	34.0	21.5	(92.4)	192.3
Balance, December 31, 2021	$ (2.2)	$ 53.8	$ 25.5	$ (44.8)	$ (139.0)	$ (106.7)

	December 31, 2020					
(In millions)	Unrealized Gains (Losses) on Securities Available for Sale, Net of Tax	Unrealized Gains (Losses) on Cash Flow Hedges, Net of Tax	Gains (Losses) on Net Investment Hedges, Net of Tax	Unrealized Gains (Losses) on Pension Benefit Obligation, Net of Tax	Currency Translation Adjustments	Total
Balance, December 31, 2019	$ 4.2	$ 7.8	$ 25.1	$ (32.8)	$ (139.5)	$ (135.2)
Other comprehensive income (loss) before reclassifications	(9.3)	(165.0)	(30.7)	(33.5)	92.9	(145.6)
Amounts reclassified from accumulated other comprehensive income (loss)	6.5	(21.8)	(2.9)	—	—	(18.2)
Net current period other comprehensive income (loss)	(2.8)	(186.8)	(33.6)	(33.5)	92.9	(163.8)
Balance, December 31, 2020	$ 1.4	$ (179.0)	$ (8.5)	$ (66.3)	$ (46.6)	$ (299.0)

The following table summarizes the amounts reclassified from accumulated other comprehensive income (loss):

	Amounts Reclassified from Accumulated Other Comprehensive Income (Loss)			
	For the Years Ended December 31,			
(In millions)	2022	2021	2020	Income Statement Location
Gains (losses) on securities available for sale	$ (12.6)	$ (3.8)	$ (8.2)	Other (income) expense
	2.6	0.8	1.7	Income tax (benefit) expense
Gains (losses) on cash flow hedges	201.6	(60.0)	18.3	Revenue
	(5.5)	(0.8)	3.3	Operating expense
	(0.3)	0.2	0.3	Other (income) expense
	(19.8)	6.0	(0.1)	Income tax (benefit) expense
Gains (losses) on net investment hedges[1]	38.1	(0.6)	2.9	Other (income) expense
Currency Translation Adjustments	(58.9)	—	—	Other (income) expense
Total reclassifications, net of tax	$ 145.2	$ (58.2)	$ 18.2	

[1] Beginning in the second quarter of 2022 we no longer held net investment hedges as they were closed with the sale of our 49.9% equity interest in Samsung Bioepis in April 2022. For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to these consolidated financial statements.

Note 15: Earnings per Share

Basic and diluted shares outstanding used in our earnings per share calculation are calculated as follows:

	For the Years Ended December 31,		
(In millions)	2022	2021	2020
Numerator:			
Net income attributable to Biogen Inc.	$ 3,046.9	$ 1,556.1	$ 4,000.6
Denominator:			
Weighted average number of common shares outstanding	145.3	149.1	160.9
Effect of dilutive securities:			
Time-vested restricted stock units	0.5	0.3	0.2
Market stock units	0.1	0.1	0.1
Performance stock units settled in stock	0.1	0.1	0.1
Dilutive potential common shares	0.7	0.5	0.4
Shares used in calculating diluted earnings per share	146.0	149.6	161.3

Amounts excluded from the calculation of net income per diluted share because their effects were anti-dilutive were insignificant.

Earnings per share for the years ended December 31, 2022, 2021 and 2020, reflects the repurchase of approximately 3.6 million shares, 6.0 million shares and 22.4 million shares of our common stock, respectively, under our share repurchase programs. For additional information on our share repurchase programs, please read *Note 14, Equity*, to these consolidated financial statements.

Note 16: Share-Based Payments

Share-Based Compensation Expense

The following table summarizes share-based compensation expense included in our consolidated statements of income:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Research and development	$ 98.5	$ 89.3	$ 80.0
Selling, general and administrative	175.1	169.5	131.3
Subtotal	273.6	258.8	211.3
Capitalized share-based compensation costs	(9.3)	(8.0)	(6.2)
Share-based compensation expense included in total cost and expense	264.3	250.8	205.1
Income tax effect	(49.2)	(46.7)	(33.5)
Share-based compensation expense included in net income attributable to Biogen Inc.	$ 215.1	$ 204.1	$ 171.6

The following table summarizes share-based compensation expense associated with each of our share-based compensation programs:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Market stock units	$ 13.2	$ 45.6	$ 40.5
Time-vested restricted stock units	202.3	159.8	142.6
Cash settled performance units	—	—	(1.7)
Performance units	—	—	(0.1)
Performance stock units settled in stock	35.0	23.9	7.9
Performance stock units settled in cash	10.1	12.2	8.6
Employee stock purchase plan	12.7	17.3	13.5
Stock options	0.3	—	—
Subtotal	273.6	258.8	211.3
Capitalized share-based compensation costs	(9.3)	(8.0)	(6.2)
Share-based compensation expense included in total cost and expense	$ 264.3	$ 250.8	$ 205.1

As of December 31, 2022, unrecognized compensation cost related to unvested share-based compensation was approximately $290.5 million, net of estimated forfeitures. We expect to recognize the cost of these unvested awards over a weighted-average period of 2.0 years.

Share-Based Compensation Plans

We have three share-based compensation plans pursuant to which awards are currently being made: (i) the Biogen Inc. 2006 Non-Employee Directors Equity Plan (2006 Directors Plan); (ii) the Biogen Inc. 2017 Omnibus Equity Plan (2017 Omnibus Equity Plan); and (iii) the Biogen Inc. 2015 Employee Stock Purchase Plan (2015 ESPP).

Directors Plan

In May 2006 our shareholders approved the 2006 Directors Plan for share-based awards to our directors. Awards granted from the 2006 Directors Plan may include stock options, shares of restricted stock, RSUs, stock appreciation rights and other awards in such amounts and with such terms and conditions as may be determined by

a committee of our Board of Directors, subject to the provisions of the 2006 Directors Plan. We have reserved a total of 1.6 million shares of common stock for issuance under the 2006 Directors Plan. The 2006 Directors Plan provides that awards other than stock options and stock appreciation rights will be counted against the total number of shares reserved under the plan in a 1.5-to-1 ratio. In June 2015 our shareholders approved an amendment to extend the term of the 2006 Directors Plan until June 2025.

Omnibus Plan

In June 2017 our shareholders approved the 2017 Omnibus Equity Plan for share-based awards to our employees. Awards granted from the 2017 Omnibus Equity Plan may include stock options, shares of restricted stock, RSUs, performance shares, stock appreciation rights and other awards in such amounts and with such terms and conditions as may be determined by a committee of our Board of Directors, subject to the provisions of the 2017 Omnibus Equity Plan. Shares of common stock available for grant under the 2017 Omnibus Equity Plan consist of 8.0 million shares reserved for this purpose, plus shares of common stock that remained available for grant under the Biogen Idec Inc. 2008 Omnibus Equity Plan (2008 Omnibus Equity Plan) as of June 7, 2017, or that could again become available for grant if outstanding awards under the 2008 Omnibus Equity Plan as of June 7, 2017, are cancelled, surrendered or terminated in whole or in part. The 2017 Omnibus Equity Plan provides that awards other than stock options and stock appreciation rights will be counted against the total number of shares available under the plan in a 1.5-to-1 ratio.

We have not made any awards pursuant to the 2008 Omnibus Equity Plan since our shareholders approved the 2017 Omnibus Equity Plan, and do not intend to make any awards pursuant to the 2008 Omnibus Equity Plan in the future, except that unused shares under the 2008 Omnibus Equity Plan have been carried over for use under the 2017 Omnibus Equity Plan.

Stock Options

During the year ended December 31, 2022, we granted approximately 81,000 stock options to our Chief Executive Officer (CEO) (2022 CEO Grant) under the 2017 Omnibus Plan with a grant date fair value of $139.10 per option for a total of approximately $11.2 million. The fair values of our stock option grants are estimated as of the date of grant using a Black-Scholes option valuation model. The estimated fair values of the stock options are then expensed over the options' vesting periods. The 2022 CEO Grant is eligible to vest in equal annual installments over a three-year period from the grant date, subject to the CEO's continued employment. The outstanding stock options have a 10-year term and are exercisable at a price per share not less than the fair market value of the underlying common stock on the date of grant.

The total intrinsic value related to the remaining stock options previously granted in 2010 that were exercised in 2020 totaled $2.9 million.

The following table summarizes the amount of tax benefit realized for stock options and cash received from the exercise of the remaining stock options previously granted in 2010:

	For the year ended December 31,
(In millions)	**2020**
Tax benefit realized for stock options	$ 2.9
Cash received from the exercise of stock options	0.7

Market Stock Units (MSUs)

MSUs awarded to employees prior to 2014 vested in four equal annual increments beginning on the first anniversary of the grant date. Participants may ultimately earn between zero and 150.0% of the target number of units granted based on actual stock performance.

MSUs awarded to employees in 2014 and thereafter vest in three equal annual increments beginning on the first anniversary of the grant date, and participants may ultimately earn between zero and 200.0% of the target number of units granted based on actual stock performance.

The vesting of these awards is subject to the respective employee's continued employment. The number of MSUs granted represents the target number of units that are eligible to be earned based on the attainment of certain market-based criteria involving our stock price. The number of MSUs earned is calculated at each annual anniversary from the date of grant over the respective vesting periods, resulting in multiple performance periods.

Accordingly, additional MSUs may be issued or currently outstanding MSUs may be cancelled upon final determination of the number of awards earned.

Beginning in 2022 we no longer grant MSUs as part of our long term incentive program and have replaced with granting performance-vested RSUs.

The following table summarizes our MSU activity:

	December 31, 2022	
	Shares	Weighted Average Grant Date Fair Value
Unvested at December 31, 2021	257,000	$ 372.08
Granted	—	—
Vested	(87,000)	369.22
Forfeited	(57,000)	371.24
Unvested at December 31, 2022	113,000	$ 366.52

We value grants of MSUs using a lattice model with a Monte Carlo simulation. This valuation methodology utilizes several key assumptions, the 30 calendar day average closing stock price on the date of grant for MSUs, expected volatility of our stock price, risk-free rates of return and expected dividend yield.

The assumptions used in our valuation are summarized as follows:

	For the Years Ended December 31,	
	2021	2020
Expected dividend yield	—%	—%
Range of expected stock price volatility	54.8% - 61.6%	37.8% - 44.1%
Range of risk-free interest rates	0.06% - 0.21%	1.41% - 1.48%
30 calendar day average stock price on grant date	$262.23 - $360.31	$257.83 - $325.40
Weighted-average per share grant date fair value	$358.77	$398.61

The fair values of MSUs vested in 2022, 2021 and 2020 totaled $18.8 million, $22.5 million and $26.9 million, respectively.

Cash Settled Performance Units (CSPUs)

CSPUs awarded to employees vest in three equal annual increments beginning on the first anniversary of the grant date. The vesting of these awards is subject to the respective employee's continued employment with such awards settled in cash. The number of CSPUs granted represents the target number of units that are eligible to be earned based on the attainment of certain performance measures established at the beginning of the performance period, which ends on December 31 of each year. Participants may ultimately earn between zero and 200.0% of the target number of units granted based on the degree of actual performance metric achievement. Accordingly, additional CSPUs may be issued or currently outstanding CSPUs may be cancelled upon final determination of the number of units earned. CSPUs are classified as liability awards and will be settled in cash based on the 30 calendar day average closing stock price through each vesting date, once the actual vested and earned number of units is known. Since no shares are issued, these awards do not dilute equity. All remaining CSPUs were fully vested as of December 31, 2020.

The cash paid in settlement of CSPUs vested in 2020 totaled $3.8 million.

Performance-vested Restricted Stock Units (PUs)

PUs are granted to certain employees in the form of RSUs that may be settled in cash or shares of our common stock at the sole discretion of the Compensation and Management Development Committee of our Board of Directors. These awards are structured and accounted for the same way as the CSPUs, and vest in three equal annual increments beginning on the first anniversary of the grant date. The number of PUs granted represents the target number of units that are eligible to be earned based on the attainment of certain performance measures established at the beginning of the performance period, which ends on December 31 of each year. Participants may ultimately earn between zero and 200.0% of the target number of units granted based on the degree of actual performance metric achievement. Accordingly, additional PUs may be issued or currently outstanding PUs may be cancelled upon final determination of the number of units earned. PUs settling in cash are based on the 30 calendar

day average closing stock price through each vesting date once the actual vested and earned number of units is known. All remaining PUs were fully vested as of December 31, 2020.

All PUs that vested in 2020 were settled in cash totaling $3.4 million.

Performance Stock Units (PSUs)

PSUs Settled in Stock

During the first quarter of 2018 we began granting awards for performance-vested RSUs that will settle in stock. PSUs awarded to employees have a three-year performance period and vest on the third anniversary of the grant date. The vesting of these awards is subject to the respective employee's continued employment. The number of PSUs granted represents the target number of units that are eligible to be earned based on the achievement of cumulative three-year performance measures established at the beginning of the performance period, which ends on December 31 of the third year of the performance period.

Participants may ultimately earn between zero and 200.0% of the target number of PSUs granted based on the degree of achievement of the applicable performance metric. Accordingly, additional PSUs may be issued or currently outstanding PSUs may be cancelled upon final determination of the number of units earned.

Beginning in 2022 we no longer grant MSUs as part of long term incentive program and have replaced with granting PSUs with a performance metric based on a three-year cumulative relative total shareholder return (rTSR) metric. The PSUs will vest on the third anniversary of the date of grant, with the number of PSUs earned based on this cumulative rTSR metric.

The following table summarizes our PSUs that settle in stock activity:

	December 31, 2022	
	Shares	Weighted Average Grant Date Fair Value
Unvested at December 31, 2021	196,000	$ 289.94
Granted [1]	270,000	294.43
Vested	(44,000)	316.83
Forfeited	(86,000)	279.09
Unvested at December 31, 2022	336,000	$ 292.95

[1] PSUs settled in stock granted in 2022 include awards granted in conjunction with our annual awards made in February 2022 and PSUs granted in conjunction with the hiring of employees. These grants reflect the target number of shares eligible to be earned at the time of grant.

We value grants of PSUs using a lattice model with a Monte Carlo simulation. This valuation methodology utilizes several key assumptions, the 30 calendar day average closing stock price on the date of grant for PSUs, expected volatility of our stock price, risk-free rates of return and expected dividend yield.

The assumptions used in our valuation are summarized as follows:

	December 31, 2022
Expected dividend yield	—%
Range of expected stock price volatility	44.0% - 45.9%
Range of risk-free interest rates	1.8% - 3.9%
30 calendar day average stock price on grant date	$231.31 - $294.86
Weighted-average per share grant date fair value	$294.43

The fair values of PSUs settled in stock that vested in 2022 and 2021 totaled $9.5 million and $15.5 million, respectively

PSUs Settled in Cash

During the first quarter of 2018 we began granting awards for performance-vested restricted stock units that will settle in cash. PSUs awarded to employees have three performance periods and vest on the third anniversary of the grant date. The vesting of these awards is subject to the respective employee's continued employment. The number of PSUs granted represents the target number of units that are eligible to be earned based on the

achievement of three annual performance measures established when the performance objectives are defined, which will be at the beginning of each year and will end on December 31 of such year.

Participants may ultimately earn between zero and 200.0% of the target number of PSUs granted based on the degree of achievement of the applicable performance metric. Accordingly, additional PSUs may be issued or currently outstanding PSUs may be cancelled upon final determination of the number of units earned. PSUs are classified as liability awards and will be settled in cash based on the 30 calendar day average closing stock price through the vesting date, once the actual vested and earned number of PSUs is determined. Since no shares are issued, these awards do not dilute equity.

Beginning in 2022 we no longer grant this type of PSUs as part of our long term incentive program and have replaced with granting time-vested RSUs.

The following table summarizes our PSUs that settle in cash activity:

	December 31, 2022
	Shares
Unvested at December 31, 2021	134,000
Granted [1]	24,000
Vested	(49,000)
Forfeited	(26,000)
Unvested at December 31, 2022	83,000

[1] PSUs settled in cash granted in 2022 include awards granted in conjunction with our annual awards made in February 2022 and PSUs granted in conjunction with the hiring of employees. These grants reflect the target number of shares eligible to be earned at the time of grant.

The fair values of PSUs settled in cash that vested in 2022 and 2021 totaled $11.0 million and $9.9 million, respectively.

Time-Vested Restricted Stock Units (RSUs)

RSUs awarded to employees generally vest no sooner than one-third per year over three years on the anniversary of the date of grant, or upon the third anniversary of the date of the grant, provided the employee remains continuously employed with us, except as otherwise provided in the plan. Shares of our common stock will be delivered to the employee upon vesting, subject to payment of applicable withholding taxes. RSUs awarded to directors for service on our Board of Directors vest on the first anniversary of the date of grant, provided in each case that the director continues to serve on our Board of Directors through the vesting date. Shares of our common stock will be delivered to the director upon vesting and are not subject to any withholding taxes.

The following table summarizes our RSU activity:

	Shares	Weighted Average Grant Date Fair Value
Unvested at December 31, 2021	1,202,000	$ 291.54
Granted [1]	1,751,000	221.28
Vested	(539,000)	297.72
Forfeited	(468,000)	244.03
Unvested at December 31, 2022	1,946,000	$ 237.90

[1] RSUs granted in 2022 primarily represent RSUs granted in conjunction with our annual awards made in February 2022 and awards made in conjunction with the hiring of new employees. RSUs granted in 2022 also include approximately 15,000 RSUs granted to our Board of Directors.

RSUs granted in 2021 and 2020 had weighted average grant date fair values of $276.90 and $318.87, respectively.

The fair values of RSUs vested in 2022, 2021 and 2020 totaled $116.3 million, $132.2 million and $140.5 million, respectively.

Employee Stock Purchase Plan (ESPP)

In June 2015 our shareholders approved the 2015 ESPP. The maximum aggregate number of shares of our common stock that may be purchased under the 2015 ESPP is 6.2 million.

The following table summarizes our ESPP activity:

	For the Years Ended December 31,		
(In millions, except share amounts)	**2022**	**2021**	**2020**
Shares issued under the 2015 ESPP	241,000	248,000	212,000
Cash received under the 2015 ESPP	$ 44.2	$ 54.4	$ 48.6

Note 17: Income Taxes

Income Tax Expense

Income before income tax expense and the income tax expense consist of the following:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Income before income tax (benefit) expense:			
Domestic	$ 1,842.0	$ 448.3	$ 3,290.0
Foreign	1,749.8	1,296.9	1,757.5
Total income before income tax (benefit) expense	$ 3,591.8	$ 1,745.2	$ 5,047.5
Income tax (benefit) expense:			
Current:			
Federal	$ 694.5	$ 319.1	$ 647.0
State	39.0	23.1	41.2
Foreign	67.9	137.1	155.1
Total current	801.4	479.3	843.3
Deferred:			
Federal	(328.3)	(242.5)	(1,749.9)
State	2.5	(11.9)	(6.8)
Foreign	157.2	(172.4)	1,905.7
Total deferred	(168.6)	(426.8)	149.0
Total income tax (benefit) expense	$ 632.8	$ 52.5	$ 992.3

Transition Toll Tax

The Tax Cuts and Jobs Act of 2017 eliminated the deferral of U.S. income tax on the historical unrepatriated earnings by imposing the one-time mandatory deemed repatriation tax on accumulated foreign subsidiaries' previously untaxed foreign earnings (the Transition Toll Tax). The Transition Toll Tax was assessed on our share of our foreign corporations' accumulated foreign earnings that were not previously taxed. Earnings in the form of cash and cash equivalents were taxed at a rate of 15.5% and all other earnings were taxed at a rate of 8.0%.

As of December 31, 2022 and 2021, we have accrued income tax liabilities of $558.0 million and $633.0 million, respectively, under the Transition Toll Tax. Of the amounts accrued as of December 31, 2022, approximately $137.8 million is expected to be paid within one year. The Transition Toll Tax will be paid in installments over an eight--year period, which started in 2018, and will not accrue interest.

Unremitted Earnings

At December 31, 2022, we considered our earnings not to be permanently reinvested outside the U.S. and therefore recorded deferred tax liabilities associated with an estimate of the total withholding taxes expected as a result of our repatriation of earnings. Other than for earnings, we are permanently reinvested for book/tax basis differences of approximately $1.5 billion as of December 31, 2022, primarily arising through the impacts of

purchase accounting. These permanently reinvested basis differences could reverse through sales of the foreign subsidiaries, as well as various other events, none of which were considered probable as of December 31, 2022. The residual U.S. tax liability, if these differences reverse, would be between $300.0 million and $400.0 million as of December 31, 2022.

TECFIDERA

Multiple TECFIDERA generic entrants are now in North America, Brazil and certain E.U. countries and have deeply discounted prices compared to TECFIDERA. The generic competition for TECFIDERA has significantly reduced our TECFIDERA revenue and we expect that TECFIDERA revenue will continue to decline in the future.

As of December 31, 2020, we assessed the realizability of our deferred tax assets that are dependent on future expected sales of TECFIDERA in the U.S. and reduced the net value of certain deferred tax assets by approximately $1.7 billion and reduced the net value of deferred tax liabilities associated with GILTI and tax credits by approximately $1.6 billion. For the year ended December 31, 2020, the income tax expense associated with these reductions was approximately $90.3 million. We continue to assess the realizability of these deferred tax assets. For the years ended December 31, 2022 and 2021, we recorded increases in these deferred tax assets of approximately $17.4 million and $108.5 million, respectively, and increases in these deferred tax liabilities of approximately $16.7 million and $103.9 million, respectively.

Deferred Tax Assets and Liabilities

Significant components of our deferred tax assets and liabilities are summarized as follows:

	As of December 31,	
(In millions)	**2022**	**2021**
Deferred tax assets:		
Tax credits	$ 112.6	$ 121.0
Inventory, other reserves and accruals	202.8	199.4
Intangibles, net	1,370.3	1,477.5
Neurimmune's tax basis in ADUHELM	470.3	475.8
IRC Section 174 capitalized research and development	271.8	—
Net operating loss	1,845.9	1,973.0
Share-based compensation	37.2	31.7
Other	280.7	208.8
Valuation allowance	(2,003.3)	(1,961.3)
Total deferred tax assets	$ 2,588.3	$ 2,525.9
Deferred tax liabilities:		
Purchased intangible assets	$ (76.1)	$ (256.6)
Samsung Bioepis investment installments	(138.0)	—
GILTI	(1,002.0)	(1,037.6)
Tax credits	(228.7)	(260.2)
Depreciation, amortization and other	(251.8)	(250.9)
Total deferred tax liabilities	$ (1,696.6)	$ (1,805.3)

The change in the valuation allowance between December 31, 2022 and 2021, was primarily related to the establishment of a valuation allowance against the deferred tax asset related to Neurimmune SubOne AG's (Neurimmune) tax basis in ADUHELM, as discussed below, and the adjustment of a valuation against certain deferred tax assets, the realization of which is dependent on future sales of TECFIDERA in the U.S., as discussed above.

In addition to deferred tax assets and liabilities, we have recorded deferred charges related to intra-entity sales of inventory. As of December 31, 2022 and 2021, the total deferred charges were $56.6 million and $39.6 million, respectively.

Inflation Reduction Act

In August 2022 the IRA was signed into law in the U.S. The IRA introduced new tax provisions, including a 15.0% corporate alternative minimum tax and a 1.0% excise tax on stock repurchases. The provisions of the IRA will be effective for periods after December 31, 2022. The enactment of the IRA did not result in any material adjustments to our income tax provision or net deferred tax assets as of December 31, 2022.

Tax Rate

A reconciliation between the U.S. federal statutory tax rate and our effective tax rate is summarized as follows:

	For the Years Ended December 31,		
	2022	2021	2020
Statutory rate	21.0 %	21.0 %	21.0 %
State taxes	1.1	0.8	0.7
Taxes on foreign earnings	(4.9)	(10.5)	(3.3)
Tax credits	(1.7)	(3.8)	(1.2)
Purchased intangible assets	0.3	(1.6)	0.7
TECFIDERA impairment	—	—	1.8
GILTI	0.7	1.3	1.3
Sale of Samsung Bioepis	(1.6)	—	—
Litigation settlement agreement	2.6	—	—
Neurimmune tax impacts	2.3	(5.3)	(0.1)
Internal reorganization	(1.4)	—	—
Other	(0.8)	1.1	(1.2)
Effective tax rate	17.6 %	3.0 %	19.7 %

Changes in Tax Rate

For the year ended December 31, 2022, compared to 2021, the increase in our effective tax rate, excluding the impact of the net Neurimmune deferred tax asset, as discussed below, includes the tax impacts of the litigation settlement agreement and the sale of our building at 125 Broadway. These increases were partially offset by the impact of the current year tax benefits related to an international reorganization to align with global tax developments, the impacts of the sale of our equity interest in Samsung Bioepis and the tax impacts of the decision to discontinue development of vixotrigine. Further in 2021, our effective tax rate benefited from the tax effects of the BIIB111 and BIIB112 impairment charges and the non-cash tax effects of changes in the value of our equity instruments.

For the year ended December 31, 2021, compared to 2020, the decrease in our effective tax rate, excluding the impact of the Neurimmune deferred tax asset, as discussed below, was primarily due to the change in the territorial mix of our profitability, which included the adverse effect of generic competition for TECFIDERA in the U.S. market, the tax impacts of the BIIB111 and BIIB112 impairment charges and the impact of the non-cash tax effects of changes in the value of our equity investments, where we recorded net unrealized losses in 2021 and net unrealized gains in 2020. Our 2020 effective tax rate also reflected an income tax expense related to the establishment of a valuation allowance against certain deferred tax assets, the realization of which is dependent on future sales of TECFIDERA in the U.S.

For additional information on the litigation settlement agreement, please read *Note 18, Other Consolidated Financial Statement Detail*, to these consolidated financial statements.

Neurimmune Deferred Tax Asset

During 2021 we recorded a net deferred tax asset in Switzerland of approximately $100.0 million on Neurimmune's tax basis in ADUHELM, the realization of which was dependent on future sales of ADUHELM.

During the first quarter of 2022, upon issuance of the final NCD related to ADUHELM, we recorded an increase in a valuation allowance of approximately $85.0 million to reduce the net value of this deferred tax asset to zero.

These adjustments to our net deferred tax asset are each recorded with an equal and offsetting amount assigned to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income, resulting in a zero net impact to net income attributable to Biogen Inc.

For additional information on our collaboration arrangement with Neurimmune, please read *Note 20, Investments in Variable Interest Entities*, to these consolidated financial statements.

Tax Attributes

As of December 31, 2022, we had general business credit carry forwards for U.S. federal income tax purposes of approximately $8.1 million, which begin to expire in 2027. For U.S. state income tax purposes, we had research and investment credit carry forwards of approximately $132.7 million that begin to expire in 2023 and net operating losses of approximately $24.8 million that begin to expire in 2036. For foreign income tax purposes, we had $15.5 billion of federal net operating loss carryforwards that begin to expire in 2027 and $15.4 billion of Swiss cantonal net operating loss carryforwards that begin to expire in 2027.

In assessing the realizability of our deferred tax assets, we have considered whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. In making this determination, under the applicable financial reporting standards, we are allowed to consider the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies. Based upon the level of historical taxable income and income tax liability and projections for future taxable income over the periods in which the deferred tax assets are utilizable, we believe it is more likely than not that we will realize the net benefits of the deferred tax assets of our wholly owned subsidiaries, net of the recorded valuation allowance. In the event that actual results differ from our estimates or we adjust our estimates in future periods, we may need to adjust or establish a valuation allowance, which could materially impact our consolidated financial position and results of operations.

Accounting for Uncertainty in Income Taxes

A reconciliation of the beginning and ending amount of our unrecognized tax benefits is summarized as follows:

(In millions)	2022	2021	2020
Beginning balance	$ 563.4	$ 75.7	$ 129.9
Additions based on tax positions related to the current period	36.3	4.2	1.5
Additions for tax positions of prior periods	23.4	509.9	51.7
Reductions for tax positions of prior periods	(14.9)	(18.8)	(63.6)
Statute expirations	(1.6)	(3.2)	(7.9)
Settlement refund (payment)	(0.2)	(4.4)	(35.9)
Ending balance	$ 606.4	$ 563.4	$ 75.7

During the year ended December 31, 2021, we increased our gross unrecognized tax benefits by approximately $455.0 million, related to a deferred tax asset for Swiss tax purposes for Neurimmune's tax basis in ADUHELM. This unrecognized tax benefit was recorded as a reduction to the gross deferred tax asset, resulting in the net deferred tax asset, as discussed above, and not as a separate liability on our consolidated balance sheets. As of December 31, 2022, the unrecognized tax benefit related to Neurimmune was approximately $450.0 million, as a result of changes in exchange rates.

Our 2020 activity reflects the impact of the effective settlement of certain tax matters. We and our subsidiaries are routinely examined by various taxing authorities. We file income tax returns in various U.S. states and in U.S. federal and other foreign jurisdictions. With few exceptions, we are no longer subject to U.S. federal tax examination for years before 2017 or state, local or non-U.S. income tax examinations for years before 2013.

The U.S. Internal Revenue Service and other national tax authorities routinely examine our intercompany transfer pricing with respect to intellectual property related transactions and it is possible that they may disagree with one or more positions we have taken with respect to such valuations.

Included in the balance of unrecognized tax benefits as of December 31, 2022, 2021 and 2020, are $134.0 million, $87.5 million and $68.8 million (net of the federal benefit on state issues), respectively, of unrecognized tax benefits that, if recognized, would affect the effective income tax rate in future periods.

We recognize potential interest and penalties related to unrecognized tax benefits in income tax expense. During the years ended December 31, 2022, 2021 and 2020, we recognized total interest and penalty expense of $0.7 million, $2.7 million and $1.0 million, respectively. We have accrued $25.2 million and $24.8 million for the payment of interest and penalties as of December 31, 2022 and 2021, respectively.

It is reasonably possible that we will adjust the value of our uncertain tax positions related to certain transfer pricing, collaboration matters and other issues as we receive additional information from various taxing authorities, including reaching settlements with such authorities.

We estimate that it is reasonably possible that our gross unrecognized tax benefits, exclusive of interest, could decrease by up to approximately $500.0 million, including approximately $450.0 million related to the unrecognized tax benefits related to Neurimmune's tax basis in ADUHELM, as discussed above, in the next 12 months as a result of various audit closures, settlements and expiration of the statute of limitations. Any changes to our gross unrecognized tax benefits related to Neurimmune's tax basis in ADUHELM would result in a zero net impact to net income attributable to Biogen, Inc., as we have recorded a full valuation allowance against the relevant deferred tax assets.

Note 18: Other Consolidated Financial Statement Detail

Supplemental Cash Flow Information

Supplemental disclosure of cash flow information for the years ended December 31, 2022, 2021 and 2020, is as follows:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Cash paid during the year for:			
Interest	$ 262.5	$ 280.8	$ 272.7
Income taxes	932.9	247.9	906.7

Other (Income) Expense, Net

Components of other (income) expense, net, are summarized as follows:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Gain on sale of equity interest in Samsung Bioepis[1]	$ (1,505.4)	$ —	$ —
Litigation settlement agreement and settlement fees	917.0	—	—
Interest income	(89.3)	(11.0)	(42.0)
Interest expense	246.6	253.6	222.5
(Gains) losses on investments, net	277.3	824.9	(685.7)
Foreign exchange (gains) losses, net	35.5	22.4	10.7
Other, net	10.1	5.6	(2.9)
Total other (income) expense, net	$ (108.2)	$ 1,095.5	$ (497.4)

[1] Reflects the pre-tax gain, net of transaction costs, recognized from the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics in April 2022. For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to these consolidated financial statements.

The (gains) losses on investments, net, as reflected in the table above, relate to debt securities, equity securities of certain biotechnology companies, venture capital funds where the underlying investments are in equity securities of certain biotechnology companies and non-marketable equity securities.

During the second quarter of 2022 we recorded a pre-tax charge of $900.0 million, plus settlement fees and expenses, related to a litigation settlement agreement to resolve a qui tam litigation relating to conduct prior to 2015. This charge is included within other (income) expense, net in our consolidated statements of income for the year ended December 31, 2022.

The following table summarizes our (gains) losses on investments, net that relates to our equity securities held as of December 31, 2022, 2021 and 2020:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Net (gains) losses recognized on equity securities	$ 264.7	$ 821.1	$ (693.9)
Less: Net (gains) losses realized on equity securities	—	(10.3)	(12.1)
Unrealized (gains) losses recognized on equity securities	$ 264.7	$ 831.4	$ (681.8)

The net unrealized losses recognized during the year ended December 31, 2022, primarily reflect a decrease in the aggregate fair value of our investments in Denali and Sangamo common stock of approximately $278.0 million. The net unrealized losses recognized during the year ended December 31, 2021, primarily reflect decreases in the aggregate fair value of our investments in Denali, Sage, Sangamo and Ionis common stock of approximately $819.6 million.

Accrued Expense and Other

Accrued expense and other consists of the following:

	As of December 31,	
(In millions)	**2022**	**2021**
Revenue-related reserves for discounts and allowances	$ 891.6	$ 802.1
Employee compensation and benefits	395.6	345.1
Collaboration expense	277.9	324.7
Royalties and licensing fees	209.4	234.7
Other	746.9	828.6
Total accrued expense and other	$ 2,521.4	$ 2,535.2

Other long-term liabilities were $944.2 million and $1,320.5 million as of December 31, 2022 and 2021, respectively, and included accrued income taxes totaling $541.7 million and $664.5 million, respectively.

Note 19: Collaborative and Other Relationships

In connection with our business strategy, we have entered into various collaboration agreements that provide us with rights to develop, produce and market products using certain know-how, technology and patent rights maintained by our collaborative partners. Terms of the various collaboration agreements may require us to make milestone payments upon the achievement of certain product research and development objectives and pay royalties on future sales, if any, of commercial products resulting from the collaboration.

Depending on the collaborative arrangement, we may record funding receivable or payable balances with our collaboration partners, based on the nature of the cost-sharing mechanism and activity within the collaboration. Our significant collaborative arrangements are discussed below.

Genentech, Inc. (Roche Group)

We have certain business and financial rights with respect to RITUXAN for the treatment of non-Hodgkin's lymphoma, CLL and other conditions; RITUXAN HYCELA for the treatment of non-Hodgkin's lymphoma and CLL; GAZYVA for the treatment of CLL and follicular lymphoma; OCREVUS for the treatment of PPMS and RMS; LUNSUMIO (mosunetuzumab), which was granted accelerated approval in the U.S. during the fourth quarter of 2022 for the treatment of relapsed or refractory follicular lymphoma; glofitamab, an investigational bispecific antibody for the potential treatment of non-Hodgkin's lymphoma; and have the option to add other potential anti-CD20 therapies, pursuant to our collaboration arrangements with Genentech, a wholly-owned member of the Roche Group. For purposes of this footnote, we refer to RITUXAN and RITUXAN HYCELA collectively as RITUXAN.

If we undergo a change in control, as defined in our collaboration agreement, Genentech has the right to present an offer to buy the rights to RITUXAN and we must either accept Genentech's offer or purchase Genentech's rights on the same terms as its offer. Genentech will also be deemed concurrently to have purchased our rights to the remaining products in the collaboration on the terms set forth below.

Our collaboration with Genentech was created through a contractual arrangement and not through a joint venture or other legal entity.

RITUXAN

Genentech and its affiliates are responsible for the worldwide manufacture of RITUXAN as well as all development and commercialization activities as follows:

- *U.S.:* We have co-exclusively licensed our rights to develop, commercialize and market RITUXAN in the U.S.
- *Canada:* We have co-exclusively licensed our rights to develop, commercialize and market RITUXAN in Canada.

GAZYVA

The Roche Group and its sub-licensees maintain sole responsibility for the development, manufacture and commercialization of GAZYVA in the U.S. The level of gross sales of GAZYVA in the U.S. could impact our percentage of the co-promotion profits for RITUXAN and LUNSUMIO, as summarized in the table below.

OCREVUS

Pursuant to the terms of our collaboration arrangements with Genentech, we receive a tiered royalty on U.S. net sales from 13.5% and increasing up to 24.0% if annual net sales exceed $900.0 million. There will be a 50.0% reduction to these royalties if a biosimilar to OCREVUS is approved in the U.S.

In addition, we receive a gross 3.0% royalty on net sales of OCREVUS outside the U.S., with the royalty period lasting 11 years from the first commercial sale of OCREVUS on a country-by-country basis.

The commercialization of OCREVUS does not impact the percentage of the co-promotion profits we receive for RITUXAN or GAZYVA. Genentech is solely responsible for development and commercialization of OCREVUS and funding future costs. Genentech cannot develop OCREVUS in CLL, non-Hodgkin's lymphoma or rheumatoid arthritis.

OCREVUS royalty revenue is based on our estimates from third-party and market research data of OCREVUS sales occurring during the corresponding period. Differences between actual and estimated royalty revenue will be adjusted for in the period in which they become known, which is generally expected to be the following quarter.

If we undergo a change in control, as defined in our collaboration agreement, Genentech will be deemed to have purchased our rights to OCREVUS in exchange for the continued payment of the current royalties on net sales (as defined in our collaboration agreement and summarized above) in the U.S. only, until the 11 year anniversary of the first commercial sale of OCREVUS in the U.S.

LUNSUMIO (mosunetuzumab)

In January 2022 we exercised our option with Genentech to participate in the joint development and commercialization of LUNSUMIO. In connection with this exercise, we recorded a $30.0 million option exercise fee payable to Genentech in December 2021, which was recognized in research and development expense in our consolidated statements of income for the year ended December 31, 2021. We also recorded a charge of approximately $20.0 million to reimburse Genentech for our 30.0% share of the costs incurred in developing this product candidate during 2021, which was recognized in research and development expense in our consolidated statements of income for the year ended December 31, 2021. For the year ended December 31, 2022, we recorded approximately $28.4 million in research and development expense and approximately $13.0 million in sales and marketing expense in our consolidated statements of income related to this collaboration.

Under our collaboration with Genentech, we were responsible for 30.0% of development costs for LUNSUMIO prior to FDA approval and will be entitled to a tiered share of co-promotion operating profits and losses in the U.S., as summarized in the table below. In addition, we receive low single-digit royalties on sales of LUNSUMIO outside the U.S. In December 2022 LUNSUMIO was granted accelerated approval by the FDA for the treatment of relapsed or refractory follicular lymphoma.

If we undergo a change in control, as defined in our collaboration agreement, Genentech will be deemed to have purchased our rights to LUNSUMIO in exchange for 30.0% of the U.S. co-promotion operating profits or losses until the 11 year anniversary of the first commercial sale of LUNSUMIO in the U.S.

Glofitamab

In December 2022 we entered into an agreement with Genentech related to the commercialization and sharing of economics for glofitamab, a late-stage bispecific antibody in development for B-cell non-Hodgkin's lymphoma and other blood cancers. Under the terms of this agreement, we will have no payment obligations and will receive tiered royalties on potential net sales of glofitamab in the U.S. Genentech will have sole decision-making rights on the commercialization of glofitamab within the U.S and, in the event of approval, we are eligible to receive tiered royalties in the mid-single digit range on potential net sales of glofitamab in the U.S.

If we undergo a change in control, as defined in our collaboration agreement, Genentech will be deemed to have purchased our rights to Glofitamab in exchange for a mid-single digit royalty on net sales (as defined in our collaboration agreement) in the U.S. only, until the 11 year anniversary of the first commercial sale of the product in the U.S.

Profit-sharing Formulas

RITUXAN and LUNSUMIO Profit Share

Our current pretax co-promotion profit-sharing formula for RITUXAN and LUNSUMIO in the U.S. provides for a 30.0% share on the first $50.0 million of combined co-promotion operating profits earned each calendar year. As a result of the FDA approval of LUNSUMIO our share of the combined annual co-promotion profits for RITUXAN and LUNSUMIO in excess of $50.0 million varies upon the following events, as summarized in the table below:

After LUNSUMIO Approval until the First Threshold Date	37.5 %
After First Threshold Date until the Second Threshold Date	35.0 %
After Second Threshold Date	30.0 %

First Threshold Date means the earlier of (i) the first day of the calendar quarter following the date U.S. gross sales of GAZYVA within any consecutive 12-month period have reached $500.0 million or (ii) the first date in any calendar year in which U.S. gross sales of LUNSUMIO have reached $150.0 million.

Second Threshold Date means the later of (i) the first date the gross sales in any calendar year in which U.S. gross sales of LUNSUMIO reach $350.0 million and (ii) January 1 of the calendar year following the calendar year in which the First Threshold Date occurs.

Our share of RITUXAN pre-tax profits in the U.S. in excess of $50.0 million for the years ended December 31, 2022, 2021 and 2020, was 37.5%.

GAZYVA Profit Share

Our current pretax profit-sharing formula for GAZYVA provides for a 35.0% share on the first $50.0 million of operating profits earned each calendar year. Our share of annual co-promotion profits in excess of $50.0 million varies upon the following events, as summarized in the table below:

Until Second GAZYVA Threshold Date	37.5 %
After Second GAZYVA Threshold Date	35.0 %

Second GAZYVA Threshold Date means the first day of the calendar quarter following the date U.S. gross sales of GAZYVA within any consecutive 12-month period have reached $500.0 million. The second GAZYVA threshold date can be achieved regardless of whether GAZYVA has been approved in a non-CLL indication.

Our share of GAZYVA pre-tax profits in excess of $50.0 million for the years ended December 31, 2022, 2021 and 2020, was 37.5%.

If we undergo a change in control, as defined in our collaboration agreement, Genentech will be deemed to have purchased our rights to GAZYVA in exchange for the continued payment of the compensation payable for GAZYVA under the collaboration arrangement (and set forth above) until the 11 year anniversary of the first commercial sale of GAZYVA in the U.S.

Revenue from Anti-CD20 Therapeutic Programs

Revenue from anti-CD20 therapeutic programs is summarized as follows:

(In millions)	For the Years Ended December 31, 2022	2021	2020
Royalty revenue on sales of OCREVUS	$ 1,136.3	$ 991.7	$ 845.4
Biogen's share of pre-tax profits in the U.S. for RITUXAN and GAZYVA	547.0	647.7	1,080.2
Other revenue from anti-CD20 therapeutic programs	17.2	19.1	52.2
Total revenue from anti-CD20 therapeutic programs	$ 1,700.5	$ 1,658.5	$ 1,977.8

Prior to regulatory approval, we record our share of the expense incurred by the collaboration for the development of anti-CD20 products in research and development expense and pre-commercialization costs within selling, general and administrative expense in our consolidated statements of income. After an anti-CD20 product is approved, we record our share of the development and sales and marketing expense related to that product as a reduction of our share of pre-tax profits in revenue from anti-CD20 therapeutic programs.

Ionis Pharmaceuticals, Inc.

SPINRAZA

In January 2012 we entered into a collaboration and license agreement with Ionis Pharmaceuticals Inc. (Ionis) pursuant to which we have an exclusive, worldwide license to develop and commercialize SPINRAZA for the treatment of SMA.

Under our agreement with Ionis, we make royalty payments to Ionis on annual worldwide net sales of SPINRAZA using a tiered royalty rate between 11.0% and 15.0%, which are recognized in cost of sales within our consolidated statements of income. Royalty cost of sales related to sales of SPINRAZA for the years ended December 31, 2022, 2021 and 2020, totaled approximately $243.1 million, $267.1 million and $286.6 million, respectively.

2018 Ionis Agreement

In June 2018 we entered into a 10-year exclusive collaboration agreement with Ionis to develop novel antisense oligonucleotide (ASO) drug candidates for a broad range of neurological diseases for a total payment of $1.0 billion, consisting of an upfront payment of $375.0 million and the purchase of approximately 11.5 million shares of Ionis common stock at a cost of $625.0 million.

Upon closing, we recorded $50.9 million of the $375.0 million upfront payment as prepaid services in our consolidated balance sheets and recognized the remaining $324.1 million as research and development expense in our consolidated statements of income. The amount recorded as prepaid services represented the value of the employee resources committed to the arrangement to provide research and discovery services over the term of the agreement.

We have the option to license therapies arising out of this agreement and will be responsible for the development and commercialization of such therapies. We may pay development milestones to Ionis of up to $125.0 million or $270.0 million for each program, depending on the indication plus an annual license fee, as well as royalties on potential net commercial sales.

During the years ended December 31, 2022, 2021 and 2020, we incurred milestones of $10.0 million, $22.5 million and $11.3 million, respectively, related to the advancement of neurological targets identified under this agreement, which were recorded as research and development expense in our consolidated statements of income.

2017 SMA Collaboration Agreement

In December 2017 we entered into a collaboration agreement with Ionis to identify new ASO drug candidates for the potential treatment of SMA. Under this agreement, we have the option to license therapies arising out of this collaboration and will be responsible for their development and commercialization of such therapies.

Upon entering into this agreement, we made a $25.0 million upfront payment to Ionis and we may pay Ionis up to $260.0 million in additional development and regulatory milestone payments if new drug candidates advance to marketing approval. Upon commercialization, we may also pay Ionis up to $800.0 million in additional performance-based milestone payments and tiered royalties on potential net sales of such therapies.

In December 2021 we exercised our option with Ionis and obtained a worldwide, exclusive, royalty-bearing license to develop and commercialize BIIB115, an investigational ASO in development for SMA. In connection with this option exercise, we made an opt-in payment of $60.0 million to Ionis, which was recorded as research and development expense in our consolidated statements of income for the year ended December 31, 2021.

2013 Long-term Strategic Research Agreement

In September 2013 we entered into a six-year research collaboration agreement with Ionis under which both companies collaborate to perform discovery level research and subsequent development and commercialization activities of antisense or other therapeutics for the potential treatment of neurological diseases. Under this agreement, Ionis performs research on a set of neurological targets identified within the agreement.

Ionis is eligible to receive milestone payments, license fees and royalty payments for all product candidates developed through this collaboration, with the specific amount dependent upon the modality of the product candidate advanced by us under the terms of the agreement.

For non-ALS antisense product candidates, Ionis is responsible for global development through the completion of a Phase 2 trial and we provide advice on the clinical trial design and regulatory strategy. For ALS antisense product candidates, we are responsible for global development, clinical trial design and regulatory strategy. We have an option to license a product candidate until completion of the Phase 2 trial. If we exercise our option, we will pay Ionis up to a $70.0 million license fee and assume global development, regulatory and commercialization responsibilities. Ionis could receive additional milestone payments upon the achievement of certain regulatory milestones of up to $130.0 million, plus additional amounts related to the cost of clinical trials conducted by Ionis under the collaboration, and royalties on future sales if we successfully develop the product candidate after option exercise.

In December 2018 we exercised our option with Ionis and obtained a worldwide, exclusive, royalty-bearing license to develop and commercialize tofersen (BIIB067), an investigational treatment for ALS with superoxide dismutase 1 (SOD1) mutations. Potential post-licensing milestone payments may include up to $55.0 million and royalties in the low- to mid-teen percentages on potential annual worldwide net sales. We are solely responsible for the costs and expense related to the development, manufacturing and commercialization of tofersen following the option exercise.

During the years ending December 31, 2022, 2021 and 2020, we incurred milestones of $17.0 million, $10.0 million and $28.0 million, respectively, related to the advancement of programs under this agreement, which were recorded as research and development expense in our consolidated statements of income.

2012 Ionis Agreement

In December 2012 we entered into an agreement with Ionis for the development and commercialization of up to three gene targets.

Under this agreement, Ionis is responsible for global development of any product candidate through the completion of a Phase 2 trial and we will provide advice on the clinical trial design and regulatory strategy. We have an option to license the product candidate until completion of the Phase 2 trial. If we exercise our option, we will pay a license fee of up to $70.0 million to Ionis and assume global development, regulatory and commercialization responsibilities. Ionis is eligible to receive up to $130.0 million in additional milestone payments upon the achievement of certain regulatory milestones as well as royalties on future sales if we successfully develop the product candidate after option exercise.

In December 2019 we exercised our option with Ionis and obtained a worldwide, exclusive, royalty-bearing license to develop and commercialize BIIB080 (tau ASO), which is currently in Phase 2 development for the potential treatment of Alzheimer's disease. In connection with the option exercise, we made a payment of $45.0 million to Ionis, which was recorded as research and development expense in our consolidated statements of income. Future payments may include additional milestone payments of up to $155.0 million and royalties on future sales in the low- to mid-teens if we successfully develop the product candidate after option exercise.

During the year ended December 31, 2022, we incurred a milestone payment of $10.0 million, related to the advancement of BIIB080 under this agreement, which was recorded within research and development expense in our consolidated statements of income.

Eisai Co., Ltd.

LEQEMBI (lecanemab) Collaboration

We have a collaboration agreement with Eisai to jointly develop and commercialize LEQEMBI (lecanemab), an anti-amyloid antibody for the potential treatment of Alzheimer's disease (the LEQEMBI Collaboration).

Eisai serves as the lead of LEQEMBI development and regulatory submissions globally with both companies co-commercializing and co-promoting the product, and Eisai having final decision-making authority. All costs, including research, development, sales and marketing expense, are shared equally between us and Eisai. Upon LEQEMBI marketing approval, we and Eisai will co-promote LEQEMBI and share profits and losses equally. We currently manufacture LEQEMBI drug substance and drug product and in March 2022 we extended our supply agreement with Eisai related to LEQEMBI from five years to ten years for the manufacture of LEQEMBI drug substance.

The LEQEMBI Collaboration also provided Eisai with an option to jointly develop and commercialize ADUHELM (aducanumab) (ADUHELM Option), and an option to jointly develop and commercialize one of our anti-tau monoclonal antibodies (Anti-Tau Option). In October 2017 Eisai exercised its ADUHELM Option and we entered into a new collaboration agreement for the joint development and commercialization of ADUHELM (aducanumab) (the ADUHELM Collaboration Agreement).

On March 14, 2022, we amended our ADUHELM Collaboration Agreement with Eisai. As of the amendment date, we have sole decision making and commercialization rights worldwide on ADUHELM, and beginning January 1, 2023, Eisai receives only a tiered royalty based on net sales of ADUHELM, and no longer participates in sharing ADUHELM's global profits and losses. In March 2022 we also amended the LEQEMBI Collaboration Agreement with Eisai to eliminate the Anti-Tau Option.

If either company undergoes a change of control, as defined in our LEQEMBI Collaboration Agreement, the non-acquired party may elect to initiate an operational separation, as defined in the LEQEMBI Collaboration Agreement. In the event of an operational separation, we would work with Eisai to effect a timely transition of any development, manufacturing or commercial responsibilities regarding LEQEMBI from us to Eisai. In this scenario, as of six months following the change of control, our ongoing responsibility for LEQEMBI related cost-sharing would be reduced to an amount equal to 80.0% of what we would have owed prior to the operational separation, and all other economic rights would remain unchanged.

In addition, in the event either company undergoes a change of control in which the acquirer is engaged in commercialization of a competing product, as defined in the LEQEMBI Collaboration Agreement, the non-acquired party may also request that the acquired party cease commercializing the competing product. Should the acquired party elect to continue commercializing the competing product, the non-acquired party may terminate the LEQEMBI Collaboration Agreement. Furthermore, in the event we are the non-acquired party, we may choose either to sell our interest in LEQEMBI to Eisai or purchase Eisai's interest in LEQEMBI, subject to the parameters set forth in the LEQEMBI Collaboration Agreement.

A summary of development and sales and marketing expense related to the LEQEMBI Collaboration is as follows:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Total development expense incurred by the collaboration related to the advancement of LEQEMBI	$ 347.2	$ 323.0	$ 219.3
Biogen's share of the LEQEMBI Collaboration development expense reflected in research and development expense in our consolidated statements of income	173.6	161.5	109.6
Total sales and marketing expense incurred by the LEQEMBI Collaboration	104.6	27.2	9.8
Biogen's share of the LEQEMBI Collaboration sales and marketing expense reflected in selling, general and administrative expense in our consolidated statements of income	52.3	13.6	4.9

ADUHELM Collaboration Agreement

Under our initial ADUHELM Collaboration Agreement, we would lead the ongoing development of ADUHELM, and we and Eisai would co-promote ADUHELM with a region-based profit split. Beginning in 2019, Eisai was reimbursing us for 45.0% of development and sales and marketing expense incurred by the collaboration for the advancement of ADUHELM.

On March 14, 2022, we amended our ADUHELM Collaboration Agreement with Eisai. As of the amendment date, we have sole decision making and commercialization rights worldwide on ADUHELM, and beginning January 1, 2023, Eisai receives only a tiered royalty based on net sales of ADUHELM, and no longer participates in sharing ADUHELM's global profits and losses. Eisai's share of development, commercialization and manufacturing expense was limited to $335.0 million for the period from January 1, 2022 to December 31, 2022, which was achieved as of December 31, 2022. Once this limit was achieved, we became responsible for all ADUHELM related costs.

A summary of development expense, sales and marketing expense and milestone payments related to the ADUHELM Collaboration Agreement is as follows:

	For the Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Total ADUHELM development expense	$ 149.4	$ 183.7	$ 152.0
Biogen's share of the ADUHELM Collaboration development expense reflected in research and development expense in our consolidated statements of income	82.2	101.1	83.6
Total ADUHELM sales and marketing expense incurred by the ADUHELM Collaboration Agreement	134.2	562.3	353.0
Biogen's share of the ADUHELM Collaboration sales and marketing expense reflected in selling, general and administrative expense and collaboration profit (loss) sharing in our consolidated statements of income	71.5	301.4	193.7
Total ADUHELM Collaboration third party milestones	—	100.0	75.0
Biogen's share of reimbursement from Eisai of ADUHELM milestone payments reflected in collaboration profit (loss) sharing in our consolidated statements of income	—	45.0	33.8

ADUHELM Co-promotion Profits and Losses

In the U.S. we recognize revenue on sales of ADUHELM to third parties as a component of product revenue, net in our consolidated statements of income. We also record the related cost of revenue and sales and marketing expense in our consolidated statements of income as these costs are incurred. Payments made to and received from Eisai for its 45.0% share of the co-promotion profits or losses in the U.S. are recognized in collaboration profit (loss) sharing in our consolidated statements of income. For the years ended December 31, 2022 and 2021, we recognized net reductions to our operating expense of approximately $224.7 million and $233.2 million, respectively, to reflect Eisai's 45.0% share of net collaboration losses in the U.S.

For the year ended December 31, 2021, we recognized a net reduction to our operating expense of $45.0 million to reflect Eisai's 45.0% share of the $100.0 million milestone payment made to Neurimmune related to the launch of ADUHELM in the U.S., which was recorded in collaboration profit (loss) sharing in our consolidated statements of income.

For the year ended December 31, 2020, we recognized a net reduction to our operating expense of $33.8 million to reflect Eisai's 45.0% share of the $75.0 million milestone payment made to Neurimmune related to the submission of a Biologics License Application (BLA) to the FDA for the approval of ADUHELM, which was recorded in collaboration profit (loss) sharing in our consolidated statements of income.

During the fourth quarter of 2021 we recorded approximately $164.0 million of charges associated with the write-off of inventory and purchase commitments in excess of forecasted demand related to ADUHELM. During the first quarter of 2022, as a result of the final NCD, we recorded approximately $275.0 million of charges associated with the write-off of inventory and purchase commitments in excess of forecasted demand related to ADUHELM. Additionally, for the years ended December 31, 2022 and 2021, we recorded approximately $111.0 million and $30.0 million, respectively, of aggregate gross idle capacity charges related to ADUHELM. These charges were recorded in cost of sales within our consolidated statements of income for the years ended December 31, 2022 and 2021.

We have recognized approximately $197.0 million and $99.0 million related to Eisai's 45.0% share of inventory, idle capacity charges and contractual commitments in collaboration profit (loss) sharing within our consolidated statements of income for the years ended December 31, 2022 and 2021, respectively.

Amounts receivable from Eisai related to the agreements discussed above were approximately $88.0 million and $285.4 million as of December 31, 2022 and 2021, respectively. Amounts payable to Eisai related to the agreements discussed above were approximately $81.2 million and $46.5 million as of December 31, 2022 and 2021, respectively.

In addition, we and Eisai co-promote AVONEX, TYSABRI and TECFIDERA in Japan in certain settings and Eisai distributes AVONEX, TYSABRI, TECFIDERA and PLEGRIDY in India and other Asia-Pacific markets, excluding China.

UCB

In November 2003 we entered into a collaboration agreement with UCB to jointly develop and commercialize dapirolizumab pegol, an anti-CD40L pegylated Fab, for the potential treatment of systemic lupus erythematosus and other future agreed indications. Either we or UCB may propose development of dapirolizumab pegol in additional indications. If the parties do not agree to add an indication as an agreed indication to the collaboration, we or UCB may, at the sole expense of the applicable party, pursue development in such excluded indication(s), subject to an opt-in right of the non-pursuing party after proof of clinical activity.

All costs incurred for agreed indications, including research, development, sales and marketing expense, are shared equally between us and UCB. If marketing approval is obtained, both companies will co-promote dapirolizumab pegol and share profits and losses equally.

A summary of development expense related to the UCB collaboration agreement is as follows:

	For the Years Ended December 31,		
(In millions)	2022	2021	2020
Total UCB collaboration development expense	$ 68.0	$ 84.2	$ 58.3
Biogen's share of the UCB collaboration development expense reflected in research and development expense in our consolidated statements of income	34.0	42.1	29.2

Alkermes

In November 2017 we entered into an exclusive license and collaboration agreement with Alkermes Pharma Ireland Limited, a subsidiary of Alkermes plc (Alkermes), for VUMERITY, a novel fumarate for the treatment of RMS. In October 2019 the FDA approved VUMERITY in the U.S. for the treatment of RMS. During the fourth quarter of 2021 VUMERITY was approved for the treatment of relapsing-remitting MS (RRMS) in the E.U., Switzerland and the United Kingdom (U.K.).

Under this agreement, we received an exclusive, worldwide license to develop and commercialize VUMERITY and we pay Alkermes royalties of 15.0% on worldwide net commercial sales of VUMERITY, which are recognized in cost of sales within our consolidated statements of income. Royalties payable on net commercial sales of VUMERITY are subject, under certain circumstances, to tiered minimum annual payment requirements for a period of five years following FDA approval. Royalty cost of sales related to sales of VUMERITY for the years ended December 31, 2022, 2021 and 2020, totaled approximately $83.0 million, $61.6 million and $12.9 million, respectively.

Alkermes is eligible to receive royalties in the high-single digits to sub-teen double digits of annual net commercial sales upon successful development and commercialization of new product candidates, other than VUMERITY, developed under the exclusive license from Alkermes.

Alkermes currently supplies both VUMERITY and FAMPYRA to us pursuant to separate supply agreements. In October 2019 we entered into a new supply agreement and amended our license and collaboration agreement with Alkermes for VUMERITY. We have elected to initiate a technology transfer and, following a transition period, to manufacture VUMERITY or have VUMERITY manufactured by a third party we have engaged in exchange for paying an increased royalty rate to Alkermes on any portion of future worldwide net commercial sales of VUMERITY that is manufactured by us or our designee. In October 2022 we entered into a new supply agreement with Alkermes for FAMPYRA. Acorda previously supplied FAMPYRA to us pursuant to a sublicensing arrangement with Alkermes, which was terminated in October 2022 as a result of an arbitration outcome between Acorda and Alkermes.

Acorda Therapeutics, Inc.

In June 2009 we entered into a collaboration and license agreement with Acorda Therapeutics, Inc. (Acorda) to develop and commercialize products containing fampridine, such as FAMPYRA, in markets outside the U.S. We are responsible for all regulatory activities and the future clinical development of related products in those markets.

Under this agreement, we pay tiered royalties based on the level of ex-U.S. net sales and we may pay potential milestone payments based on the successful achievement of certain regulatory and commercial milestones, which would be capitalized as intangible assets upon achievement of the milestones and amortized utilizing an economic consumption model. During the third quarter of 2020 we recognized a milestone of $15.0 million, which became due

upon ex-U.S. net sales reaching $100.0 million over a period of four consecutive quarters, and was capitalized within intangible assets, net in our consolidated balance sheets.

In connection with the collaboration and license agreement, we also entered into a supply agreement with Acorda for the commercial supply of FAMPYRA. This agreement was a sublicense arrangement of an existing agreement between Acorda and Alkermes Inc., who acquired Elan Drug Technologies, the original party to the license with Acorda. In October 2022 we learned that, as a result of an arbitration filed by Acorda with the American Arbitration Association in July 2020 after Acorda and Alkermes were unable to resolve a dispute over license and supply royalties, Acorda no longer had to pay Alkermes any royalties on net sales for license and supply of FAMPYRA and Acorda was now free to use alternative sources for supply of FAMPYRA. Acorda notified us that as a result of it no longer obtaining FAMPYRA from Alkermes, that we would need to enter into a supply agreement to obtain FAMPYRA directly with Alkermes.

For the years ending December 31, 2022, 2021 and 2020, total cost of sales related to royalties and commercial supply of FAMPYRA reflected in our consolidated statements of income were approximately $46.1 million, $46.6 million and $44.5 million, respectively.

Sage Therapeutics, Inc.

In November 2020 we entered into a global collaboration and license agreement with Sage to jointly develop and commercialize zuranolone (BIIB125) for the potential treatment of MDD and PPD and BIIB124 (SAGE-324) for the potential treatment of essential tremor with potential in other neurological conditions such as epilepsy.

In connection with the closing of this transaction in December 2020 we purchased $650.0 million of Sage common stock, or approximately 6.2 million shares at approximately $104.14 per share, which were initially subject to transfer restrictions. We recorded an asset in investments and other assets in our consolidated balance sheets to reflect the initial fair value of the Sage common stock acquired and a charge of approximately $209.0 million to research and development expense in our consolidated statements of income to reflect the premium paid for the Sage common stock. We also made an upfront payment of $875.0 million that was recorded as research and development expense within our consolidated statements of income for the year ended December 31, 2020.

We may also pay Sage development and commercial milestone payments that could total up to approximately $1.6 billion if all the specified milestones set forth in this collaboration are achieved. Both companies will share equal responsibility and costs for development as well as profits and losses for commercialization in the U.S. Outside of the U.S., we are responsible for development and commercialization, excluding Japan, Taiwan and South Korea, with respect to zuranolone and may pay Sage potential tiered royalties in the high teens to low twenties. We may pay Sage milestones totaling $225.0 million upon the first commercial sale of zuranolone, for the potential treatment of MDD and PPD, in the U.S.

A summary of development and sales and marketing expense related to this collaboration is as follows:

	For the Years Ended December 31,		
(In millions)	2022	2021	2020
Total Sage collaboration development expense	$ 173.3	$ 167.7	$ —
Biogen's share of the Sage collaboration development expense reflected in research and development expense in our consolidated statements of income	86.7	83.8	—
Total Sage sales and marketing expense incurred by the collaboration	109.9	36.4	—
Biogen's share of the Sage collaboration sales and marketing expense reflected in selling, general and administrative expense in our consolidated statements of income	55.0	18.2	—

Denali Therapeutics Inc.

In August 2020 we entered into a collaboration and license agreement with Denali to co-develop and co-commercialize Denali's small molecule inhibitors of leucine-rich repeat kinase 2 (LRRK2) for Parkinson's disease. In addition to the LRRK2 program, we also have an exclusive option to license two preclinical programs from Denali's Transport Vehicle platform, including its Antibody Transport Vehicle (ATV): ATV enabled anti-amyloid beta program and a second program utilizing its Transport Vehicle technology. Further, we have a right of first negotiation on two additional ATV-enabled therapeutics for indications within specific neurodegenerative diseases, should Denali decide to seek a collaboration for such programs.

As part of this collaboration we purchased $465.0 million of Denali common stock in September 2020, or approximately 13 million shares at approximately $34.94 per share, which were initially subject to transfer restrictions. We recorded an asset in investments and other assets in our consolidated balance sheets to reflect the initial fair value of the Denali common stock acquired and a charge of approximately $41.3 million to research and development expense in our consolidated statements of income to reflect the premium paid for the Denali common stock. We also made an upfront payment of $560.0 million that was recorded as research and development expense within our consolidated statements of income for the year ended December 31, 2020.

We may also pay Denali development and commercial milestone payments that could total up to approximately $1.1 billion if the milestones related to the LRRK2 program are achieved. Under this collaboration, both companies share responsibility and costs for global development based on specified percentages as well as profits and losses for commercialization in the U.S. and China. Outside the U.S. and China we are responsible for commercialization and may pay Denali potential tiered royalties.

In October 2022 we and Denali announced the initiation of the Phase 3 LIGHTHOUSE study for BIIB122 (DNL151), a small molecule inhibitor of LRRK2 for the potential treatment of Parkinson's disease.

A summary of development expense related to this collaboration is as follows:

	For the Years Ended December 31,		
(In millions)	2022	2021	2020
Total Denali collaboration development expense	$ 75.1	$ 42.5	$ 14.6
Biogen's share of the Denali collaboration development expense reflected in research and development expense in our consolidated statements of income	43.8	25.5	8.8

Sangamo Therapeutics, Inc.

In February 2020 we entered into a collaboration and license agreement with Sangamo to develop and commercialize ST-501 for tauopathies, including Alzheimer's disease; ST-502 for synucleinopathies, including Parkinson's disease; a third neuromuscular disease target; and up to nine additional neurological disease targets to be identified and selected within a five-year period. The companies are leveraging Sangamo's proprietary zinc finger protein technology delivered via adeno-associated virus to modulate the expression of key genes involved in neurological diseases.

In connection with the closing of this transaction in April 2020 we purchased $225.0 million of Sangamo common stock, or approximately 24 million shares at approximately $9.21 per share, which were initially subject to transfer restrictions. We recorded an asset in investments and other assets in our consolidated balance sheets to reflect the initial fair value of the Sangamo common stock acquired and a charge of approximately $83.0 million to research and development expense in our consolidated statements of income to reflect the premium paid for the Sangamo common stock. We also made an upfront payment of $125.0 million that was recorded as research and development expense within our consolidated statements of income for the year ended December 31, 2020.

We may also pay Sangamo research, development, regulatory and commercial milestone payments that could total up to approximately $2.4 billion if we select all of the targets allowed under this collaboration and all the specified milestones set forth in this collaboration are achieved. Of this amount, up to $80.0 million relates to the selection of targets, $1.9 billion relates to the achievement of specified research, clinical development, regulatory and first commercial sale milestones and $380.0 million relates to the achievement of specified sales-based milestones if annual worldwide net sales of licensed products reach specified levels. In addition, we may pay Sangamo tiered royalties on potential net sales of any products developed under this collaboration in the high single digit to sub-teen percentages.

A summary of development expense related to this collaboration is as follows:

(In millions)	For the Years Ended December 31, 2022	2021	2020
Total Sangamo collaboration development expense	$ 19.1	$ 22.7	$ 10.1
Biogen's share of the Sangamo collaboration development expense reflected in research and development expense in our consolidated statements of income	12.1	14.6	6.4

InnoCare Pharma Limited

In July 2021 we entered into a collaboration and license agreement with InnoCare Pharma Limited (InnoCare) for orelabrutinib, an oral small molecule Bruton's tyrosine kinase inhibitor for the potential treatment of MS. Orelabrutinib is currently being studied in a multi-country, placebo-controlled Phase 2 trial in RRMS. Under the terms of this collaboration, we have exclusive rights to orelabrutinib in the field of MS worldwide and certain autoimmune diseases outside of China (including Hong Kong, Macau and Taiwan), while InnoCare retains exclusive worldwide rights to orelabrutinib in the field of oncology and certain autoimmune diseases in China (including Hong Kong, Macau and Taiwan).

In connection with the closing of this transaction in August 2021 we made an upfront payment of $125.0 million that was recorded as research and development expense within our consolidated statements of income for the year ended December 31, 2021. We may also pay InnoCare up to approximately $812.5 million in potential development milestones and potential commercial payments should this collaboration achieve certain development, commercial milestones and sales thresholds. In addition, we may pay InnoCare tiered royalties on potential net sales of any products developed under this collaboration in the low to high teen percentages.

In February 2023 we terminated our license and collaboration agreement with InnoCare for orelabrutinib, for the potential treatment of MS.

Other Research and Discovery Arrangements

These arrangements may include the potential for future milestone payments based on the achievement of certain clinical and commercial development payable over a period of several years.

Other

For the years ended December 31, 2022, 2021 and 2020, we recorded approximately $39.2 million, $89.1 million and $92.1 million, respectively, as research and development expense in our consolidated statements of income related to other research and discovery related arrangements.

Samsung Bioepis Co., Ltd.

Joint Venture Agreement

In February 2012 we entered into a joint venture agreement with Samsung BioLogics establishing an entity, Samsung Bioepis, to develop, manufacture and market biosimilar products. Samsung BioLogics contributed 280.5 billion South Korean won (approximately $250.0 million) for an 85.0% ownership interest in Samsung Bioepis and we contributed 49.5 billion South Korean won (approximately $45.0 million) for the remaining 15.0% ownership interest. In June 2018 we exercised our option under our joint venture agreement to increase our ownership percentage in Samsung Bioepis from approximately 5.0%, which reflected the effect of previous equity financings in which we did not participate, to approximately 49.9%. The share purchase transaction was completed in November 2018 and, upon closing, we paid 759.5 billion South Korean won ($676.6 million) to Samsung BioLogics.

In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics. Under the terms of this transaction, we received approximately $1.0 billion in cash at closing and expect to receive approximately $1.3 billion in cash to be deferred over two payments of approximately $812.5 million due at the first anniversary and approximately $437.5 million due at the second anniversary of the closing of this transaction.

As part of this transaction, we are also eligible to receive up to an additional $50.0 million upon the achievement of certain commercial milestones. Our policy for contingent payments of this nature is to recognize the payments in the period that they become realizable, which is generally the same period in which the payments are earned.

Prior to this sale, we recognized our share of the results of operations related to our investment in Samsung Bioepis under the equity method of accounting one quarter in arrears when the results of the entity became available, which was reflected as equity in (income) loss of investee, net of tax in our consolidated statements of income.

Upon our November 2018 investment, the equity method of accounting required us to identify and allocate differences between the fair value of our investment and the carrying value of our interest in the underlying net assets of the investee. These basis differences were being amortized over their economic life, until the completion of the sale in April 2022, as discussed above. The total basis difference was approximately $675.0 million and related to inventory, developed technology, IPR&D and deferred tax balances. The basis differences related to inventory were amortized, net of tax, over their estimated useful lives of 1.5 years, and the basis differences related to developed technology and IPR&D for marketed products were being amortized, net of tax, over their estimated useful lives of 15 years.

For the year ended December 31, 2022, we recognized net income on our investment of $2.6 million, reflecting our share of Samsung Bioepis' operating profits, net of tax, totaling $17.0 million offset by amortization of basis differences totaling $14.4 million. This amount reflects our share of results prior to the sale of Samsung Bioepis as the results are recognized one quarter in arrears. Following the sale of Samsung Bioepis we no longer recognize gains or losses associated with Samsung Bioepis' results of operations and amortization related to basis differences.

For the year ended December 31, 2021, we recognized net income on our investment of $34.9 million, reflecting our share of Samsung Bioepis' operating profits, net of tax, totaling $64.6 million offset by amortization of basis differences totaling $29.7 million.

Net income on our investment for the year ended December 31, 2021, reflects a $31.2 million benefit related to the release of a valuation allowance on deferred tax assets associated with Samsung Bioepis. The valuation allowance was released in the second quarter of 2021 based on a consideration of the positive and negative evidence, including the historic earnings of Samsung Bioepis.

As of December 31, 2021, the carrying value of our investment in Samsung Bioepis totaled 713.3 billion South Korean won ($599.9 million), which is classified as a component of investments and other assets within our consolidated balance sheets. In connection with the sale of Samsung Bioepis, the carrying value of our investment was reduced to zero.

For additional information on the sale of our equity interest in Samsung Bioepis, please read *Note 3, Dispositions*, to these consolidated financial statements.

2019 Development and Commercialization Agreement

In December 2019 we completed a transaction with Samsung Bioepis and secured the exclusive rights to commercialize two potential ophthalmology biosimilar products, BYOOVIZ (ranibizumab-nuna), a ranibizumab biosimilar referencing LUCENTIS, and SB15, a proposed aflibercept biosimilar referencing EYLEA, in major markets worldwide, including the U.S., Canada, Europe, Japan and Australia. Samsung Bioepis will be responsible for development and will supply both products to us at a pre-specified gross margin of approximately 45.0%.

In connection with this transaction, we made an upfront payment of $100.0 million to Samsung Bioepis in January 2020, of which $63.0 million was recorded as research and development expense in our consolidated statements of income in 2019 and $37.0 million was recorded as an intangible assets, net in our consolidated balance sheets in 2019.

During the third quarter of 2020 we paid Samsung Bioepis a $15.0 million development milestone, which was included in research and development expense in our consolidated statements of income. During the third quarter of 2021 we accrued $15.0 million in milestone payments related to the approval of BYOOVIZ in the U.S., the E.U. and the U.K., that were capitalized within intangible assets, net in our consolidated balance sheets. We may also pay Samsung Bioepis up to approximately $180.0 million in additional development, regulatory and sales-based milestones.

We also acquired an option to extend the term of our 2013 commercial agreement for BENEPALI, IMRALDI and FLIXABI by an additional five years, subject to payment of an option exercise fee of $60.0 million, and obtained an option to acquire exclusive rights to commercialize these products in China.

2013 Commercial Agreement

In December 2013 we entered into an agreement with Samsung Bioepis to commercialize, over a 10-year term, 3 anti-tumor necrosis factor (TNF) biosimilar product candidates in Europe and in the case of BENEPALI, Japan. As discussed above, we have an option to extend this agreement by an additional five years. Under this agreement, we have made upfront and clinical development milestone payments totaling $46.0 million, which were recorded as research and development expense in our consolidated statements of income as the programs they relate to had not achieved regulatory approval. We also agreed to make additional milestone payments of $25.0 million upon regulatory approval in the E.U. for each of the three anti-TNF biosimilar product candidates. IMRALDI, an adalimumab biosimilar referencing HUMIRA, FLIXABI, an infliximab biosimilar referencing REMICADE, and BENEPALI, an etanercept biosimilar referencing ENBREL, received regulatory approval in the E.U. in August 2017, May 2016 and January 2016, respectively, and we capitalized the related milestone payments totaling $75.0 million as intangible assets, net in our consolidated balance sheets.

We reflect revenue on sales of BENEPALI, IMRALDI and FLIXABI to third parties in product revenue, net in our consolidated statements of income and record the related cost of revenue and sales and marketing expense in our consolidated statements of income to their respective line items when these costs are incurred. Royalty payments to AbbVie Inc. (AbbVie) on sales of IMRALDI are recognized in cost of sales within our consolidated statements of income.

We share 50.0% of the profit or loss related to our commercial agreement with Samsung Bioepis, which is recognized in collaboration profit (loss) sharing in our consolidated statements of income. For the years ended December 31, 2022, 2021 and 2020, we recognized net profit-sharing expense of $217.4 million, $285.4 million and $266.5 million, respectively, to reflect Samsung Bioepis' 50.0% sharing of the net collaboration profits.

Other Services

Simultaneous with the formation of Samsung Bioepis, we also entered into a license agreement with Samsung Bioepis.

Under the license agreement, we granted Samsung Bioepis an exclusive license to use, develop, manufacture and commercialize biosimilar products created by Samsung Bioepis using Biogen product-specific technology. In exchange, we receive single digit royalties on biosimilar products developed and commercialized by Samsung Bioepis.

For the years ended December 31, 2022, 2021 and 2020, we recognized $20.6 million, $20.7 million and $20.9 million, respectively, in royalty revenue under the license agreement, as a component of other revenue in our consolidated statements of income.

Amounts receivable from Samsung Bioepis related to the agreements discussed above were $2.0 million and $4.1 million as of December 31, 2022 and 2021, respectively. Amounts payable to Samsung Bioepis related to the agreements discussed above were $40.5 million and $148.7 million as of December 31, 2022 and 2021, respectively.

Note 20: Investments in Variable Interest Entities

Consolidated Variable Interest Entities

Our consolidated financial statements include the financial results of variable interest entities in which we are the primary beneficiary. The following are our significant variable interest entities.

Neurimmune SubOne AG

We have a collaboration and license agreement with Neurimmune for the development and commercialization of antibodies for the potential treatment of Alzheimer's disease, including ADUHELM (as amended, the Neurimmune Agreement). We are responsible for the development, manufacturing and commercialization of all collaboration products. The Neurimmune Agreement is effective for the longer of the duration of certain patents relating to a licensed product or 12 years from the first commercial sale of a licensed product.

We consolidate the results of Neurimmune as we determined that we are the primary beneficiary of Neurimmune because we have the power through the collaboration to direct the activities that most significantly impact the entity’s economic performance and we are required to fund 100.0% of the research and development costs incurred in support of the collaboration. Our royalty rates payable on products developed under the

Neurimmune Agreement, including royalty rates payable on commercial sales of ADUHELM, range from the high single digits to sub-teens.

Under the terms of the Neurimmune Agreement, we were required to pay Neurimmune a milestone payment of $75.0 million upon the regulatory filing with the FDA for the approval of ADUHELM. During the second quarter of 2020 we paid Neurimmune $75.0 million upon the completed submission of the BLA for the approval of ADUHELM to the FDA, which was recognized as a charge to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income. In addition, during the second quarter of 2020 we recognized net profit-sharing income of $33.8 million to reflect Eisai's 45.0% share of the $75.0 million milestone payment, which was recognized in collaboration profit (loss) sharing in our consolidated statements of income.

In June 2021 ADUHELM was granted accelerated approval by the FDA. Under the terms of the Neurimmune Agreement, we were required to pay Neurimmune a milestone payment of $100.0 million related to the launch of ADUHELM in the U.S. During the second quarter of 2021 we made this $100.0 million payment, which was recognized as a charge to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income. In addition, during the second quarter of 2021 we recognized net profit-sharing income of $45.0 million to reflect Eisai's 45.0% share of the $100.0 million milestone payment, which was recognized in collaboration profit (loss) sharing in our consolidated statements of income.

During 2021 we recorded a net deferred tax asset in Switzerland of approximately $100.0 million on Neurimmune's tax basis in ADUHELM, the realization of which was dependent on future sales of ADUHELM. During the first quarter of 2022, upon issuance of the final NCD related to ADUHELM, we recorded an increase in a valuation allowance of approximately $85.0 million to reduce the net value of this deferred tax asset to zero. These adjustments to our net deferred tax asset are each recorded with an equal and offsetting amount assigned to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income, resulting in a zero net impact to net income attributable to Biogen Inc.

Excluding the impact of the Neurimmune deferred tax asset, the assets and liabilities of Neurimmune are not significant to our consolidated financial position or results of operations as it is a research and development organization. We have provided no financing to Neurimmune other than contractually required amounts.

Research and development costs for which we reimburse Neurimmune are reflected in research and development expense in our consolidated statements of income. During the years ending December 31, 2022, 2021 and 2020, amounts reimbursed were immaterial.

For additional information on our collaboration arrangements with Eisai, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

Unconsolidated Variable Interest Entities

We have relationships with various variable interest entities that we do not consolidate as we lack the power to direct the activities that significantly impact the economic success of these entities. These relationships include investments in certain biotechnology companies and research collaboration agreements.

As of December 31, 2022 and 2021, the carrying value of our investments in certain biotechnology companies representing potential unconsolidated variable interest entities totaled $27.8 million and $24.6 million, respectively. Our maximum exposure to loss related to these variable interest entities is limited to the carrying value of our investments.

We have also entered into research collaboration agreements with certain variable interest entities where we are required to fund certain development activities. These development activities are included in research and development expense in our consolidated statements of income as they are incurred. We have provided no financing to these variable interest entities other than previous contractually required amounts.

Note 21: Litigation

We are currently involved in various claims and legal proceedings, including the matters described below. For information as to our accounting policies relating to claims and legal proceedings, including use of estimates and contingencies, please read *Note 1, Summary of Significant Accounting Policies*, to these consolidated financial statements.

With respect to some loss contingencies, an estimate of the possible loss or range of loss cannot be made until management has further information, including, for example, (i) which claims, if any, will survive dispositive motion practice; (ii) information to be obtained through discovery; (iii) information as to the parties' damages claims and supporting evidence; (iv) the parties' legal theories; and (v) the parties' settlement positions. If an estimate of the possible loss or range of loss can be made at this time, it is included in the potential loss contingency description below.

The claims and legal proceedings in which we are involved also include challenges to the scope, validity or enforceability of the patents relating to our products, pipeline or processes and challenges to the scope, validity or enforceability of the patents held by others. These include claims by third-parties that we infringe their patents. An adverse outcome in any of these proceedings could result in one or more of the following and have a material impact on our business or consolidated results of operations and financial position: (i) loss of patent protection; (ii) inability to continue to engage in certain activities; and (iii) payment of significant damages, royalties, penalties and/or license fees to third parties.

Loss Contingencies

ADUHELM Securities Litigation

We and certain current and former officers are named as defendants in actions filed by shareholders in November 2020 (the November 2020 Securities Action) and February 2022 (the February 2022 Securities Action) and pending in the U.S. District Court for the District of Massachusetts. The actions allege violations of federal securities laws under 15 U.S.C §78j(b) and §78t(a) and 17 C.F.R. §240.10b-5 and seek declarations of the actions as class actions and monetary relief. In September 2022, the court dismissed the November 2020 Securities Action, and the plaintiff has appealed to the U.S. Court of Appeals for the First Circuit. Our motion to dismiss the February 2022 Securities Action is pending.

Shareholder Derivative Actions

We and members of the Board of Directors are named as defendants in derivative actions filed by shareholders on February 9 and July 21, 2022, in the U.S. District Court for the District of Massachusetts. The actions allege violations of federal securities laws under 15 U.S.C. §78n(a) and 17 C.F.R. §240 14.a-9, breaches of fiduciary duties and waste of corporate assets, and seek declaratory and injunctive relief, monetary relief payable to Biogen, and attorneys' fees and costs payable to the plaintiffs. The court has stayed both cases.

IMRALDI Patent Litigation

In September 2018 Fresenius Kabi Deutschland GmbH (Fresenius Kabi) commenced proceedings for damages and injunctive relief against Biogen France SAS in the Tribunal de Grande Instance de Paris and proceedings against Biogen GmbH in the D✔sseldorf Regional Court, alleging that IMRALDI, the adalimumab biosimilar product of Samsung Bioepis that Biogen commercializes in Europe, infringes national counterparts of European Patent No. 3 148 510 (the EP '510 Patent). In June 2022 Fresenius Kabi amended both actions to assert claims under European Patent 3 145 488 (the EP '488 Patent), which expires in May 2035. No hearing has been set in either action.

In June 2022 the Technical Boards of Appeal (TBA) of the European Patent Office (EPO) affirmed the revocation of the EP '510 Patent, which resolves all pending infringement claims under the EP '510 Patent. The EPO upheld the validity of the EP '488 Patent in October 2022.

In June 2020 Fresenius Kabi commenced preliminary injunction proceedings in Denmark's Maritime and Commercial High Court alleging that IMRALDI infringes the Danish counterpart of the EP '488 Patent and a corresponding Danish utility model, DK 2020 00038 Y3. In September 2021 the Court refused Fresenius Kabi's request for a preliminary injunction and Fresenius Kabi has withdrawn its appeal.

In July 2019 Gedeon Richter Nyrt commenced proceedings for damages and injunctive relief against Biogen GmbH in the D✔sseldorf Regional Court, alleging infringement of the German counterpart of European Patent No. 3 212 667 (the EP '667 Patent), which expires in October 2035. The case has been stayed pending Gedeon Richter's appeal to the TBA of the revocation of the patent. A hearing has been set by the TBA for July 2023.

In November 2020 Gedeon Richter Nyrt commenced proceedings against Biogen GmbH in the D✔sseldorf Regional Court alleging infringement of a German utility model corresponding to EP '667. The proceeding has been stayed pending the outcome of proceedings that Biogen has filed in the German Patent and Trademark Office to cancel the utility model, and in which a hearing has been set for March 2023.

Dispute with Former Convergence Shareholders

In 2015 Biogen acquired Convergence, a UK company. In November and December 2019 Shareholder Representative Services LLC, on behalf of the former shareholders of Convergence, sent us correspondence asserting claims of $200.0 million for alleged breach of the contract under which we acquired Convergence. We dispute the claims.

ERISA Class Action Litigation

In September 2020 the U.S. District Court for the District of Massachusetts consolidated two cases filed against us in July and August 2020 by participants in the Biogen 401(k) Savings Plan, alleging breach of fiduciary duty under ERISA. Plaintiffs seek a declaration of the action as a class action and monetary and other relief.

Humana Patient Assistance Litigation

In September 2021 Humana Inc. (Humana) filed suit against us in the U.S. District Court for the District of Massachusetts, alleging damages related to our providing MS patients with free medications and making charitable contributions to non-profit organizations that assist MS patients. Humana alleges violation of the federal RICO Act and state laws and seeks statutory treble damages, attorneys' fees and costs. We filed a motion to dismiss, which is pending.

Distributor Matter

In December 2022 we terminated our distribution agreement with the distributor of products for Biogen in various countries in the Middle East and northern Africa. The former distributor has asserted breach of contract. No suit has been filed.

Other Matters

Government Investigations

The company has received subpoenas from the Securities and Exchange Commission seeking information relating to ADUHELM, including healthcare sites and ADUHELM's approval. In 2021 the U.S. House of Representatives Committees on Oversight and Reform and Energy (House Committees) and the Office of Inspector General (OIG) each announced investigations related to ADUHELM. In December 2022 the House Committees issued a report on their investigation.

TYSABRI Patent Matters

In September 2022 we filed an action in the U.S. District Court for the District of Delaware against Sandoz Inc. and Polpharma Biologics S.A. under the Biologics Price Competition and Innovation Act, 42 U.S.C. §262, seeking a declaratory judgment of patent infringement. No trial date has been set.

In December 2022 the TBA affirmed the revocation of our European Patent 2 676 967 (the EP '967 Patent), covering pre-treatment testing of patients using natalizumab (TYSABRI).

In September 2021 Polpharma Biologics S.A., Sandoz AG, Sandoz Limited and Sandoz GmbH filed an action in the English High Court to revoke the U.K. counterpart of the EP ‘967 Patent. No trial date has been set.

Annulment Proceedings in the General Court of the European Union relating to TECFIDERA

Pharmaceutical Works Polpharma SA (Polpharma) and Mylan Ireland Ltd. (Mylan Ireland) each filed actions in the General Court of the European Union (Polpharma in October 2018 and Mylan Ireland in November 2020) to annul the European Medicines Agency's (EMA) decision not to validate their applications to market generic versions of TECFIDERA on the grounds that TECFIDERA benefits from regulatory data protection. On May 5, 2021, the European General Court annulled the EMA's non-validation decision with respect to Polpharma. The European Court of Justice will announce its decision in our appeal of this decision on March 16, 2023. The case brought by Mylan Ireland has been stayed.

Product Liability and Other Legal Proceedings

We are also involved in product liability claims and other legal proceedings generally incidental to our normal business activities. While the outcome of any of these proceedings cannot be accurately predicted, we do not believe

the ultimate resolution of any of these existing matters would have a material adverse effect on our business or financial condition.

Note 22: Commitments and Contingencies

Royalty Payments

TYSABRI

In 2013 we acquired from Elan full ownership of all remaining rights to TYSABRI that we did not already own or control. Under the acquisition agreement, we are obligated to make contingent payments to Elan of 18.0% on annual worldwide net commercial sales up to $2.0 billion and 25.0% on annual worldwide net commercial sales that exceed $2.0 billion. Royalty payments to Elan and other third parties are recognized as cost of sales in our consolidated statements of income. Elan was acquired by Perrigo Company plc (Perrigo) in December 2013 and Perrigo subsequently sold its rights to these payments to a third-party effective January 2017.

SPINRAZA

In 2016 we exercised our option to develop and commercialize SPINRAZA from Ionis. Under our agreement with Ionis, we make royalty payments to Ionis on annual worldwide net commercial sales of SPINRAZA using a tiered royalty rate between 11.0% and 15.0%, which are recorded as cost of sales in our consolidated statements of income. For additional information on our collaboration arrangements with Ionis, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

VUMERITY

Under our agreement with Alkermes, we make royalty payments to Alkermes on worldwide net commercial sales of VUMERITY using a royalty rate of 15.0%, which are recorded as cost of sales in our consolidated statements of income. Royalties payable on net commercial sales of VUMERITY are subject, under certain circumstances, to tiered minimum annual payment requirements for a period of five years following FDA approval. For additional information on our collaboration arrangement with Alkermes, please read *Note 19, Collaborative and Other Relationships*, to these consolidated financial statements.

Regulatory and Commercial Milestone Payments

Based on our development plans as of December 31, 2022, we could trigger potential future milestone payments to third parties of up to approximately $9.3 billion, including approximately $2.0 billion in development milestones, approximately $0.5 billion in regulatory milestones and approximately $6.8 billion in commercial milestones, as part of our various collaborations, including licensing and development programs. Payments under these agreements generally become due and payable upon achievement of certain development, regulatory or commercial milestones. Because the achievement of these milestones was not considered probable as of December 31, 2022, such contingencies have not been recorded in our financial statements. Amounts related to contingent milestone payments are not considered contractual obligations as they are contingent on the successful achievement of certain development, regulatory or commercial milestones.

If certain clinical and commercial milestones are met, we may pay up to $356.2 million in milestones in 2023 under our current agreements. This includes milestones totaling $225.0 million due to Sage upon the first commercial sale of zuranolone, for the potential treatment of MDD and PPD, in the U.S.

During the second quarter of 2020 we paid Neurimmune $75.0 million upon the completed submission of the BLA for the approval of ADUHELM to the FDA, which was recognized as a charge to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income.

In June 2021 ADUHELM was granted accelerated approval by the FDA. Under the terms of the Neurimmune Agreement, we were required to pay Neurimmune a milestone payment of $100.0 million related to the launch of ADUHELM in the U.S. During the second quarter of 2021 we made this $100.0 million payment, which was recognized as a charge to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income.

Other Funding Commitments

As of December 31, 2022, we have several ongoing clinical studies in various clinical trial stages. Our most significant clinical trial expenditures are to CROs. The contracts with CROs are generally cancellable, with notice, at our option. We recorded accrued expense of approximately $20.4 million in our consolidated balance sheets for expenditures incurred by CROs as of December 31, 2022. We have approximately $929.0 million in cancellable future commitments based on existing CRO contracts as of December 31, 2022.

Tax Related Obligations

We exclude liabilities pertaining to uncertain tax positions from our summary of contractual obligations as we cannot make a reliable estimate of the period of cash settlement with the respective taxing authorities. As of December 31, 2022, we have approximately $154.6 million of liabilities associated with uncertain tax positions.

As of December 31, 2022 and 2021, we have accrued income tax liabilities of approximately $558.0 million and $633.0 million, respectively, under the Transition Toll Tax. Of the amounts accrued as of December 31, 2022, approximately $137.8 million is expected to be paid within one year. The Transition Toll Tax will be paid in installments over an eight--year period, which started in 2018, and will not accrue interest. For additional information on the Transition Toll Tax, please read *Note 17, Income Taxes*, to these consolidated financial statements.

Note 23: Guarantees

As of December 31, 2022 and 2021, we did not have significant liabilities recorded for guarantees.

We enter into indemnification provisions under our agreements with other companies in the ordinary course of business, typically with business partners, contractors, clinical sites and customers. Under these provisions, we generally indemnify and hold harmless the indemnified party for losses suffered or incurred by the indemnified party as a result of our activities. These indemnification provisions generally survive termination of the underlying agreement. The maximum potential amount of future payments we could be required to make under these indemnification provisions is unlimited. However, to date we have not incurred material costs to defend lawsuits or settle claims related to these indemnification provisions. As a result, the estimated fair value of these agreements is minimal. Accordingly, we have no liabilities recorded for these agreements as of December 31, 2022 and 2021.

Note 24: Employee Benefit Plans

We sponsor various retirement and pension plans. Our estimates of liabilities and expense for these plans incorporate a number of assumptions, including expected rates of return on plan assets and interest rates used to discount future benefits.

401(k) Savings Plan

We maintain a 401(k) Savings Plan, which is available to substantially all regular employees in the U.S. over the age of 21. Participants may make voluntary contributions. We make matching contributions according to the 401(k) Savings Plan's matching formula. All matching contributions and participant contributions vest immediately. The 401(k) Savings Plan also holds certain transition contributions on behalf of participants who previously participated in the Biogen, Inc. Retirement Plan. The expense related to our 401(k) Savings Plan primarily consists of our matching contributions.

Expense related to our 401(k) Savings Plan totaled approximately $56.0 million, $58.4 million and $44.3 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Deferred Compensation Plan

We maintain a non-qualified deferred compensation plan, known as the Supplemental Savings Plan (SSP), which allows a select group of management employees in the U.S. to defer a portion of their compensation. The SSP also provides certain credits to highly compensated U.S. employees that are paid by the company. These credits are known as the Restoration Match. The deferred compensation amounts are accrued when earned. Such deferred compensation is distributable in cash in accordance with the rules of the SSP. Deferred compensation amounts under such plan as of December 31, 2022 and 2021, totaled approximately $131.9 million and $131.4 million, respectively, and are included in other long-term liabilities in our consolidated balance sheets. The SSP also holds certain transition contributions on behalf of participants who previously participated in the Biogen, Inc. Retirement

Plan. The Restoration Match and participant contributions vest immediately. Distributions to participants can be either in one lump sum payment or annual installments as elected by the participants.

Pension Plans

Our retiree benefit plans include defined benefit plans for employees in our affiliates in Switzerland and Germany as well as other insignificant defined benefit plans in certain other countries where we maintain an operating presence.

Our Swiss plan is a government-mandated retirement fund that provides employees with a minimum investment return. The minimum investment return is determined annually by the Swiss government and was 2.00% in 2022 and 1.00% in both 2021 and 2020. Under the Swiss plan, both we and certain of our employees with annual earnings in excess of government determined amounts are required to make contributions into a fund managed by an independent investment fiduciary. Employer contributions must be in an amount at least equal to the employee's contribution. Minimum employee contributions are based on the respective employee's age, salary and gender. As of December 31, 2022 and 2021, the Swiss plan had an unfunded net pension obligation of $49.9 million and $64.1 million, respectively, and plan assets that totaled $193.7 million and $200.1 million, respectively. In 2022, 2021 and 2020 we recognized net expense totaling $20.0 million, $21.5 million and $15.5 million, respectively, related to our Swiss plan, of which $5.3 million, $3.5 million and $2.6 million, respectively, was included in other (income) expense, net in our consolidated statements of income.

The obligations under the German plans are unfunded and totaled $40.9 million and $68.4 million as of December 31, 2022 and 2021, respectively. Net periodic pension cost related to the German plans totaled $5.9 million, $7.6 million and $6.2 million for the years ended December 31, 2022, 2021 and 2020, respectively, of which $1.8 million, $2.1 million and $2.0 million, respectively, was included in other (income) expense, net in our consolidated statements of income.

Note 25: Segment Information

We operate as one operating segment, focused on discovering, developing and delivering worldwide innovative therapies for people living with serious neurological and neurodegenerative diseases as well as related therapeutic adjacencies. Our CEO, as the chief operating decision-maker, manages and allocates resources to the operations of our company on a total company basis. Our research and development organization is responsible for the research and discovery of new product candidates and supports development and registration efforts for potential future products. Our pharmaceutical, operations and technology organization manages the development of the manufacturing processes, clinical trial supply, commercial product supply, distribution, buildings and facilities. Our commercial organization is responsible for U.S. and international development of our commercial products. The company is also supported by corporate staff functions. Managing and allocating resources on a total company basis enables our CEO to assess the overall level of resources available and how to best deploy these resources across functions, therapeutic areas and research and development projects that are in line with our long-term company-wide strategic goals. Consistent with this decision-making process, our CEO uses consolidated, single-segment financial information for purposes of evaluating performance, forecasting future period financial results, allocating resources and setting incentive targets.

Enterprise-wide disclosures about product revenue, other revenue and long-lived assets by geographic area are presented below. Revenue is primarily attributed to individual countries based on location of the customer or licensee.

Geographic Information

The following tables contain certain financial information by geographic area:

	December 31, 2022					
(In millions)	**U.S.**	**Europe[1]**	**Germany**	**Asia**	**Other**	**Total**
Product revenue from external customers	$ 3,469.3	$ 2,401.3	$ 926.2	$ 672.1	$ 518.9	$ 7,987.8
Revenue from anti-CD20 therapeutic programs	1,636.4	0.1	—	—	64.0	1,700.5
Other revenue from external customers	425.8	11.7	—	47.6	—	485.1
Long-lived assets	1,369.4	2,275.8	21.0	13.7	22.6	3,702.5

	December 31, 2021					
(In millions)	**U.S.**	**Europe[1]**	**Germany**	**Asia**	**Other**	**Total**
Product revenue from external customers	$ 3,805.7	$ 2,626.0	$ 1,162.4	$ 688.0	$ 564.8	$ 8,846.9
Revenue from anti-CD20 therapeutic programs	1,596.7	—	—	—	61.8	1,658.5
Other revenue from external customers	429.9	9.7	—	36.7	—	476.3
Long-lived assets	1,390.5	2,337.8	25.4	16.4	21.7	3,791.8

	December 31, 2020					
(In millions)	**U.S.**	**Europe[1]**	**Germany**	**Asia**	**Other**	**Total**
Product revenue from external customers	$ 5,900.1	$ 2,495.3	$ 1,161.1	$ 596.7	$ 539.0	$ 10,692.2
Revenue from anti-CD20 therapeutic programs	1,897.4	0.1	—	—	80.3	1,977.8
Other revenue from external customers	733.6	8.0	0.1	32.9	—	774.6
Long-lived assets	1,496.3	2,290.2	31.2	16.2	10.9	3,844.8

[1] Represents amounts related to Europe less those attributable to Germany.

Long-Lived Assets

As of December 31, 2022, 2021 and 2020, approximately $2,198.5 million, $2,237.0 million and $2,180.6 million, respectively, of our long-lived assets were related to the construction of our large-scale biologics manufacturing facility in Solothurn, Switzerland.

For additional information on our Solothurn manufacturing facility, please read *Note 11, Property, Plant and Equipment,* to these consolidated financial statements.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Biogen Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Biogen Inc. and its subsidiaries (the “Company”) as of December 31, 2022 and 2021, and the related consolidated statements of income, of comprehensive income, of equity and of cash flow for each of the three years in the period ended December 31, 2022, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Annual Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Reserves for Medicaid and Managed Care Rebates

As described in Notes 1 and 5 to the consolidated financial statements, the Company recognized revenue from product sales net of reserves, including Medicaid and managed care rebates. Within accrued expense and other, total contractual adjustments amounted to $868.1 million as of December 31, 2022. A portion of this balance includes provisions for Medicaid and managed care rebates in the US. Medicaid rebates relate to the Company's estimated obligations to states under established reimbursement arrangements. The Company's liability for Medicaid rebates consists of estimates for claims that a state will make for the current quarter, claims for prior quarters that have been estimated for which an invoice has not been received, invoices received for claims from the prior quarters that have not been paid and an estimate of potential claims that will be made for inventory that exists in the distribution channel at period end. Managed care rebates represent the Company's estimated obligations to third-parties, primarily pharmacy benefit managers. These rebates result from performance-based goals, formulary position and price increase limit allowances (price protection). The calculation of the accrual for these rebates is based on an estimate of the coverage patterns and the resulting applicable contractual rebate rate(s) to be earned over a contractual period. Rebate accruals for Medicaid and managed care are recorded in the same period the related revenue is recognized, resulting in a reduction of product revenue and the establishment of a liability which is included in accrued expense and other current liabilities. The Medicaid and managed care estimates reflect historical experience, current contractual and statutory requirements, specific known market events and trends, industry data and forecasted customer buying and payment patterns.

The principal considerations for our determination that performing procedures relating to reserves for Medicaid and managed care rebates is a critical audit matter are the significant judgment by management due to the significant measurement uncertainty involved in developing these reserves, as the reserves are based on assumptions developed using historical experience, current contractual requirements, specific known market events and payment patterns, which in turn led to a high degree of auditor judgment, subjectivity, and effort in applying procedures and evaluating audit evidence related to these assumptions.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the reserves for Medicaid and managed care rebates, including controls over the assumptions used to estimate these Medicaid and managed care rebate reserves. These procedures also included, among others (i) developing an independent estimate of the Medicaid and managed care rebate reserves by utilizing third-party data related to product demand, data related to price changes, the terms of the specific rebate programs, the historical trend of actual rebate claims paid and consideration of contractual requirement changes and market events; (ii) comparing the independent estimate to management's estimate; and (iii) testing rebate claims paid by the Company, including evaluating the claims for consistency with the contractual terms of the Company's rebate agreements.

/s/PricewaterhouseCoopers LLP
Boston, Massachusetts
February 15, 2023

We have served as the Company's auditor since 2003.

EXHIBIT 10.3

EXECUTION VERSION

AMENDMENT TO CREDIT AGREEMENT

THIS AMENDMENT TO CREDIT AGREEMENT (this "Agreement"), dated as of February 7, 2023 (the "Amendment Effective Date"), is entered into among BIOGEN INC., a Delaware corporation (the "Borrower"), each Lender party hereto, and BANK OF AMERICA, N.A., as the Administrative Agent, the Swing Line Lender, and the L/C Issuer. All capitalized terms used herein and not otherwise defined herein shall have the meanings given to such terms in the Existing Credit Agreement (as defined below) or the Amended Credit Agreement (as defined below), as applicable.

RECITALS

WHEREAS, the Borrower, the Lenders from time to time party thereto, and Bank of America, N.A., as the Administrative Agent, the Swing Line Lender, and the L/C Issuer, entered into that certain Credit Agreement dated as of January 28, 2020 (as amended, restated, amended and restated, extended, supplemented or otherwise modified from time to time prior to the Amendment Effective Date, the "Existing Credit Agreement");

WHEREAS, the Borrower has requested that the Existing Credit Agreement be amended as set forth below, subject to the terms and conditions specified in this Agreement; and

WHEREAS, the parties hereto are willing to amend the Existing Credit Agreement, subject to the terms and conditions specified in this Agreement.

NOW, THEREFORE, in consideration of the premises and the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Amendments to Existing Credit Agreement; Effect of this Agreement; Treatment of Existing Eurocurrency Rate Loans.

(a) Effective as of the Amendment Effective Date, the parties hereto agree that: (i) the Existing Credit Agreement is hereby amended to (A) delete the stricken text (indicated textually in the same manner as the following example: ~~stricken text~~ or ~~stricken text~~), and (B) add the bold underlined text (indicated textually in the same manner as the following example: double- underlined text or double-underlined text), in each case, as set forth in the credit agreement attached hereto as Annex A (the Existing Credit Agreement, as amended as set forth on Annex A attached hereto, the "Amended Credit Agreement"); and (ii) Exhibit A to the Existing Credit Agreement is amended to read in the form of Exhibit A attached hereto. The Amended Credit Agreement is not a novation of the Existing Credit Agreement.

(b) Except as expressly modified and amended in this Agreement, all of the terms, provisions and conditions of the Loan Documents shall remain unchanged and in full force and effect. The Loan Documents and any and all other documents heretofore, now or hereafter executed and delivered pursuant to the terms of the Existing Credit Agreement are hereby amended so that any reference to the Existing Credit Agreement shall mean a reference to the Amended Credit Agreement.

(c) It is understood and agreed that, with respect to any Committed Loan bearing interest at a Eurocurrency Rate and outstanding on the Amendment Effective Date, (i) such Committed Loan shall continue to bear interest at such Eurocurrency Rate until the end of the current Interest Period applicable to such Committed Loan, and (ii) any Eurocurrency Rate-related

provisions of the Existing Credit Agreement applicable to such Committed Loan are incorporated into the Amended Credit Agreement, *mutatis mutandis*, and the parties hereto hereby agree that such provisions shall continue to apply to such Committed Loan until the end of the current Interest Period applicable thereto.

2. Condition Precedent. This Agreement shall be effective as of the Amendment Effective Date upon receipt by the Administrative Agent of counterparts of this Agreement duly executed by the Borrower, each Lender, the Administrative Agent, the Swing Line Lender, and the L/C Issuer.

3. Payment of Expenses. The Borrower agrees to reimburse the Administrative Agent for all reasonable out-of-pocket expenses incurred by the Administrative Agent in connection with the preparation, execution and delivery of this Agreement, including the reasonable fees, charges and disbursements of Moore & Van Allen PLLC.

4. Miscellaneous.

(a) The Loan Documents, and the obligations of the Borrower under the Loan Documents, are hereby ratified and confirmed and shall remain in full force and effect according to their terms. This Agreement is a Loan Document.

(b) The Borrower represents and warrants that:

(i) The execution, delivery and performance by the Borrower of this Agreement has been duly authorized by all necessary corporate or other organizational action, and do not and will not (A) contravene the terms of any of the Borrower's Organization Documents, (B) conflict with or result in any breach or contravention of, or the creation of any Lien under, or require any payment to be made under (1) any material Contractual Obligation to which the Borrower is a party or affecting the Borrower or the properties of the Borrower or any of its Subsidiaries, or (2) any order, injunction, writ or decree of any Governmental Authority or any arbitral award to which the Borrower or its property is subject, or (C) violate any Law.

(ii) This Agreement has been duly executed and delivered by the Borrower. This Agreement constitutes a legal, valid and binding obligation of the Borrower, enforceable against the Borrower in accordance with its terms, subject to bankruptcy, insolvency, moratorium and other laws of general application affecting creditors and general principles of equity.

(iii) No approval, consent, exemption, authorization, or other action by, or notice to, or filing with, any Governmental Authority or any other Person is necessary or required in connection with the execution, delivery or performance by, or enforcement against, the Borrower of this Agreement.

(iv) After giving effect to this Agreement: (A) the representations and warranties of the Borrower contained in Article V of the Amended Credit Agreement (other than the representations contained in Sections 5.05(c) and 515 of the Amended Credit Agreement) or any other Loan Document, or which are contained in any document furnished at any time under or in connection therewith, shall be true and correct in all material respects on and as of the Amendment Effective Date, except to the extent that such representations and warranties specifically refer to an earlier date, in which case they shall be true and correct in all material respects as of such earlier date, and except that for

purposes of this Section 4(b)(iv)(A), the representations and warranties contained in Sections 5.05(a) and (b) of the Amended Credit Agreement shall be deemed to refer to the most recent statements furnished pursuant to Sections 6.01(a) and (b), respectively, of the Existing Credit Agreement; provided, that, any representation and warranty that is qualified as to "materiality", "Material Adverse Effect" or similar language shall be true and correct (after giving effect to any qualification therein) in all respects; and (B) no Default shall exist.

(c) This Agreement may be in the form of an Electronic Record and may be executed using Electronic Signatures, including facsimile or .pdf, and shall be considered an original, and shall have the same legal effect, validity and enforceability as a paper record. This Agreement may be executed in as many counterparts as necessary or convenient, including both paper and electronic counterparts, but all such counterparts shall be one and the same Agreement. For the avoidance of doubt, subject to Section 10.19 of the Amended Credit Agreement, the authorization under this Section 4(c) may include use or acceptance by the Administrative Agent or any Lender of a manually signed counterpart of this Agreement which has been converted into electronic form (such as scanned into .pdf), or an electronically signed counterpart of this Agreement converted into another format, for transmission, delivery and/or retention.

(d) If any provision of this Agreement is held to be illegal, invalid or unenforceable, (i) the legality, validity and enforceability of the remaining provisions of this Agreement shall not be affected or impaired thereby and (ii) the parties shall endeavor in good faith negotiations to replace the illegal, invalid or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the illegal, invalid or unenforceable provisions. The invalidity of a provision in a particular jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

(e) THIS AGREEMENT AND ANY CLAIMS, CONTROVERSY, DISPUTE OR CAUSE OF ACTION (WHETHER IN CONTRACT OR TORT OR OTHERWISE) BASED UPON, ARISING OUT OF OR RELATING TO THIS AGREEMENT AND THE TRANSACTIONS CONTEMPLATED HEREBY, SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK.

(f) The terms of Sections 10.14 and 10.15 of the Amended Credit Agreement with respect to submission to jurisdiction, waiver of venue and waiver of jury trial are incorporated herein by reference, *mutatis mutandis*, and the parties hereto agree to such terms.

[SIGNATURE PAGES FOLLOW]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the date first above written.

BORROWER: BIOGEN INC.,
a Delaware corporation

/s/ Michael
By: Name: Michael Dambach
Title: Vice President and Treasurer

ADMINISTRATIVE AGENT: BANK OF AMERICA, N.A.,
as the Administrative Agent

/s/ Henry
By: Name: Henry Pennell
Title: Vice President

LENDERS: BANK OF AMERICA, N.A.,
as a Lender, the Swing Line Lender, and the L/C Issuer

/s/ Darren
By: Name: Darren Merten
Title: Director

CITIBANK, N.A., as a
Lender

/s/ Kevin
By: Name: Kevin Ciok
Title: Vice President

DEUTSCHE BANK AG NEW YORK BRANCH,
as a Lender

/s/ Ming K. By: Name: Ming K. Chu
Title: Director

/s/ Annie By: Name: Annie Chung
Title: Director

GOLDMAN SACHS BANK USA,
as a Lender

/s/ Keshia
By: Name: Keshia Leday
Title: Authorized Signatory

JPMORGAN CHASE BANK, N.A.,
as a Lender

/s/ Gregory T. By: Name: Gregory T. Martin
Title: Executive Director

MIZUHO BANK (USA), as a
Lender

/s/ Tracy
By: Name: Tracy Rahn
Title: Executive Director

MORGAN STANLEY BANK, N.A.,
as a Lender

/s/ Tayo
By: Name: Tayo Lapite
Title: Authorized Signatory

U.S. BANK NATIONAL ASSOCIATION,
as a Lender

/s/ Maria
By: Name: Maria Massimino
Title: Senior Vice President

BANK OF CHINA, NEW YORK BRANCH,
as a Lender

/s/ Raymond
By: Name: Raymond Qiao
Title: Executive Vice President

WELLS FARGO BANK, NATIONAL ASSOCIATION,
as a Lender

/s/ Andrea S.
By: Name: Andrea S. Chen
Title: Managing Director

AGRICULTURAL BANK OF CHINA LIMITED, NEW YORK BRANCH,
as a Lender

/s/ Jing (Leslie)
By: Name: Jing (Leslie) Xu
Title: Co-Head of Corporate Banking Department

THE BANK OF NOVA SCOTIA,
as a Lender

/s/ Arjun
By: Name: Arjun Talwalkar
Title: Director

Annex A

Amended Credit Agreement

See attached.

Exhibit A

Amended Exhibit A to Existing Credit Agreement

See attached.

Published CUSIP Numbers:
Deal: 09074KAC1
Revolver: 09074KAD9

CREDIT AGREEMENT

Dated as of January 28, 2020 among

BIOGEN INC.,
as the Borrower,

BANK OF AMERICA, N.A.,
as Administrative Agent, Swing Line Lender and the L/C Issuer,

CITIBANK, N.A., **DEUTSCHE BANK SECURITIES INC**.,
GOLDMAN SACHS BANK USA, **JPMORGAN CHASE BANK, N.A.**, **MIZUHO BANK (USA), MORGAN STANLEY BANK, N.A.**
and
U.S. BANK NATIONAL ASSOCIATION,

as Co-Syndication Agents and

The Other Lenders Party Hereto

BOFA SECURITIES, INC.,
as Sole Lead Arranger and Sole Bookrunner

TABLE OF CONTENTS

SCHEDULES

CREDIT AGREEMENT

This CREDIT AGREEMENT (this "Agreement") is entered into as of January 28, 2020, among BIOGEN INC., a Delaware corporation (the "Borrower"), each Lender from time to time party hereto, and BANK OF AMERICA, N.A., as Administrative Agent, Swing Line Lender and L/C Issuer.

The Borrower has requested that the Lenders provide a revolving credit facility, and the Lenders are willing to do so on the terms and conditions set forth herein.

In consideration of the mutual covenants and agreements herein contained, the parties hereto covenant and agree as follows:

ARTICLE I.
DEFINITIONS AND ACCOUNTING TERMS

Section 1.01 Defined Terms. As used in this Agreement, the following terms shall have the meanings set forth below:

"Administrative Agent" means Bank of America (through itself or one of its designated affiliates or branch offices) in its capacity as administrative agent under any of the Loan Documents, or any successor administrative agent.

"Administrative Agent's Office" means, with respect to any currency, the Administrative Agent's address and, as appropriate, account as set forth on Schedule 10.02 with respect to such currency, or such other address or account as the Administrative Agent may from time to time notify to the Borrower and the Lenders.

"Administrative Questionnaire" means an Administrative Questionnaire in a form supplied by the Administrative Agent.

"Affected Financial Institution" means (a) any EEA Financial Institution, or (b) any UK Financial Institution.

"Affiliate" means, with respect to any Person, another Person that directly, or indirectly through one or more intermediaries, Controls or is Controlled by or is under common Control with the Person specified.

"Agent Fee Letter" means the fee letter agreement, dated January 3, 2020, among the Borrower, BofA Securities and Bank of America.

"Agent Parties" has the meaning specified in Section 10.02(c).

"Aggregate Commitments" means the Commitments of all the Lenders. The aggregate principal amount of the Aggregate Commitments in effect on the Closing Date is ONE BILLION DOLLARS ($1,000,000,000).

"Agreement" means this Credit Agreement.

"Agreement Currency" has the meaning specified in Section 10.18.

"Alternative Currency" means each of Euros, Yen, and Sterling, together with each other currency (other than Dollars) that is approved in accordance with Section 1.08.

"Alternative Currency Conforming Changes" means, with respect to the use, administration of or any conventions associated with any Relevant Rate or any proposed Alternative Currency Successor Rate for an Alternative Currency, as applicable, any conforming changes to the definitions of "EURIBOR", "Interest Period", "SONIA" and "TIBOR", the timing and frequency of determining rates and making payments of interest and other technical, administrative or operational matters (including, for the avoidance of doubt, the definition of "Business Day", the timing of borrowing requests or prepayment, conversion or continuation notices and the length of lookback periods) as may be appropriate, in the reasonable discretion of the Administrative Agent, in consultation with the Borrower, to reflect the adoption and implementation of such applicable rate(s) and to permit the administration thereof by the Administrative Agent in a manner substantially consistent with market practice for such Alternative Currency (or, if the Administrative Agent determines that adoption of any portion of such market practice is not administratively feasible or that no market practice for the administration of such rate for such Alternative Currency exists, in such other manner of administration as the Administrative Agent reasonably determines, in consultation with the Borrower, is necessary in connection with the administration of this Agreement and any other Loan Document).

"Alternative Currency Daily Rate" means, for any day, with respect to any Committed Loan:

(a) denominated in Sterling, the rate per annum equal to SONIA determined pursuant to the definition thereof; and

(b) denominated in any other Alternative Currency (to the extent such Committed Loan denominated in such currency will bear interest at a daily rate), the daily rate per annum as designated with respect to such Alternative Currency at the time such Alternative Currency is approved in accordance with Section 1.08, plus the adjustments (if any) determined in accordance with Section 1.08;

provided, that, if any Alternative Currency Daily Rate shall be less than zero, such rate shall be deemed zero for purposes of this Agreement. Any change in an Alternative Currency Daily Rate shall be effective from and including the date of such change without further notice.

"Alternative Currency Daily Rate Loan" means a Committed Loan that bears interest at a rate based on the definition of "Alternative Currency Daily Rate". All Alternative Currency Daily Rate Loans must be denominated in an Alternative Currency.

"Alternative Currency Equivalent" means, at any time, with respect to any amount denominated in Dollars, the equivalent amount thereof in the applicable Alternative Currency as determined by the Administrative Agent or the L/C Issuer, as the case may be, by reference to Bloomberg (or such other publicly available service for displaying exchange rates), to be the exchange rate for the purchase of such Alternative Currency with Dollars at approximately 11:00 a.m. on the date two (2) Business Days prior to the date as of which the foreign exchange computation is made; provided, that, if no such rate is available, the "Alternative Currency Equivalent" shall be determined by the Administrative Agent or the L/C Issuer, as the case may be, using any reasonable method of determination it deems appropriate in its sole discretion (and such determination shall be conclusive absent manifest error).

"Alternative Currency Loan" means an Alternative Currency Daily Rate Loan or an Alternative Currency Term Rate Loan, as applicable.

"Alternative Currency Scheduled Unavailability Date" has the meaning specified in Section 3.03(c).

"Alternative Currency Successor Rate" has the meaning specified in Section 3.03(c).

"Alternative Currency Term Rate" means, for any Interest Period, with respect to any Committed Loan:

(a) denominated in Euros, the rate per annum equal to the Euro Interbank Offered Rate ("EURIBOR"), as published on the applicable Reuters screen page (or such other commercially available source providing such quotations as may be designated by the Administrative Agent from time to time) on the day that is two (2) TARGET Days preceding the first day of such Interest Period with a term equivalent to such Interest Period;

(b) denominated in Yen, the rate per annum equal to the Tokyo Interbank Offer Rate ("TIBOR"), as published on the applicable Reuters screen page (or such other commercially available source providing such quotations as may be designated by the Administrative Agent from time to time) on the Rate Determination Date with a term equivalent to such Interest Period; and

(c) denominated in any other Alternative Currency (to the extent such Committed Loan denominated in such currency will bear interest at a term rate), the term rate per annum on the appliable determination date with a term equivalent to such Interest Period, as designated with respect to such Alternative Currency at the time such Alternative Currency is approved in accordance with Section 1.08, plus the adjustments (if any) determined in accordance with Section 1.08;

provided, that, if any Alternative Currency Term Rate shall be less than zero, such rate shall be deemed zero for purposes of this Agreement.

"Alternative Currency Term Rate Loan" means a Committed Loan that bears interest at a rate based on the definition of "Alternative Currency Term Rate". All Alternative Currency Term Rate Loans must be denominated in an Alternative Currency.

"Applicable Authority" means, with respect to any Alternative Currency, the applicable administrator for the Relevant Rate for such Alternative Currency or any Governmental Authority having jurisdiction over the Administrative Agent or such administrator with respect to its publication of the applicable Relevant Rate.

"Applicable Percentage" means with respect to any Lender at any time, the percentage (carried out to the ninth decimal place) of the Aggregate Commitments represented by such Lender's Commitment at such time, subject to adjustment as provided in Section 2.15. If the commitment of each Lender to make Committed Loans and the obligation of the L/C Issuer to make L/C Credit Extensions have been terminated pursuant to Section 8.02 or if the Aggregate Commitments have expired, then the Applicable Percentage of each Lender shall be determined based on the Applicable Percentage of such Lender most recently in effect, giving effect to any subsequent assignments and to any Lender's status as a Defaulting Lender at the time of determination. The initial Applicable Percentage of each Lender is set forth opposite the name of such Lender on Schedule 2.01 or in the Assignment and Assumption or other documentation pursuant to which such Lender becomes a party hereto, as applicable.

"Applicable Rate" means, from time to time, the following percentages per annum, based upon the Debt Rating as set forth below:

Pricing Level	Debt Ratings S&P/Moody's	Commitment Fee	Term SOFR Loans and Alternative Currency Loans	Base Rate Loans	Letter of Credit Fee
1	≥ A+/A1	0.050%	0.750%	0.000%	0.750%
2	A/A2	0.070%	0.875%	0.000%	0.875%
3	A-/A3	0.080%	1.000%	0.000%	1.000%
4	BBB+/Baa1	0.100%	1.125%	0.125%	1.125%
5	BBB/Baa2	0.125%	1.250%	0.250%	1.250%
6	≤ BBB-/Baa3	0.175%	1.375%	0.375%	1.375%

"Debt Rating" means, as of any date of determination, the rating as determined by either S&P or Moody's (collectively, the "Debt Ratings") of the Borrower's non-credit-enhanced, senior unsecured long- term debt; provided, that: (a) if the respective Debt Ratings issued by the foregoing rating agencies differ by one level, then the Pricing Level for the higher of such Debt Ratings shall apply (with the Debt Rating for Pricing Level 1 being the highest and the Debt Rating for Pricing Level 6 being the lowest); (b) if there is a split in Debt Ratings of more than one level, then the Pricing Level that is one level higher than the Pricing Level of the lower Debt Rating shall apply; (c) if the Borrower has only one Debt Rating, such Debt Rating shall apply; and (d) if the Borrower does not have any Debt Rating, Pricing Level 6 shall apply.

Initially, the Applicable Rate for the Commitment Fee, Term SOFR Loans, Alternative Currency Loans, Base Rate Loans, and the Letter of Credit Fee shall be determined based upon the Debt Ratings specified in the certificate delivered pursuant to Section 4.01(a)(vi). Thereafter, each change in the Applicable Rate resulting from a publicly announced change in the Debt Ratings shall be effective during the period commencing on the date of the public announcement thereof and ending on the date immediately preceding the effective date of the next such change. If the rating system of Moody's or S&P shall change, or if either such rating agency shall cease to be in the business of rating corporate debt obligations, the Borrower and the Lenders shall negotiate in good faith to amend this provision to reflect such changed rating system or the unavailability of ratings from such rating agency and, pending the effectiveness of any such amendment, the Applicable Rates shall be determined by reference to the Debt Ratings most recently in effect prior to such change or cessation.

"Applicable Time" means, with respect to any Committed Borrowings, any L/C Credit Extensions and any payments in any Alternative Currency, the local time in the place of settlement for such Alternative Currency as may be determined by the Administrative Agent or the L/C Issuer, as the case may be, to be necessary for timely settlement on the relevant date in accordance with normal banking procedures in the place of payment.

"Approved Fund" means any Fund that is administered or managed by (a) a Lender, (b) an Affiliate of a Lender or (c) an entity or an Affiliate of an entity that administers or manages a Lender.

"Arranger" means BofA Securities, in its capacities as sole lead arranger and sole bookrunner.

"Assignment and Assumption" means an assignment and assumption entered into by a Lender and an Eligible Assignee (with the consent of any party whose consent is required by Section 10.06(b)), and accepted by the Administrative Agent, in substantially the form of Exhibit E or any other form (including an electronic documentation form generated by use of an electronic platform) approved by the Administrative Agent.

"Attributable Indebtedness" means, on any date, (a) in respect of any capital lease of any Person, the capitalized amount thereof that would appear on a balance sheet of such Person prepared as of such date in accordance with GAAP, and (b) in respect of any Synthetic Lease Obligation, the capitalized amount of

the remaining lease payments under the relevant lease that would appear on a balance sheet of such Person prepared as of such date in accordance with GAAP if such lease were accounted for as a capital lease.

"Audited Financial Statements" means the audited consolidated balance sheet of the Borrower and its Subsidiaries for the fiscal year ended December 31, 2018, and the related consolidated statements of income or operations, shareholders' equity and cash flows for such fiscal year of the Borrower and its Subsidiaries, including the notes thereto.

"Auto-Extension Letter of Credit" has the meaning specified in Section 2.03(b)(iii).

"Availability Period" means the period from and including the Closing Date to but excluding the earliest of (a) the Maturity Date, (b) the date of termination of the Aggregate Commitments pursuant to Section 2.06, and (c) the date of termination of the commitment of each Lender to make Committed Loans and of the obligation of the L/C Issuer to make L/C Credit Extensions pursuant to Section 8.02.

"Back-Up Indemnity Payment" has the meaning specified in Section 3.01(c)(i).

"Bail-In Action" means the exercise of any Write-Down and Conversion Powers by the applicable Resolution Authority in respect of any liability of an Affected Financial Institution.

"Bail-In Legislation" means, (a) with respect to any EEA Member Country implementing Article 55 of Directive 2014/59/EU of the European Parliament and of the Council of the European Union, the implementing law, rule, regulation or requirement for such EEA Member Country from time to time which is described in the EU Bail-In Legislation Schedule, and (b) with respect to the United Kingdom, Part I of the United Kingdom Banking Act 2009 (as amended from time to time) and any other law, regulation or rule applicable in the United Kingdom relating to the resolution of unsound or failing banks, investment firms or other financial institutions or their affiliates (other than through liquidation, administration or other insolvency proceedings).

"Bank of America" means Bank of America, N.A. and its successors.

"Base Rate" means for any day a fluctuating rate of interest per annum equal to the highest of (a) the Federal Funds Rate plus 1/2 of 1%, (b) the rate of interest in effect for such day as publicly announced from time to time by Bank of America as its "prime rate," and (c) Term SOFR plus 1%; provided, that, if the Base Rate shall be less than zero, such rate shall be deemed zero for purposes of this Agreement. The "prime rate" is a rate set by Bank of America based upon various factors including Bank of America's costs and desired return, general economic conditions and other factors, and is used as a reference point for pricing some loans, which may be priced at, above, or below such announced rate. Any change in the "prime rate" announced by Bank of America shall take effect at the opening of business on the day specified in the public announcement of such change. If the Base Rate is being used as an alternate rate of interest pursuant to Section 3.03, then the Base Rate shall be the greater of clauses (a) and (b) above and shall be determined without reference to clause (c) above.

"Base Rate Committed Loan" means a Committed Loan that is a Base Rate Loan. All Base Rate Committed Loans shall be denominated in Dollars.

"Base Rate Loan" means a Loan that bears interest based on the Base Rate. All Base Rate Loans shall be denominated in Dollars.

"Beneficial Ownership Certification" means a certification regarding beneficial ownership required by the Beneficial Ownership Regulation.

"Beneficial Ownership Regulation" means 31 C.F.R. § 1010.230.

"Benefit Plan" means any of (a) an "employee benefit plan" (as defined in ERISA) that is subject to Title I of ERISA, (b) a "plan" as defined in and subject to Section 4975 of the Code, or (c) any Person whose assets include (for purposes of ERISA Section 3(42) or otherwise for purposes of Title I of ERISA or Section 4975 of the Code) the assets of any such "employee benefit plan" or "plan".

"BHC Act Affiliate" of a party means an "affiliate" (as such term is defined under, and interpreted in accordance with, 12 U.S.C. 1841(k)) of such party.

"BofA Securities" means BofA Securities, Inc.

"Borrower" has the meaning specified in the introductory paragraph hereto.

"Borrower Materials" has the meaning specified in Section 6.02.

"Borrowing" means a Committed Borrowing or a Swing Line Borrowing, as the context may require.

"Business Day" means any day other than a Saturday, Sunday or other day on which commercial banks are authorized to close under the Laws of, or are in fact closed in, the state where the Administrative Agent's Office is located; provided, that: (a) if such day relates to any interest rate settings as to an Alternative Currency Loan denominated in Euro, any fundings, disbursements, settlements and payments in Euro in respect of any such Alternative Currency Loan, or any other dealings in Euro to be carried out pursuant to this Agreement in respect of any such Alternative Currency Loan, means a Business Day that is also a TARGET Day; (b) if such day relates to any interest rate settings as to an Alternative Currency Loan denominated in (i) Sterling, means a day other than a day banks are closed for general business in London because such day is a Saturday, Sunday or a legal holiday under the laws of the United Kingdom, and (ii) Yen, means a day other than a day banks are closed for general business in Japan because such day is a Saturday, Sunday or a legal holiday under the laws of Japan; (c) if such day relates to any interest rate settings as to an Alternative Currency Loan denominated in a currency other than Euro, Sterling or Yen, means any such day on which dealings in deposits in the relevant currency are conducted by and between banks in the applicable offshore interbank market for such currency; and (d) if such day relates to any fundings, disbursements, settlements and payments in a currency other than Euro in respect of an Alternative Currency Loan denominated in a currency other than Euro, or any other dealings in any currency other than Euro to be carried out pursuant to this Agreement in respect of any such Alternative Currency Loan (other than any interest rate settings), means any such day on which banks are open for foreign exchange business in the principal financial center of the country of such currency.

"Cash Collateralize" means to pledge and deposit with or deliver to the Administrative Agent, for the benefit of one or more of the L/C Issuer or the Lenders, as collateral for L/C Obligations or obligations of the Lenders to fund participations in respect of L/C Obligations, cash or deposit account balances, in each case denominated in Dollars, or, if the Administrative Agent and the L/C Issuer shall agree in their sole discretion, other credit support, in each case pursuant to documentation in form and substance reasonably satisfactory to the Administrative Agent and the L/C Issuer. "Cash Collateral" shall have a meaning correlative to the foregoing and shall include the proceeds of such cash collateral and other credit support.

"Change in Law" means the occurrence, after the date of this Agreement, of any of the following: (a) the adoption or taking effect of any law, rule, regulation or treaty, (b) any change in any law, rule, regulation or treaty or in the administration, interpretation, implementation or application thereof by any

Governmental Authority or (c) the making or issuance of any request, rule, guideline or directive (whether or not having the force of law) by any Governmental Authority; provided, that, notwithstanding anything herein to the contrary, (x) the Dodd-Frank Wall Street Reform and Consumer Protection Act and all requests, rules, guidelines or directives thereunder or issued in connection therewith or in the implementation thereof and (y) all requests, rules, guidelines or directives promulgated by the Bank for International Settlements, the Basel Committee on Banking Supervision (or any successor or similar authority) or the United States or foreign regulatory authorities, in each case pursuant to Basel III, shall in each case be deemed to be a "Change in Law", regardless of the date enacted, adopted, issued or implemented.

"Change of Control" means an event or series of events by which:

(a) any "person" or "group" (as such terms are used in Sections 13(d) and 14(d) of the Securities Exchange Act of 1934, but excluding any employee benefit plan of such person or its subsidiaries, and any person or entity acting in its capacity as trustee, agent or other fiduciary or administrator of any such plan) becomes the "beneficial owner" (as defined in Rules 13d-3 and 13d-5 under the Securities Exchange Act of 1934, except that a person or group shall be deemed to have "beneficial ownership" of all securities that such person or group has the right to acquire, whether such right is exercisable immediately or only after the passage of time (such right, an "option right")), directly or indirectly, of thirty-five percent (35%) or more of the equity securities of the Borrower entitled to vote for members of the board of directors or equivalent governing body of the Borrower on a fully-diluted basis (and taking into account all such securities that such person or group has the right to acquire pursuant to any option right); or

(b) during any period of 12 consecutive months, a majority of the members of the board of directors or other equivalent governing body of the Borrower ceases to be composed of individuals (i) who were members of that board or equivalent governing body on the first day of such period, (ii) whose election or nomination to that board or equivalent governing body was approved by individuals referred to in clause (i) above constituting at the time of such election or nomination at least a majority of that board or equivalent governing body or (iii) whose election or nomination to that board or other equivalent governing body was approved by individuals referred to in clauses (i) and (ii) above constituting at the time of such election or nomination at least a majority of that board or equivalent governing body; or

(c) any Person or two or more Persons acting in concert shall have acquired by contract or otherwise, or shall have entered into a contract or arrangement that, upon consummation thereof, will result in its or their acquisition of the power to exercise, directly or indirectly, a controlling influence over the management or policies of the Borrower, or control over equity securities of the Borrower entitled to vote for members of the board of directors or equivalent governing body of the Borrower on a fully-diluted basis (and taking into account all such securities that such Person or group has the right to acquire pursuant to any option right) representing thirty-five percent (35%) or more of the combined voting power of such securities.

"Closing Date" means January 28, 2020.

"CME" means CME Group Benchmark Administration Limited.

"Code" means the Internal Revenue Code of 1986, as amended.

"Commitment" means, as to each Lender, its obligation to (a) make Committed Loans to the Borrower pursuant to Section 2.01, (b) purchase participations in L/C Obligations, and (c) purchase participations in Swing Line Loans, in an aggregate principal amount at any one time outstanding not to exceed the amount set forth opposite such Lender's name on Schedule 2.01 or in the Assignment and

Assumption or other documentation pursuant to which such Lender becomes a party hereto, as applicable, as such amount may be adjusted from time to time in accordance with this Agreement.

"Commitment Fee" has the meaning specified in Section 2.09(a).

"Committed Borrowing" means a borrowing consisting of simultaneous Committed Loans of the same Type, in the same currency, and, in the case of Term SOFR Loans or Alternative Currency Term Rate Loans, having the same Interest Period made by each of the Lenders pursuant to Section 2.01.

"Committed Loan" has the meaning specified in Section 2.01.

"Committed Loan Notice" means a notice of (a) a Committed Borrowing, (b) a conversion of Term SOFR Loans to Base Rate Committed Loans, (c) a conversion of Base Rate Committed Loans to Term SOFR Loans, or (d) a continuation of Term SOFR Loans or Alternative Currency Term Rate Loans, in each case pursuant to Section 2.02(a), which shall be substantially in the form of Exhibit A or such other form as may be approved by the Administrative Agent in its reasonable discretion (including any form on an electronic platform or electronic transmission system as shall be approved by the Administrative Agent, email and/or .pdf) appropriately completed and signed by a Responsible Officer of the Borrower.

"Communication" means this Agreement, any other Loan Document, and any other written document, amendment, approval, consent, information, notice, certificate, request, statement, disclosure, or authorization related to any Loan Document.

"Compliance Certificate" means a certificate substantially in the form of Exhibit D.

"Consolidated EBITDA" means, for any period, for the Borrower and its Subsidiaries on a consolidated basis, an amount equal to Consolidated Net Income for such period plus (a) the following to the extent deducted in calculating such Consolidated Net Income, without duplication: (i) Consolidated Interest Charges for such period, (ii) the provision for Federal, state, local and foreign income taxes payable by the Borrower and its Subsidiaries for such period, (iii) depreciation and amortization expense, (iv) other non-recurring charges or losses of the Borrower and its Subsidiaries reducing such Consolidated Net Income (including, to the extent non-recurring, (A) charges, fees and expenses incurred in connection with any issuance of Debt or equity, acquisition, investment, collaboration, license, asset sale or divestiture, whether or not consummated, (B) upfront, earnout or milestone payments or other similar contingent amounts, and noncompetition and consulting payments, in connection with any collaboration, license, acquisition or disposition, and (C) any restructuring, integration, transition, severance, facility closing and similar charges associated with any acquisition or disposition), (v) non-cash expenses and charges that do not represent a reserve for cash expenditures in a future period, and (vi) purchase of in-process research and development, and minus (b) the following to the extent included in calculating such Consolidated Net Income, without duplication: (i) Federal, state, local and foreign income tax credits of the Borrower and its Subsidiaries for such period, (ii) all non-cash items increasing Consolidated Net Income for such period and (iii) non-recurring income or gains of the Borrower and its Subsidiaries increasing such Consolidated Net Income. For the purposes of calculating Consolidated EBITDA for any period of four (4) consecutive fiscal quarters of the Borrower (each, a "Reference Period"), (i) if at any time during such Reference Period the Borrower or any Subsidiary shall have made any Material Disposition, the Consolidated EBITDA for such Reference Period shall be reduced by an amount equal to the Consolidated EBITDA (if positive) attributable to the property that is the subject of such Material Disposition for such Reference Period or increased by an amount equal to the Consolidated EBITDA (if negative) attributable thereto for such Reference Period, and (ii) if during such Reference Period the Borrower or any Subsidiary shall have made a Material Acquisition, Consolidated EBITDA for such Reference Period shall be calculated after giving pro forma effect thereto as if such Material Acquisition occurred on the first day of such Reference Period.

As used in this definition, "Material Acquisition" means any acquisition of property or series of related acquisitions of property that involves the payment of noncontingent consideration by the Borrower and its Subsidiaries in excess of $500,000,000; and "Material Disposition" means any sale, transfer or disposition of property or series of related sales, transfers, or dispositions of property that yields gross proceeds to the Borrower or any of its Subsidiaries in excess of $500,000,000.

"Consolidated Indebtedness" means, as of any date of determination, for the Borrower and its Subsidiaries on a consolidated basis, the sum of (a) the outstanding principal amount of all obligations, whether current or long-term, for borrowed money (including Obligations hereunder) and all obligations evidenced by bonds, debentures, notes, loan agreements or other similar instruments, (b) all purchase money Indebtedness, (c) all direct obligations (to the extent such obligations are drawn and outstanding and excluding any contingent obligation) arising under letters of credit (including standby and commercial), bankers' acceptances, bank guaranties, surety bonds and similar instruments, (d) all obligations in respect of the deferred purchase price of property or services (other than trade accounts payable in the ordinary course of business, and purchase price adjustments, earnouts and other contingent payments due with respect to acquisitions either permitted hereby or completed prior to the Closing Date), (e) Attributable Indebtedness in respect of capital leases, (f) without duplication, all Guarantees with respect to outstanding Indebtedness of the types specified in clauses (a) through (e) above of Persons other than the Borrower or any Subsidiary, and (g) all Indebtedness of the types referred to in clauses (a) through (f) above of any partnership or joint venture (other than a joint venture that is itself a corporation, limited liability company or other limited liability entity) in which the Borrower or a Subsidiary is a general partner or joint venturer, unless such Indebtedness is expressly made non-recourse to the Borrower or such Subsidiary.

"Consolidated Interest Charges" means, for any period, for the Borrower and its Subsidiaries on a consolidated basis, the sum of (a) all interest, premium payments, debt discount, fees, charges and related expenses of the Borrower and its Subsidiaries in connection with Indebtedness (including capitalized interest), in each case to the extent treated as interest in accordance with GAAP, and (b) the portion of rent expense of the Borrower and its Subsidiaries with respect to such period under capital leases that is treated as interest in accordance with GAAP.

"Consolidated Leverage Ratio" means, as of any date of determination, the ratio of (a) Consolidated Indebtedness as of such date to (b) Consolidated EBITDA for the period of the four (4) fiscal quarters of the Borrower most recently ended on or prior to such date.

"Consolidated Net Income" means, for any period, for the Borrower and its Subsidiaries on a consolidated basis, the net income of the Borrower and its Subsidiaries (excluding unusual and infrequent gains and unusual and infrequent losses) for such period.

"Consolidated Net Worth" means, as of any date of determination, for the Borrower and its Subsidiaries on a consolidated basis, Shareholders' Equity.

"Contractual Obligation" means, as to any Person, any provision of any security issued by such Person or of any agreement, instrument or other undertaking to which such Person is a party or by which it or any of its property is bound.

"Control" means the possession, directly or indirectly, of the power to direct or cause the direction of the management or policies of a Person, whether through the ability to exercise voting power, by contract or otherwise. "Controlling" and "Controlled" have meanings correlative thereto.

"Covered Entity" means any of the following: (a) a "covered entity" as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b); (b) a "covered bank" as that term is defined in, and

interpreted in accordance with, 12 C.F.R. § 47.3(b); or (c) a "covered FSI" as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b).

"Covered Party" has the meaning specified in Section 10.21.

"Credit Extension" means each of the following: (a) a Borrowing; and (b) an L/C Credit Extension.

"Daily Simple SOFR" with respect to any applicable determination date means SOFR as published on such date on the Federal Reserve Bank of New York's website (or any successor source).

"Debt Rating" and "Debt Ratings" each have the meaning specified in the definition of "Applicable Rate."

"Debtor Relief Laws" means the Bankruptcy Code of the United States, and all other liquidation, conservatorship, bankruptcy, assignment for the benefit of creditors, moratorium, rearrangement, receivership, insolvency, reorganization, or similar debtor relief Laws of the United States or other applicable jurisdictions from time to time in effect.

"Default" means any event or condition that constitutes an Event of Default or that, with the giving of any notice, the passage of time, or both, would be an Event of Default.

"Default Rate" means (a) with respect to any Obligation for which a rate is specified, a rate per annum equal to two percent (2%) in excess of the rate otherwise applicable thereto and (b) with respect to any Obligation for which a rate is not specified or available, a rate per annum equal to the Base Rate plus the Applicable Rate for Base Rate Committed Loans plus two percent (2%), in each case, to the fullest extent permitted by applicable Law.

"Default Right" has the meaning assigned to that term in, and shall be interpreted in accordance with, 12 C.F.R. §§ 252.81, 47.2 or 382.1, as applicable.

"Defaulting Lender" means, subject to Section 2.15(b), any Lender that (a) has failed to (i) fund all or any portion of its Loans within two (2) Business Days of the date such Loans were required to be funded hereunder unless such Lender in good faith notifies the Administrative Agent and the Borrower in writing that such failure is the result of such Lender's determination that one or more conditions precedent to funding (each of which conditions precedent, together with any applicable default, shall be specifically identified in such writing) has not been satisfied, or (ii) pay to the Administrative Agent, the L/C Issuer, the Swing Line Lender or any other Lender any other amount required to be paid by it hereunder (including in respect of its participation in Letters of Credit or Swing Line Loans) within two (2) Business Days of the date when due, (b) has notified the Borrower, the Administrative Agent, the L/C Issuer or the Swing Line Lender in writing that it does not intend to comply with its funding obligations hereunder, or has made a public statement to that effect (unless such writing or public statement relates to such Lender's obligation to fund a Loan hereunder and states that such position is based on such Lender's determination that a condition precedent to funding (which condition precedent, together with any applicable default, shall be specifically identified in such writing or public statement) cannot be satisfied), (c) has failed, within three (3) Business Days after written request by the Administrative Agent, the L/C Issuer or the Borrower, to confirm in writing to the Administrative Agent, the Borrower or the L/C Issuer, as applicable, that it will comply with its prospective funding obligations hereunder (provided, that, such Lender shall cease to be a Defaulting Lender pursuant to this clause (c) upon receipt of such written confirmation by the Administrative Agent, the Borrower or the L/C Issuer, as applicable), or (d) has, or has a direct or indirect parent company that has, (i) become the subject of a proceeding under any Debtor Relief Law, (ii) had appointed for it a receiver, custodian, conservator, trustee, administrator, assignee for the benefit of

creditors or similar Person charged with reorganization or liquidation of its business or assets, including the Federal Deposit Insurance Corporation or any other state or federal regulatory authority acting in such a capacity or (iii) become the subject of a Bail-In Action; provided, that, a Lender shall not be a Defaulting Lender solely by virtue of the ownership or acquisition of any Equity Interests in that Lender or any direct or indirect parent company thereof by a Governmental Authority so long as such ownership interest does not result in or provide such Lender with immunity from the jurisdiction of courts within the United States or from the enforcement of judgments or writs of attachment on its assets or permit such Lender (or such Governmental Authority) to reject, repudiate, disavow or disaffirm any contracts or agreements made with such Lender. Any determination by the Administrative Agent that a Lender is a Defaulting Lender under any one or more of clauses (a) through (d) above, and of the effective date of such status, shall be conclusive and binding absent manifest error, and such Lender shall be deemed to be a Defaulting Lender (subject to Section 2.15(b)) as of the date established therefor by the Administrative Agent in a written notice of such determination, which shall be delivered by the Administrative Agent to the Borrower, the L/C Issuer, the Swing Line Lender and each other Lender promptly following such determination.

"Designated Jurisdiction" means any country or territory to the extent that such country or territory itself is, or whose government is, the subject of any Sanction.

"Designated Lender" has the meaning specified in Section 2.12(e).

"Disposition" or "Dispose" means the sale, transfer, license, lease or other disposition (including any sale and leaseback transaction) of any property by any Person, including any sale, assignment, transfer or other disposal, with or without recourse, of any notes or accounts receivable or any rights and claims associated therewith.

"Dollar" and "$" mean lawful money of the United States.

"Dollar Equivalent" means, for any amount, at the time of determination thereof, (a) if such amount is expressed in Dollars, such amount, (b) if such amount is expressed in an Alternative Currency, the equivalent of such amount in Dollars determined by using the rate of exchange for the purchase of Dollars with the Alternative Currency last provided (either by publication or otherwise provided to the Administrative Agent or the L/C Issuer, as applicable) by the applicable Bloomberg source (or such other publicly available source for displaying exchange rates) on date that is two (2) Business Days immediately preceding the date of determination (or if such service ceases to be available or ceases to provide such rate of exchange, the equivalent of such amount in Dollars as determined by the Administrative Agent or the L/C Issuer, as applicable using any reasonable method of determination it deems appropriate in its sole discretion), and (c) if such amount is denominated in any other currency, the equivalent of such amount in Dollars as determined by the Administrative Agent or the L/C Issuer, as applicable, using any reasonable method of determination it deems appropriate in its sole discretion. Any determination by the Administrative Agent or the L/C Issuer pursuant to clause (b) or (c) above shall be conclusive absent manifest error.

"Domestic Subsidiary" means any Subsidiary that is organized under the Laws of any state of the United States or the District of Columbia.

"EEA Financial Institution" means (a) any credit institution or investment firm established in any EEA Member Country which is subject to the supervision of an EEA Resolution Authority, (b) any entity established in an EEA Member Country which is a parent of an institution described in clause (a) of this definition, or (c) any financial institution established in an EEA Member Country which is a Subsidiary of an institution described in clauses (a) or (b) of this definition and is subject to consolidated supervision with its parent.

"EEA Member Country" means any of the member states of the European Union, Iceland, Liechtenstein, and Norway.

"EEA Resolution Authority" means any public administrative authority or any Person entrusted with public administrative authority of any EEA Member Country (including any delegee) having responsibility for the resolution of any EEA Financial Institution.

"Electronic Copy" has the meaning specified in Section 10.19.

"Electronic Record" has the meaning assigned to it by 15 USC §7006.

"Electronic Signature" has the meaning assigned to it by 15 USC §7006.

"Eligible Assignee" means any Person that meets the requirements to be an assignee under Section 10.06(b)(iii) and (v) (subject to such consents, if any, as may be required under Section 10.06(b)(iii)).

"Eligible Currency" means any lawful currency other than Dollars that is readily available, freely transferable and convertible into Dollars in the international interbank market available to the Lenders (in the case of Committed Loans to be denominated in such currency) or the L/C Issuer (in the case of Letters of Credit to be issued in such currency), in each case in such market and as to which a Dollar Equivalent may be readily calculated. If, after the designation by the Lenders (in the case of Committed Loans to be denominated in such currency) or the L/C Issuer (in the case of Letters of Credit to be issued in such currency) of any currency as an Alternative Currency, as applicable, any change in currency controls or exchange regulations or any change in the national or international financial, political or economic conditions are imposed in the country in which such currency is issued, result in, in the reasonable opinion of the Lenders (in the case of Committed Loans to be denominated in such currency) or the L/C Issuer (in the case of Letters of Credit to be denominated in such currency), (a) such currency no longer being readily available, freely transferable and convertible into Dollars, (b) a Dollar Equivalent for such currency no longer being readily calculable with respect to such currency, (c) such currency being a currency that is impracticable for the Lenders (in the case of Committed Loans to be denominated in such currency) or the L/C Issuer (in the case of Letters of Credit to be issued in such currency), as applicable, to provide, or (d) such currency being a currency in which the Lenders (in the case of Committed Loans to be denominated in such currency) or the L/C Issuer (in the case of Letters of Credit to be issued in such currency), as applicable, are no longer willing to make such Credit Extensions (each of clauses (a), (b), (c), and (d), a "Disqualifying Event"), then the Administrative Agent shall promptly notify the Lenders (in the case of Committed Loans to be denominated in such currency) or the L/C Issuer (in the case of Letters of Credit to be issued in such currency), as applicable, and the Borrower, and such currency shall no longer be an Alternative Currency until such time as the Disqualifying Event(s) no longer exist.

"Environmental Laws" means any and all Federal, state, local, and foreign statutes, laws, regulations, ordinances, rules, judgments, orders, decrees, permits, concessions, grants, franchises, licenses, agreements or governmental restrictions relating to pollution and the protection of the environment or the release of any materials into the environment, including those related to hazardous substances or wastes, air emissions and discharges to waste or public systems.

"Environmental Liability" means any liability, contingent or otherwise (including any liability for damages, costs of environmental remediation, fines, penalties or indemnities), of the Borrower or any of its Subsidiaries directly or indirectly resulting from or based upon (a) violation of any Environmental Law, (b) the generation, use, handling, transportation, storage, treatment or disposal of any Hazardous Materials, (c) exposure to any Hazardous Materials, (d) the release or threatened release of any Hazardous Materials into

the environment or (e) any contract, agreement or other consensual arrangement pursuant to which liability is assumed or imposed with respect to any of the foregoing.

"Equity Interests" means, with respect to any Person, all of the shares of capital stock of (or other ownership or profit interests in) such Person, all of the warrants, options or other rights for the purchase or acquisition from such Person of shares of capital stock of (or other ownership or profit interests in) such Person, all of the securities convertible into or exchangeable for shares of capital stock of (or other ownership or profit interests in) such Person or warrants, rights or options for the purchase or acquisition from such Person of such shares (or such other interests), and all of the other ownership or profit interests in such Person (including partnership, member or trust interests therein), whether voting or nonvoting, and whether or not such shares, warrants, options, rights or other interests are outstanding on any date of determination.

"ERISA" means the Employee Retirement Income Security Act of 1974, as amended from time to time.

"ERISA Affiliate" means any trade or business (whether or not incorporated) under common control with the Borrower within the meaning of Section 414(b) or (c) of the Code (and Sections 414(m) and (o) of the Code for purposes of provisions relating to Section 412 of the Code).

"ERISA Event" means: (a) a Reportable Event with respect to a Pension Plan; (b) the withdrawal of the Borrower or any ERISA Affiliate from a Pension Plan subject to Section 4063 of ERISA during a plan year in which such entity was a "substantial employer" as defined in Section 4001(a)(2) of ERISA or a cessation of operations that is treated as such a withdrawal under Section 4062(e) of ERISA; (c) a complete or partial withdrawal by the Borrower or any ERISA Affiliate from a Multiemployer Plan; (d) the filing of a notice of intent to terminate or the treatment of a Pension Plan amendment as a termination under Sections 4041 or 4041A of ERISA; (e) the institution by the PBGC of proceedings to terminate a Pension Plan; (f) the determination that any Pension Plan is considered an at-risk plan or a plan in endangered or critical status within the meaning of Sections 430, 431 and 432 of the Code or Sections 303, 304 and 305 of ERISA; or (g) the imposition of any liability under Title IV of ERISA, other than for PBGC premiums due but not delinquent under Section 4007 of ERISA, upon the Borrower or any ERISA Affiliate.

"EU Bail-In Legislation Schedule" means the EU Bail-In Legislation Schedule published by the Loan Market Association (or any successor person), as in effect from time to time.

"EURIBOR" has the meaning specified in the definition of "Alternative Currency Term Rate".

"Euro" means the single currency of the Participating Member States.

"Event of Default" has the meaning specified in Section 8.01.

"Excluded Taxes" means any of the following Taxes imposed on or with respect to any Recipient or required to be withheld or deducted from a payment to a Recipient, (a) Taxes imposed on or measured by net income (however denominated), franchise Taxes, and branch profits Taxes, in each case, (i) imposed by the United States, (ii) imposed as a result of such Recipient being organized under the laws of, or having its principal office or, in the case of any Lender, its Lending Office located in, the jurisdiction imposing such Tax (or any political subdivision thereof) or (iii) that are Other Connection Taxes, (b) in the case of a Lender, U.S. Federal withholding Taxes imposed on amounts payable to or for the account of such Lender with respect to an applicable interest in a Loan or Commitment pursuant to a law in effect on the date on which (i) such Lender acquires such interest in the Loan or Commitment (other than pursuant to an assignment request by the Borrower under Section 10.13) or (ii) such Lender changes its Lending Office,

except in each case to the extent that pursuant to Section 3.01(a)(ii), (a)(iii) or (c), amounts with respect to such Taxes were payable either to such Lender's assignor immediately before such Lender became a party hereto or to such Lender immediately before it changed its Lending Office, (c) Taxes attributable to such Recipient's failure to comply with Section 3.01(e) and (d) any U.S. federal withholding taxes imposed under FATCA.

"Existing Credit Agreement" means that certain credit agreement, dated as of August 28, 2015, by and among the Borrower, the lenders from time to time party thereto, and Bank of America, as administrative agent.

"Existing Maturity Date" has the meaning specified in Section 2.16(b).

"Extending Lender" has the meaning specified in Section 2.16(a).

"Extension Request Date" has the meaning specified in Section 2.16(a).

"FASB ASC" means the Accounting Standards Codification of the Financial Accounting Standards Board.

"FATCA" means Sections 1471 through 1474 of the Code, as of the date of this Agreement (or any amended or successor version that is substantively comparable and not materially more onerous to comply with), any current or future regulations or official interpretations thereof and any agreements entered into pursuant thereto (including any intergovernmental agreements).

"Federal Funds Rate" means, for any day, the rate per annum calculated by the Federal Reserve Bank of New York based on such day's federal funds transactions by depository institutions (as determined in such manner as the Federal Reserve Bank of New York shall set forth on its public website from time to time) and published on the next succeeding Business Day by the Federal Reserve Bank of New York as the federal funds effective rate; provided, that, if the Federal Funds Rate as so determined would be less than zero, such rate shall be deemed to be zero for the purposes of this Agreement.

"Foreign Lender" means (a) if the Borrower is a U.S. Person, a Lender that is not a U.S. Person, and (b) if the Borrower is not a U.S. Person, a Lender that is resident or organized under the laws of a jurisdiction other than that in which the Borrower is resident for tax purposes. For purposes of this definition, the United States, each State thereof and the District of Columbia shall be deemed to constitute a single jurisdiction.

"Foreign Subsidiary" means any Subsidiary that is not a Domestic Subsidiary.

"FRB" means the Board of Governors of the Federal Reserve System of the United States.

"Fronting Exposure" means, at any time there is a Defaulting Lender, (a) with respect to the L/C Issuer, such Defaulting Lender's Applicable Percentage of the outstanding L/C Obligations other than L/C Obligations as to which such Defaulting Lender's participation obligation has been reallocated to other Lenders or Cash Collateralized in accordance with the terms hereof and (b) with respect to the Swing Line Lender, such Defaulting Lender's Applicable Percentage of Swing Line Loans other than Swing Line Loans as to which such Defaulting Lender's participation obligation has been reallocated to other Lenders in accordance with the terms hereof.

"Fund" means any Person (other than a natural Person) that is (or will be) engaged in making, purchasing, holding or otherwise investing in commercial loans and similar extensions of credit in the ordinary course of its activities.

"GAAP" means generally accepted accounting principles in the United States set forth in the Accounting Standards Codification of the Financial Accounting Standards Board, consistently applied, and as in effect from time to time, subject to Section 1.03(a).

"Governmental Authority" means the government of the United States or any other nation, or of any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government (including the Financial Conduct Authority, the Prudential Regulation Authority and any supra-national bodies such as the European Union or the European Central Bank).

"Guarantee" means, as to any Person, (a) any obligation, contingent or otherwise, of such Person guaranteeing or having the economic effect of guaranteeing any Indebtedness payable or performable by another Person (the "primary obligor") in any manner, whether directly or indirectly, and including any obligation of such Person, direct or indirect, (i) to purchase or pay (or advance or supply funds for the purchase or payment of) such Indebtedness, (ii) to purchase or lease property, securities or services for the purpose of assuring the obligee in respect of such Indebtedness of the payment or performance of such Indebtedness, (iii) to maintain working capital, equity capital or any other financial statement condition or liquidity or level of income or cash flow of the primary obligor so as to enable the primary obligor to pay such Indebtedness, or (iv) entered into for the purpose of assuring in any other manner the obligee in respect of such Indebtedness of the payment or performance thereof or to protect such obligee against loss in respect thereof (in whole or in part), or (b) any Lien on any assets of such Person securing any Indebtedness of any other Person, whether or not such Indebtedness is assumed by such Person (or any right, contingent or otherwise, of any holder of such Indebtedness to obtain any such Lien). The amount of any Guarantee shall be deemed to be an amount equal to the stated or determinable amount of the related primary obligation, or portion thereof, in respect of which such Guarantee is made or, if not stated or determinable, the maximum reasonably anticipated liability in respect thereof as determined by the guaranteeing Person in good faith. The term "Guarantee" as a verb has a corresponding meaning.

"Hazardous Materials" means all explosive or radioactive substances or wastes and all hazardous or toxic substances, wastes or other pollutants, including petroleum or petroleum distillates, asbestos or asbestos-containing materials, polychlorinated biphenyls, radon gas, infectious or medical wastes and all other substances or wastes of any nature regulated pursuant to any Environmental Law.

"HMT" has the meaning specified in the definition of "Sanctions."

"Honor Date" has the meaning specified in Section 2.03(c)(i).

"Indebtedness" means, as to any Person at a particular time, without duplication, all of the following, whether or not included as indebtedness or liabilities in accordance with GAAP:

(a) all obligations of such Person for borrowed money and all obligations of such Person evidenced by bonds, debentures, notes, loan agreements or other similar instruments;

(b) all direct or contingent obligations of such Person arising under letters of credit (including standby and commercial), bankers' acceptances, bank guaranties, surety bonds and similar instruments;

(c) net obligations of such Person under any Swap Contract;

(d) all obligations of such Person to pay the deferred purchase price of property or services (other than trade accounts payable in the ordinary course of business, and purchase price adjustments, earnouts and other contingent payments due with respect to acquisitions either permitted hereby or completed prior to the Closing Date);

(e) indebtedness (excluding prepaid interest thereon) secured by a Lien on property owned or being purchased by such Person (including indebtedness arising under conditional sales or other title retention agreements), whether or not such indebtedness shall have been assumed by such Person or is limited in recourse;

(f) capital leases and Synthetic Lease Obligations;

(g) all obligations of such Person to purchase, redeem, retire or defease in cash or otherwise make any cash payment in respect of any Equity Interest in such Person or any other Person, valued, in the case of a redeemable preferred interest, at the greater of its voluntary or involuntary liquidation preference plus accrued and unpaid dividends; and

(h) all Guarantees of such Person in respect of any of the foregoing.

For all purposes hereof, the Indebtedness of any Person shall include the Indebtedness of any partnership or joint venture (other than a joint venture that is itself a corporation, limited liability company or similar limited liability entity) in which such Person is a general partner or a joint venturer, unless such Indebtedness is expressly made non-recourse to such Person. The amount of any net obligation under any Swap Contract on any date shall be deemed to be the Swap Termination Value thereof as of such date. The amount of any capital lease or Synthetic Lease Obligation as of any date shall be deemed to be the amount of Attributable Indebtedness in respect thereof as of such date.

"Indemnified Taxes" means (a) Taxes, other than Excluded Taxes, imposed on or with respect to any payment made by or on account of any obligation of the Borrower under any Loan Document and (b) to the extent not otherwise described in clause (a) above, Other Taxes.

"Indemnitee" has the meaning specified in Section 10.04(b).

"Information" has the meaning specified in Section 10.07.

"Interest Payment Date" means, (a) as to any Term SOFR Loan or any Alternative Currency Term Rate Loan, the last day of each Interest Period applicable to such Loan and the Maturity Date; provided, that, if any Interest Period for such Loan exceeds three (3) months, the respective dates that fall every three
(3) months after the beginning of such Interest Period shall also be Interest Payment Dates; (b) as to any Alternative Currency Daily Rate Loan, the last Business Day of each calendar month and the Maturity Date; and (c) as to any Base Rate Loan (including, for the avoidance of doubt, a Swing Line Loan), the last Business Day of each March, June, September and December and the Maturity Date.

"Interest Period" means, as to each Term SOFR Loan and each Alternative Currency Term Rate Loan, the period commencing on the date such Loan is disbursed or converted to or continued as a Term SOFR Loan or an Alternative Currency Term Rate Loan, as applicable, and ending on the date one, three or six months thereafter (in each case subject to availability for the interest rate applicable to the relevant currency), as selected by the Borrower in its Committed Loan Notice; provided, that: (a) any Interest Period that would otherwise end on a day that is not a Business Day shall be extended to the next succeeding

Business Day unless such Business Day falls in another calendar month, in which case such Interest Period shall end on the next preceding Business Day; (b) any Interest Period that begins on the last Business Day of a calendar month (or on a day for which there is no numerically corresponding day in the calendar month at the end of such Interest Period) shall end on the last Business Day of the calendar month at the end of such Interest Period; and (c) no Interest Period shall extend beyond the Maturity Date.

"Interim Financial Statements" has the meaning specified in Section 5.05(b).

"Investment" means, as to any Person, any direct or indirect acquisition or investment by such Person, whether by means of (a) the purchase or other acquisition of capital stock or other securities of another Person, (b) a loan, advance or capital contribution to, Guarantee or assumption of debt of, or purchase or other acquisition of any other debt or equity participation or interest in, another Person, including any partnership or joint venture interest in such other Person and any arrangement pursuant to which the investor Guarantees Indebtedness of such other Person, or (c) the purchase or other acquisition (in one transaction or a series of transactions) of assets of another Person that constitute a business unit. For purposes of covenant compliance, the amount of any Investment shall be the amount that should be reported in accordance with GAAP.

"IRS" means the United States Internal Revenue Service.

"ISP" means, with respect to any Letter of Credit, the "International Standby Practices 1998" published by the Institute of International Banking Law & Practice, Inc. (or such later version thereof as may be in effect at the time of issuance of such Letter of Credit if such Letter of Credit was issued subject to such later version).

"Issuer Documents" means with respect to any Letter of Credit, the Letter of Credit Application, and any other document, agreement and instrument entered into by the L/C Issuer and the Borrower (or any Subsidiary) or in favor of the L/C Issuer and relating to such Letter of Credit.

"Judgment Currency" has the meaning specified in Section 10.18.

"Laws" means, collectively, all international, foreign, Federal, state and local statutes, treaties, rules, guidelines, regulations, ordinances, codes and administrative or judicial precedents or authorities, including the interpretation or administration thereof by any Governmental Authority charged with the enforcement, interpretation or administration thereof, and all applicable administrative orders, directed duties, requests, licenses, authorizations and permits of, and agreements with, any Governmental Authority, in each case whether or not having the force of law.

"L/C Advance" means, with respect to each Lender, such Lender's funding of its participation in any L/C Borrowing in accordance with its Applicable Percentage. All L/C Advances shall be denominated in Dollars.

"L/C Borrowing" means an extension of credit resulting from a drawing under any Letter of Credit which has not been reimbursed on the date when made or refinanced as a Committed Borrowing. All L/C Borrowings shall be denominated in Dollars.

"L/C Commitment" means the L/C Issuer's obligation to issue Letters of Credit to the Borrower pursuant to Section 2.03 in an aggregate principal amount at any one time outstanding not to exceed the Letter of Credit Sublimit, as such amount may be adjusted from time to time in accordance with this Agreement.

"L/C Credit Extension" means, with respect to any Letter of Credit, the issuance thereof or extension of the expiry date thereof, or the increase of the amount thereof.

"L/C Issuer" means Bank of America (through itself or through one of its designated affiliates or branch offices), in its capacity as issuer of Letters of Credit hereunder, or any successor issuer of Letters of Credit hereunder.

"L/C Obligations" means, as at any date of determination, the aggregate amount available to be drawn under all outstanding Letters of Credit plus the aggregate of all Unreimbursed Amounts, including all L/C Borrowings. For purposes of computing the amount available to be drawn under any Letter of Credit, the amount of such Letter of Credit shall be determined in accordance with Section 1.06. For all purposes of this Agreement, if on any date of determination a Letter of Credit has expired by its terms but any amount may still be drawn thereunder by reason of the operation of Rule 3.13 or 3.14 of the ISP or because a drawing was presented under such Letter of Credit on or prior to the expiration date thereof but has not yet been honored or dishonored, such Letter of Credit shall be deemed to be "outstanding" in the amount so remaining available to be drawn.

"Lender" means each of the Persons identified as a "Lender" on the signature pages hereto, each other Person that becomes a "Lender" in accordance with this Agreement and, their successors and assigns and, unless the context requires otherwise, includes the Swing Line Lender. The term "Lender" shall include any Designated Lender who has funded any Credit Extension.

"Lender Party" means each Lender, the Swing Line Lender and the L/C Issuer.

"Lending Office" means, as to any Lender, the office or offices of such Lender described as such in such Lender's Administrative Questionnaire, or such other office or offices as a Lender may from time to time notify the Borrower and the Administrative Agent, which office may include any Affiliate of such Lender or any domestic or foreign branch of such Lender or such Affiliate.

"Letter of Credit" means any standby letter of credit issued hereunder providing for the payment of cash upon the honoring of a presentation thereunder. Letters of Credit may be issued in Dollars or any Alternative Currency.

"Letter of Credit Application" means an application and agreement for the issuance or amendment of a Letter of Credit in the form from time to time in use by the L/C Issuer.

"Letter of Credit Expiration Date" means the day that is seven (7) days prior to the Maturity Date then in effect (or, if such day is not a Business Day, the next preceding Business Day).

"Letter of Credit Fee" has the meaning specified in Section 2.03(h).

"Letter of Credit Sublimit" means an amount equal to the lesser of (a) $25,000,000 and (b) the Aggregate Commitments. The Letter of Credit Sublimit is part of, and not in addition to, the Aggregate Commitments.

"Leverage Increase Period" has the meaning specified in Section 7.05.

"Lien" means any mortgage, pledge, hypothecation, assignment, deposit arrangement, encumbrance, lien (statutory or other), charge, or preference, priority or other security interest or preferential arrangement in the nature of a security interest of any kind or nature whatsoever (including any conditional sale or other title retention agreement, any easement, right of way or other encumbrance on title

to real property, and any financing lease having substantially the same economic effect as any of the foregoing).

"Loan" means an extension of credit by a Lender to the Borrower under Article II in the form of a Committed Loan or a Swing Line Loan.

"Loan Documents" means this Agreement, each Note, each Issuer Document, the Agent Fee Letter and any agreement creating or perfecting rights in Cash Collateral pursuant to Section 2.14.

"Material Adverse Effect" means: (a) a material adverse change in, or a material adverse effect upon, the business, assets, operations, properties or financial condition of the Borrower and its Subsidiaries taken as a whole; (b) a material impairment of the ability of the Borrower to perform its obligations under the Loan Documents to which it is a party; or (c) a material adverse effect upon the legality, validity, binding effect or enforceability against the Borrower of the Loan Documents to which it is a party.

"Material Subsidiary" means each Subsidiary which, as of last day of the most recently ended fiscal quarter of the Borrower, contributed greater than five percent (5%) of the Borrower's Consolidated Net Worth as of such date.

"Maturity Date" means January 28, 2025 or such later date as may be established for such Lender in accordance with Section 2.16; provided, that, if such date is not a Business Day, the Maturity Date shall be the next preceding Business Day.

"Maximum Rate" has the meaning specified in Section 10.09.

"Minimum Collateral Amount" means, at any time, (a) with respect to Cash Collateral consisting of cash or deposit account balances provided to reduce or eliminate Fronting Exposure during the existence of a Defaulting Lender, an amount equal to one hundred two percent (102%) of the Fronting Exposure of the L/C Issuer with respect to Letters of Credit issued and outstanding at such time, (b) with respect to Cash Collateral consisting of cash or deposit account balances provided in accordance with the provisions of Section 2.14(a)(i), (a)(ii) or (a)(iii), an amount equal to one hundred two percent (102%) of the Outstanding Amount of all L/C Obligations, and (c) otherwise, an amount determined by the Administrative Agent and the L/C Issuer in their sole discretion.

"Moody's" means Moody's Investors Service, Inc. and any successor thereto.

"Multiemployer Plan" means a "multiemployer plan" as defined in Section 4001(a)(3) of ERISA, to which the Borrower or any ERISA Affiliate makes or is obligated to make contributions, or during the preceding five (5) plan years, has made or been obligated to make contributions.

"Multiple Employer Plan" means a Plan which has two or more contributing sponsors (including the Borrower or any ERISA Affiliate) at least two of whom are not under common control, as such a plan is described in Section 4064 of ERISA.

"Non-Consenting Lender" means any Lender that does not approve any consent, waiver or amendment that (a) requires the approval of all Lenders or all affected Lenders in accordance with the terms of Section 10.01 and (b) has been approved by the Required Lenders.

"Non-Defaulting Lender" means, at any time, each Lender that is not a Defaulting Lender at such time.

"Non-Extending Lender" has the meaning specified in Section 2.16(a).

"Non-Extension Notice Date" has the meaning specified in Section 2.03(b)(iii).

"Note" means a promissory note made by the Borrower in favor of a Lender evidencing Loans made by such Lender, substantially in the form of Exhibit C.

"Obligations" means all advances to, and debts, liabilities, obligations, covenants and duties of, the Borrower arising under any Loan Document or otherwise with respect to any Loan or Letter of Credit, whether direct or indirect (including those acquired by assumption), absolute or contingent, due or to become due, now existing or hereafter arising and including interest and fees that accrue after the commencement by or against the Borrower or any Affiliate thereof of any proceeding under any Debtor Relief Laws naming such Person as the debtor in such proceeding, regardless of whether such interest and fees are allowed claims in such proceeding.

"OFAC" means the Office of Foreign Assets Control of the United States Department of the Treasury.

"Organization Documents" means: (a) with respect to any corporation, the certificate or articles of incorporation and the bylaws (or equivalent or comparable constitutive documents with respect to any non- U.S. jurisdiction); (b) with respect to any limited liability company, the certificate or articles of formation or organization and operating agreement; and (c) with respect to any partnership, joint venture, trust or other form of business entity, the partnership, joint venture or other applicable agreement of formation or organization and any agreement, instrument, filing or notice with respect thereto filed in connection with its formation or organization with the applicable Governmental Authority in the jurisdiction of its formation or organization and, if applicable, any certificate or articles of formation or organization of such entity.

"Other Connection Taxes" means, with respect to any Recipient, Taxes imposed as a result of a present or former connection between such Recipient and the jurisdiction imposing such Tax (other than connections arising solely from such Recipient having executed, delivered, become a party to, performed its obligations under, received payments under, received or perfected a security interest under, engaged in any other transaction pursuant to or enforced any Loan Document, or sold or assigned an interest in any Loan or Loan Document).

"Other Taxes" means all present or future stamp, court or documentary, intangible, recording or filing Taxes or similar Taxes that arise from any payment made under, from the execution, delivery, performance, enforcement or registration of, from the receipt or perfection of a security interest under, or otherwise with respect to, any Loan Document, except any such Taxes that are Other Connection Taxes imposed with respect to an assignment (other than an assignment made pursuant to Section 3.06).

"Outstanding Amount" means: (a) with respect to Committed Loans and Swing Line Loans on any date, the Dollar Equivalent amount of the aggregate outstanding principal amount thereof after giving effect to any borrowings and prepayments or repayments of Committed Loans and Swing Line Loans, as the case may be, occurring on such date; and (b) with respect to any L/C Obligations on any date, the Dollar Equivalent of the aggregate outstanding amount of such L/C Obligations on such date after giving effect to any L/C Credit Extension occurring on such date and any other changes in the aggregate amount of the L/C Obligations as of such date, including as a result of any reimbursements by the Borrower of Unreimbursed Amounts.

"Overnight Rate" means, for any day, (a) with respect to any amount denominated in Dollars, the greater of (i) the Federal Funds Rate, and (ii) an overnight rate determined by the Administrative Agent,

the L/C Issuer, or the Swing Line Lender, as the case may be, in accordance with banking industry rules on interbank compensation, and (b) with respect to any amount denominated in an Alternative Currency, an overnight rate determined by the Administrative Agent or the L/C Issuer, as the case may be, in accordance with banking industry rules on interbank compensation.

"Participant" has the meaning specified in Section 10.06(d).

"Participant Register" has the meaning specified in Section 10.06(d).

"Participating Member State" means any member state of the European Union that adopts or has adopted the Euro as its lawful currency in accordance with legislation of the European Union relating to Economic and Monetary Union.

"PATRIOT Act" has the meaning specified in Section 10.17.

"PBGC" means the Pension Benefit Guaranty Corporation or any successor thereto.

"Pension Funding Rules" means the rules of the Code and ERISA regarding minimum required contributions (including any installment payment thereof) to Pension Plans and set forth in Section 412, 430, 431, 432 and 436 of the Code and Sections 302, 303, 304 and 305 of ERISA.

"Pension Plan" means any employee pension benefit plan (including a Multiple Employer Plan or a Multiemployer Plan) that is maintained or is contributed to by the Borrower or any ERISA Affiliate and is either covered by Title IV of ERISA or is subject to minimum funding standards under Section 412 of the Code.

"Person" means any natural person, corporation, limited liability company, trust, joint venture, association, company, partnership, Governmental Authority or other entity.

"Plan" means any employee pension benefit plan within the meaning of Section 3(2) of ERISA (including a Pension Plan), maintained for employees of the Borrower or, with respect to Pension Plans, any ERISA Affiliate.

"Platform" has the meaning specified in Section 6.02.

"PTE" means a prohibited transaction class exemption issued by the U.S. Department of Labor, as any such exemption may be amended from time to time.

"Public Lender" has the meaning specified in Section 6.02.

"QFC" has the meaning assigned to the term "qualified financial contract" in, and shall be interpreted in accordance with, 12 U.S.C. 5390(c)(8)(D).

"QFC Credit Support" has the meaning specified in Section 10.21.

"Rate Determination Date" means, with respect to an Interest Period, two (2) Business Days prior to the commencement of such Interest Period (or such other day as is generally treated as the rate fixing day by market practice in such interbank market, as determined by the Administrative Agent; provided, that, to the extent such market practice is not administratively feasible for the Administrative Agent, then "Rate Determination Date" means such other day as otherwise reasonably determined by the Administrative Agent).

"Recipient" means the Administrative Agent, any Lender, the L/C Issuer or any other recipient of any payment to be made by or on account of any obligation of the Borrower hereunder.

"Register" has the meaning specified in Section 10.06(c).

"Related Indemnified Parties" means, with respect to an Indemnitee, (a) any Affiliate of such Indemnitee, (b) the respective directors, officers or employees of such Indemnitee or any of its Affiliates,
(c) the respective agents and advisors or other representatives of such Indemnitee or any of its Affiliates, in the case of this clause (c), acting on behalf of or at the instructions of such Indemnitee or any of its Affiliates.

"Related Parties" means, with respect to any Person, such Person's Affiliates and the partners, directors, officers, employees, agents, trustees, administrators, managers, advisors and representatives of such Person and of such Person's Affiliates.

"Relevant Rate" means with respect to any Committed Loan denominated in (a) Euros, EURIBOR (or, where applicable, any Alternative Currency Successor Rate established in connection therewith), (b) Yen, TIBOR (or, where applicable, any Alternative Currency Successor Rate established in connection therewith), and (c) Sterling, SONIA (or, where applicable, any Alternative Currency Successor Rate established in connection therewith).

"Removal Effective Date" has the meaning specified in Section 9.06(b).

"Reportable Event" means any of the events set forth in Section 4043(c) of ERISA, other than events for which the thirty (30) day notice period has been waived.

"Request for Credit Extension" means (a) with respect to a Committed Borrowing, or a conversion or continuation of Committed Loans, a Committed Loan Notice, (b) with respect to an L/C Credit Extension, a Letter of Credit Application, and (c) with respect to a Swing Line Loan, a Swing Line Loan Notice.

"Required Lenders" means, as of any date of determination, Lenders having more than fifty percent (50%) of the Aggregate Commitments or, if the commitment of each Lender to make Committed Loans and the obligation of the L/C Issuer to make L/C Credit Extensions have been terminated pursuant to Section 8.02, Lenders holding in the aggregate more than fifty percent (50%) of the Total Outstandings (with the aggregate amount of each Lender's risk participation and funded participation in L/C Obligations and Swing Line Loans being deemed "held" by such Lender for purposes of this definition). The Commitment of, and the portion of the Total Outstandings held or deemed held by, any Defaulting Lender shall be excluded for purposes of making a determination of Required Lenders; provided, that, the amount of any participation in any Swing Line Loan and Unreimbursed Amounts that such Defaulting Lender has failed to fund that have not been reallocated to and funded by another Lender shall be deemed to be held by the Lender that is the Swing Line Lender or the L/C Issuer, as the case may be, in making such determination; provided, further, that, this definition is subject to Sections 3.03(b) and (c).

"Rescindable Amount" has the meaning specified in Section 2.12(b)(ii).

"Resignation Effective Date" has the meaning specified in Section 9.06(a).

"Resolution Authority" means an EEA Resolution Authority or, with respect to any UK Financial Institution, a UK Resolution Authority.

"Responsible Officer" means (a) the chief executive officer, president, chief financial officer, treasurer, assistant treasurer or controller of the Borrower, (b) solely for purposes of the delivery of secretary's certificates pursuant to Section 4.01, the secretary or any assistant secretary of the Borrower, and (c) solely for purposes of delivering notices pursuant to Article II, any other officer or employee of the Borrower designated in or pursuant to an agreement between the Borrower and the Administrative Agent. Any document delivered hereunder that is signed by a Responsible Officer of the Borrower shall be conclusively presumed to have been authorized by all necessary corporate, partnership and/or other action on the part of the Borrower and such Responsible Officer shall be conclusively presumed to have acted on behalf of the Borrower. To the extent requested by the Administrative Agent, each Responsible Officer will provide an incumbency certificate and appropriate authorization documentation, in form and substance reasonably satisfactory to the Administrative Agent.

"Revaluation Date" means (a) with respect to any Committed Loan, each of the following: (i) each date of a Committed Borrowing of an Alternative Currency Loan, (ii) with respect to an Alternative Currency Daily Rate Loan, each Interest Payment Date, (iii) each date of a continuation of an Alternative Currency Term Rate Loan pursuant to Section 2.02, and (iv) such additional dates as the Administrative Agent shall reasonably determine or the Required Lenders shall reasonably require; and (b) with respect to any Letter of Credit, each of the following: (i) each date of issuance, amendment and/or extension of a Letter of Credit denominated in an Alternative Currency, (ii) each date of any payment under any Letter of Credit denominated in an Alternative Currency, and (iii) such additional dates as the Administrative Agent or the L/C Issuer shall reasonably determine or the Required Lenders shall reasonably require.

"S&P" means Standard & Poor's Financial Services LLC, a subsidiary of S&P Global Inc., and any successor thereto.

"Same Day Funds" means (a) with respect to disbursements and payments in Dollars, immediately available funds, and (b) with respect to disbursements and payments in an Alternative Currency, same day or other funds as may be determined by the Administrative Agent or the L/C Issuer, as the case may be, to be customary in the place of disbursement or payment for the settlement of international banking transactions in the relevant Alternative Currency.

"Sanctions" means any international economic sanction or trade embargo administered or enforced by the United States government, including OFAC, the United Nations Security Council, the European Union, His Majesty's Treasury ("HMT") or other relevant sanctions authority.

"Scheduled Unavailability Date" has the meaning specified in Section 3.03(c).

"SEC" means the Securities and Exchange Commission, or any Governmental Authority succeeding to any of its principal functions.

"Shareholders' Equity" means, as of any date of determination, consolidated shareholders' equity of the Borrower and its Subsidiaries as of that date determined in accordance with GAAP (such determination to be made by reference to the financial statements of the Borrower most recently delivered by the Borrower to the Administrative Agent on or prior to such date pursuant to Section 6.01(a) or (b), as applicable (or, with respect to any such determination to be made prior to the first delivery of such financial statements, determined by reference to the Interim Financial Statements)).

"SOFR" means the Secured Overnight Financing Rate as administered by the Federal Reserve Bank of New York (or a successor administrator).

"SOFR Adjustment" means: (a) with respect to Daily Simple SOFR, 0.10% (10 basis points); and
(b) with respect to Term SOFR, (i) 0.10% (10 basis points) for an Interest Period of one month's duration,
(ii) 0.10% (10 basis points) for an Interest Period of three months' duration, and (iii) 0.10% (10 basis points) for an Interest Period of six months' duration.

"Solvent" means, with respect to any Person, as of any date of determination, (a) the amount of the "present fair saleable value" of the assets of such Person will, as of such date, exceed the amount of all "liabilities of such Person, contingent or otherwise", as of such date, as such quoted terms are determined in accordance with applicable federal and state laws governing determinations of the insolvency of debtors,
(b) the present fair saleable value of the assets of such Person will, as of such date, be greater than the amount that will be required to pay the liability of such Person on its debts as such debts become absolute and matured, (c) such Person will not have, as of such date, an unreasonably small amount of capital with which to conduct its business, and (d) such Person will be able to pay its debts as they mature.

"SONIA" means, with respect to any applicable determination date, the Sterling Overnight Index Average Reference Rate published on the fifth (5^{th}) Business Day preceding such date on the applicable Reuters screen page (or such other commercially available source providing such quotations as may be designated by the Administrative Agent from time to time); provided, that, if such determination date is not a Business Day, SONIA means such rate that applied on the first Business Day immediately prior thereto.

"Special Notice Currency" means, at any time, any Alternative Currency other than the currency of a country that is a member of the Organization for Economic Cooperation and Development at such time located in North America or Europe.

"Sterling" means the lawful currency of the United Kingdom.

"Subsidiary" of a Person means a corporation, partnership, joint venture, limited liability company or other business entity of which a majority of the shares of securities or other interests having ordinary voting power for the election of directors or other governing body (other than securities or interests having such power only by reason of the happening of a contingency) are at the time beneficially owned, or the management of which is otherwise controlled, directly, or indirectly through one or more intermediaries, or both, by such Person. Unless otherwise specified, all references herein to a "Subsidiary" or to "Subsidiaries" shall refer to a Subsidiary or Subsidiaries of the Borrower.

"Supported QFC" has the meaning specified in Section 10.21.

"Swap Contract" means (a) any and all rate swap transactions, basis swaps, credit derivative transactions, forward rate transactions, commodity swaps, commodity options, forward commodity contracts, equity or equity index swaps or options, bond or bond price or bond index swaps or options or forward bond or forward bond price or forward bond index transactions, interest rate options, forward foreign exchange transactions, cap transactions, floor transactions, collar transactions, currency swap transactions, cross-currency rate swap transactions, currency options, spot contracts, or any other similar transactions or any combination of any of the foregoing (including any options to enter into any of the foregoing), whether or not any such transaction is governed by or subject to any master agreement, and (b) any and all transactions of any kind, and the related confirmations, which are subject to the terms and conditions of, or governed by, any form of master agreement published by the International Swaps and Derivatives Association, Inc., any International Foreign Exchange Master Agreement, or any other master agreement (any such master agreement, together with any related schedules, a "Master Agreement"), including any such obligations or liabilities under any Master Agreement.

"Swap Termination Value" means, in respect of any one or more Swap Contracts, after taking into account the effect of any legally enforceable netting agreement relating to such Swap Contracts, (a) for any date on or after the date such Swap Contracts have been closed out and termination value(s) determined in accordance therewith, such termination value(s), and (b) for any date prior to the date referenced in clause (a), the amount(s) determined as the mark-to-market value(s) for such Swap Contracts, as determined based upon one or more mid-market or other readily available quotations provided by any recognized dealer in such Swap Contracts (which may include a Lender or any Affiliate of a Lender).

"Swing Line Borrowing" means a borrowing of a Swing Line Loan pursuant to Section 2.04.

"Swing Line Lender" means Bank of America in its capacity as provider of Swing Line Loans, or any successor swing line lender hereunder.

"Swing Line Loan" has the meaning specified in Section 2.04(a).

"Swing Line Loan Notice" means a notice of a Swing Line Borrowing pursuant to Section 2.04(b), which shall be substantially in the form of Exhibit B or such other form as approved by the Administrative Agent in its reasonable discretion (including any form on an electronic platform or electronic transmission system as shall be approved by the Administrative Agent, email and/or .pdf), appropriately completed and signed by a Responsible Officer of the Borrower.

"Swing Line Sublimit" means an amount equal to the lesser of (a) $20,000,000 and (b) the Aggregate Commitments. The Swing Line Sublimit is part of, and not in addition to, the Aggregate Commitments.

"Synthetic Lease Obligation" means the monetary obligation of a Person under (a) a so called synthetic, off-balance sheet or tax retention lease or (b) an agreement for the use or possession of property creating obligations that do not appear on the balance sheet of such Person but which, upon the insolvency or bankruptcy of such Person, would be characterized as indebtedness of such Person (without regard to accounting treatment).

"TARGET2" means the Trans-European Automated Real-time Gross Settlement Express Transfer payment system which utilizes a single shared platform and which was launched on November 19, 2007.

"TARGET Day" means any day on which TARGET2 (or, if such payment system ceases to be operative, such other payment system, if any, determined by the Administrative Agent to be a suitable replacement) is open for the settlement of payments in Euro.

"Taxes" means all present or future taxes, levies, imposts, duties, deductions, withholdings (including backup withholding), assessments, fees or other charges imposed by any Governmental Authority, including any interest, additions to tax or penalties applicable thereto.

"Term SOFR" means: (a) for any Interest Period with respect to a Term SOFR Loan, the rate per annum equal to the Term SOFR Screen Rate two (2) U.S. Government Securities Business Days prior to the commencement of such Interest Period with a term equivalent to such Interest Period; provided, that, if the rate is not published prior to 11:00 a.m. on such determination date then Term SOFR means the Term SOFR Screen Rate on the first U.S. Government Securities Business Day immediately prior thereto; in each case, plus the SOFR Adjustment for such Interest Period; and (b) for any interest calculation with respect to a Base Rate Committed Loan on any date, the rate per annum equal to the Term SOFR Screen Rate with a term of one month commencing that day; provided, that, if Term SOFR determined in accordance with

either of the foregoing clauses (a) or (b) of this definition would otherwise be less than zero, Term SOFR shall be deemed zero for purposes of this Agreement.

"Term SOFR Conforming Changes" means, with respect to the use, administration of or any conventions associated with SOFR, Term SOFR or any proposed Term SOFR Successor Rate, as applicable, any conforming changes to the definitions of "Base Rate", "SOFR", "Term SOFR" and "Interest Period", timing and frequency of determining rates and making payments of interest and other technical, administrative or operational matters (including, for the avoidance of doubt, the definitions of "Business Day" and "U.S. Government Securities Business Day", timing of borrowing requests or prepayment, conversion or continuation notices and length of lookback periods) as may be appropriate, in the reasonable discretion of the Administrative Agent, in consultation with the Borrower, to reflect the adoption and implementation of such applicable rate(s) and to permit the administration thereof by the Administrative Agent in a manner substantially consistent with market practice (or, if the Administrative Agent determines that adoption of any portion of such market practice is not administratively feasible or that no market practice for the administration of such rate exists, in such other manner of administration as the Administrative Agent reasonably determines, in consultation with the Borrower, is necessary in connection with the administration of this Agreement and any other Loan Document).

"Term SOFR Loan" means a Committed Loan that bears interest at a rate based on clause (a) of the definition of "Term SOFR". All Term SOFR Loans shall be denominated in Dollars.

"Term SOFR Replacement Date" has the meaning specified in Section 3.03(b).

"Term SOFR Scheduled Unavailability Date" has the meaning specified in Section 3.03(b).

"Term SOFR Screen Rate" means the forward-looking SOFR term rate administered by CME (or any successor administrator satisfactory to the Administrative Agent) and published on the applicable Reuters screen page (or such other commercially available source providing such quotations as may be designated by the Administrative Agent from time to time in its reasonable discretion).

"Term SOFR Successor Rate" has the meaning specified in Section 3.03(b).

"Threshold Amount" means $200,000,000.

"TIBOR" has the meaning specified in the definition of "Alternative Currency Term Rate".

"Total Outstandings" means the aggregate Outstanding Amount of all Loans and all L/C Obligations.

"Type" means, with respect to a Committed Loan, its character as a Base Rate Loan, a Term SOFR Loan, an Alternative Currency Daily Rate Loan or an Alternative Currency Term Rate Loan.

"UK Financial Institution" means any BRRD Undertaking (as such term is defined under the PRA Rulebook (as amended from time to time) promulgated by the United Kingdom Prudential Regulation Authority) or any Person subject to IFPRU 11.6 of the FCA Handbook (as amended from time to time) promulgated by the United Kingdom Financial Conduct Authority, which includes certain credit institutions and investment firms, and certain affiliates of such credit institutions or investment firms.

"UK Resolution Authority" means the Bank of England or any other public administrative authority having responsibility for the resolution of any UK Financial Institution.

"United States" and "U.S." mean the United States of America.

"Unreimbursed Amount" has the meaning specified in Section 2.03(c)(i).

"U.S. Government Securities Business Day" means any Business Day, except any Business Day on which any of the Securities Industry and Financial Markets Association, the New York Stock Exchange or the Federal Reserve Bank of New York is not open for business because such day is a legal holiday under the federal laws of the United States or the laws of the State of New York, as applicable.

"U.S. Person" means any Person that is a "United States person" as defined in Section 7701(a)(30) of the Code.

"U.S. Special Resolution Regimes" has the meaning specified in Section 10.21.

"U.S. Tax Compliance Certificate" has the meaning specified in Section 3.01(e)(ii)(B)(III).

"Write-Down and Conversion Powers" means, (a) with respect to any EEA Resolution Authority, the write-down and conversion powers of such EEA Resolution Authority from time to time under the Bail- In Legislation for the applicable EEA Member Country, which write-down and conversion powers are described in the EU Bail-In Legislation Schedule, and (b) with respect to the United Kingdom, any powers of the applicable Resolution Authority under the Bail-In Legislation to cancel, reduce, modify or change the form of a liability of any UK Financial Institution or any contract or instrument under which that liability arises, to convert all or part of that liability into shares, securities or obligations of that person or any other person, to provide that any such contract or instrument is to have effect as if a right had been exercised under it or to suspend any obligation in respect of that liability or any of the powers under that Bail-In Legislation that are related to or ancillary to any of those powers.

"Yen" means the lawful currency of Japan.

Section 1.02 Other Interpretive Provisions. With reference to this Agreement and each other Loan Document, unless otherwise specified herein or in such other Loan Document:

(a) The definitions of terms herein shall apply equally to the singular and plural forms of the terms defined. Whenever the context may require, any pronoun shall include the corresponding masculine, feminine and neuter forms. The words "include," "includes" and "including" shall be deemed to be followed by the phrase "without limitation." The word "will" shall be construed to have the same meaning and effect as the word "shall." Unless the context requires otherwise, (i) any definition of or reference to any agreement, instrument or other document (including any Organization Document) shall be construed as referring to such agreement, instrument or other document as from time to time amended, restated, amended and restated, extended, replaced, supplemented or otherwise modified (subject to any restrictions on such amendments, restatements, amendments and restatements, extensions, replacements, supplements or modifications set forth herein or in any other Loan Document), (ii) any reference herein to any Person shall be construed to include such Person's successors and assigns, (iii) the words "herein," "hereof" and "hereunder," and words of similar import when used in any Loan Document, shall be construed to refer to such Loan Document in its entirety and not to any particular provision thereof, (iv) all references in a Loan Document to Articles, Sections, Exhibits and Schedules shall be construed to refer to Articles and Sections of, and Exhibits and Schedules to, the Loan Document in which such references appear, (v) any reference to any law shall include all statutory and regulatory rules, regulations, orders and provisions consolidating, amending, replacing or interpreting such law and any reference to any law, rule or regulation shall, unless otherwise specified, refer to such law, rule or regulation as amended, modified or supplemented from time to time, and (vi) the words "asset" and "property" shall be construed to have the same meaning and effect

and to refer to any and all tangible and intangible assets and properties, including cash, securities, accounts and contract rights.

(b) In the computation of periods of time from a specified date to a later specified date, the word "from" means "from and including;" the words "to" and "until" each mean "to but excluding;" and the word "through" means "to and including."

(c) Section headings herein and in the other Loan Documents are included for convenience of reference only and shall not affect the interpretation of this Agreement or any other Loan Document.

(d) Any reference herein to a merger, transfer, consolidation, amalgamation, assignment, sale, or disposition, or similar term, shall be deemed to apply to a division of or by a limited liability company, or an allocation of assets to a series of a limited liability company (or the unwinding of such a division or allocation), as if it were a merger, transfer, consolidation, amalgamation, assignment, sale, or disposition, or similar term, as applicable, to, of or with a separate Person. Any division of a limited liability company shall constitute a separate Person hereunder (and each division of any limited liability company that is a Subsidiary, joint venture or any other like term shall also constitute such a Person).

Section 1.03 Accounting Terms.

(a) Generally. All accounting terms not specifically or completely defined herein shall be construed in conformity with, and all financial data (including financial ratios and other financial calculations) required to be submitted pursuant to this Agreement shall be prepared in conformity with, GAAP applied on a consistent basis, as in effect from time to time, applied in a manner consistent with that used in preparing the Audited Financial Statements, except as otherwise specifically prescribed herein. Notwithstanding the foregoing, for purposes of this Agreement, (i) leases shall continue to be classified and accounted for on a basis consistent with GAAP as in effect as of December 31, 2015, notwithstanding any change in GAAP related thereto (including pursuant to FASB ASC Topic 842), and (ii) all liability amounts shall be determined excluding any liability relating to any operating lease, all asset amounts shall be determined excluding any right-of-use assets relating to any operating lease, all amortization amounts shall be determined excluding any amortization of a right-of-use asset relating to any operating lease, and all interest amounts shall be determined excluding any deemed interest comprising a portion of fixed rent payable under any operating lease, in each case to the extent that such liability, asset, amortization or interest
(A) pertains to an operating lease under which the covenantor or a member of its consolidated group is the lessee and (B) would not have been accounted for as a liability, asset, amortization or interest, as applicable, under GAAP as in effect on December 31, 2015.

(b) Changes in GAAP. If at any time any change in GAAP would affect the computation of any financial ratio or requirement set forth in any Loan Document, and either the Borrower or the Required Lenders shall so request, the Administrative Agent, the Lenders and the Borrower shall negotiate in good faith to amend such ratio or requirement to preserve the original intent thereof in light of such change in GAAP (subject to the reasonable approval of the Required Lenders); provided, that, until so amended, (i) such ratio or requirement shall continue to be computed in accordance with GAAP prior to such change therein and (ii) the Borrower shall provide to the Administrative Agent and the Lenders financial statements and other documents required under this Agreement or as reasonably requested hereunder setting forth a reconciliation between calculations of such ratio or requirement made before and after giving effect to such change in GAAP.

(c) FASB ASC 825 and FASB ASC 470-20. Notwithstanding the above, for purposes of determining compliance with any covenant (including the computation of any financial covenant) contained herein, Indebtedness of the Borrower and its Subsidiaries shall be deemed to be carried at one hundred

percent (100%) of the outstanding principal amount thereof, and the effects of FASB ASC 825 and FASB ASC 470-20 on financial liabilities shall be disregarded.

Section 1.04 Rounding. Any financial ratios required to be maintained by the Borrower pursuant to this Agreement shall be calculated by dividing the appropriate component by the other component, carrying the result to one place more than the number of places by which such ratio is expressed herein and rounding the result up or down to the nearest number (with a rounding-up if there is no nearest number).

Section 1.05 Times of Day; Rates.

Unless otherwise specified, all references herein to times of day shall be references to Eastern time (daylight or standard, as applicable).

The Administrative Agent does not warrant, nor accept responsibility, nor shall the Administrative Agent have any liability with respect to the administration, submission or any other matter related to any reference rate referred to herein or with respect to any rate (including, for the avoidance of doubt, the selection of such rate and any related spread or other adjustments) that is an alternative or replacement for or successor to any such rate (including any Term SOFR Successor Rate or any Alternative Currency Successor Rate) (or any component of any of the foregoing) or the effect of any of the foregoing, or of any Term SOFR Conforming Changes or any Alternative Currency Conforming Changes. The Administrative Agent and its affiliates or other related entities may engage in transactions or other activities that affect any reference rate referred to herein, or any alternative, successor or replacement rate (including any Term SOFR Successor Rate or any Alternative Currency Successor Rate) (or any component of any of the foregoing) or any related spread or other adjustments thereto, in each case, in a manner adverse to the Borrower. The Administrative Agent may select information sources or services in its reasonable discretion to ascertain any reference rate referred to herein or any alternative, successor or replacement rate (including any Term SOFR Successor Rate or any Alternative Currency Successor Rate) (or any component of any of the foregoing), in each case pursuant to the terms of this Agreement, and shall have no liability to the Borrower, any Lender or any other Person for damages of any kind, including direct or indirect, special, punitive, incidental or consequential damages, costs, losses or expenses (whether in tort, contract or otherwise and whether at law or in equity), for any error or other action or omission related to or affecting the selection, determination, or calculation of any rate (or component thereof) provided by any such information source or service. For the avoidance of doubt, this paragraph of Section 1.05 does not alter or impair the rights and obligations of the Administrative Agent otherwise expressly set forth in this Agreement.

Section 1.06 Letter of Credit Amounts. Unless otherwise specified herein, the amount of a Letter of Credit at any time shall be deemed to be the Dollar Equivalent of the stated amount of such Letter of Credit in effect at such time; provided, that, with respect to any Letter of Credit that, by its terms or the terms of any Issuer Document related thereto, provides for one or more automatic increases in the stated amount thereof, the amount of such Letter of Credit shall be deemed to be the Dollar Equivalent of the maximum stated amount of such Letter of Credit after giving effect to all such increases, whether or not such maximum stated amount is in effect at such time.

Section 1.07 Exchange Rates; Currency Equivalents.

(a) The Administrative Agent or the L/C Issuer, as applicable, shall determine the Dollar Equivalent amounts of Credit Extensions and Outstanding Amounts denominated in Alternative Currencies. Such Dollar Equivalent shall become effective as of such Revaluation Date and shall be the Dollar Equivalent of such amounts until the next Revaluation Date to occur. Except for purposes of financial

statements delivered by the Borrower hereunder or calculating financial covenants hereunder or except as otherwise provided herein, the applicable amount of any currency (other than Dollars) for purposes of the Loan Documents shall be such Dollar Equivalent amount as so determined by the Administrative Agent or the L/C Issuer, as applicable.

(b) Wherever in this Agreement in connection with a Committed Borrowing, a continuation of an Alternative Currency Term Rate Loan, the prepayment of an Alternative Currency Loan, or the issuance, amendment or extension of a Letter of Credit, an amount, such as a required minimum or multiple amount, is expressed in Dollars, but such Committed Borrowing, Loan or Letter of Credit is denominated in an Alternative Currency, such amount shall be the relevant Alternative Currency Equivalent of such Dollar amount (rounded to the nearest unit of such Alternative Currency, with 0.5 of a unit being rounded upward), as determined by the Administrative Agent or the L/C Issuer, as the case may be.

Section 1.08 Additional Alternative Currencies.

(a) The Borrower may from time to time request that Committed Loans be made and/or Letters of Credit be issued, in either case in a currency other than those specifically listed in the definition of "Alternative Currency;" provided, that, such requested currency is an Eligible Currency. In the case of any such request with respect to the making of Committed Loans, such request shall be subject to the approval of the Administrative Agent and each Lender; and in the case of any such request with respect to the issuance of Letters of Credit, such request shall be subject to the approval of the Administrative Agent and the L/C Issuer.

(b) Any such request shall be made to the Administrative Agent not later than 11:00 a.m., ten (10) Business Days prior to the date of the desired Credit Extension (or such earlier time or date as may be agreed by the Administrative Agent and, in the case of any such request pertaining to Letters of Credit, the L/C Issuer, in its or their sole discretion). In the case of any such request pertaining to Committed Loans, the Administrative Agent shall promptly notify each Lender of such request; and in the case of any such request pertaining to Letters of Credit, the Administrative Agent shall promptly notify the L/C Issuer of such request. Each Lender (in the case of any such request pertaining to Committed Loans) or the L/C Issuer (in the case of a request pertaining to Letters of Credit), shall notify the Administrative Agent, not later than 11:00 a.m., five (5) Business Days after receipt of such request whether it consents, in its sole discretion, to the making of Committed Loans or the issuance of Letters of Credit, as the case may be, in such requested currency.

(c) Any failure by a Lender or the L/C Issuer, as the case may be, to respond to such request within the time period specified in Section 1.08(b) shall be deemed to be a refusal by such Lender or the L/C Issuer, as the case may be, to permit Committed Loans to be made or Letters of Credit to be issued in such requested currency. If the Administrative Agent and all the Lenders consent to making Committed Loans in such requested currency and the Administrative Agent and the Lenders reasonably determine that an appropriate interest rate is available to be used for such requested currency, the Administrative Agent shall so notify the Borrower and (i) the Administrative Agent and the Lenders may amend this Agreement to the extent necessary to add the applicable rate for such currency and any applicable adjustments for such rate that is agreed by the Borrower, the Administrative Agent and the Lenders, and (ii) to the extent this Agreement has been amended to reflect the appropriate rate (and applicable adjustments, if any) for such currency, such currency shall thereupon be deemed for all purposes to be an Alternative Currency for purposes of any Committed Borrowings. If the Administrative Agent and the L/C Issuer consent to the issuance of Letters of Credit in such requested currency, the Administrative Agent shall so notify the Borrower and the Administrative Agent and the L/C Issuer may amend this Agreement to the extent necessary to reflect the addition of such currency as an Alternative Currency for Letters of Credit. If the

Administrative Agent shall fail to obtain consent to any request for an additional currency under this Section 1.08, the Administrative Agent shall promptly so notify the Borrower.

Section 1.09 Change of Currency.

(a) Each obligation of the Borrower to make a payment denominated in the national currency unit of any member state of the European Union that adopts the Euro as its lawful currency after the Closing Date shall be redenominated into Euro at the time of such adoption. If, in relation to the currency of any such member state, the basis of accrual of interest expressed in this Agreement in respect of that currency shall be inconsistent with any convention or practice in the London interbank market for the basis of accrual of interest in respect of the Euro, such expressed basis shall be replaced by such convention or practice with effect from the date on which such member state adopts the Euro as its lawful currency; provided, that, if any Committed Borrowing in the currency of such member state is outstanding immediately prior to such date, such replacement shall take effect, with respect to such Committed Borrowing, at the end of the then current Interest Period.

(b) Each provision of this Agreement shall be subject to such reasonable changes of construction as the Administrative Agent, in consultation with the Borrower, may from time to time specify to be appropriate to reflect the adoption of the Euro by any member state of the European Union and any relevant market conventions or practices relating to the Euro. Each provision of this Agreement also shall be subject to such reasonable changes of construction as the Administrative Agent, in consultation with the Borrower, may from time to time specify to be appropriate to reflect a change in currency of any other country and any relevant market conventions or practices relating to the change in currency.

ARTICLE II.
THE COMMITMENTS AND CREDIT EXTENSIONS

Section 2.01 Committed Loans. Subject to the terms and conditions set forth herein, each Lender severally agrees to make loans (each such loan, a "Committed Loan") denominated in Dollars or in one or more Alternative Currencies to the Borrower from time to time on any Business Day during the Availability Period, in an aggregate amount not to exceed at any time outstanding the amount of such Lender's Commitment; provided, that, after giving effect to any Committed Borrowing, (i) the Total Outstandings shall not exceed the Aggregate Commitments, and (ii) the aggregate Outstanding Amount of the Committed Loans of any Lender, plus such Lender's Applicable Percentage of the Outstanding Amount of all L/C Obligations, plus such Lender's Applicable Percentage of the Outstanding Amount of all Swing Line Loans shall not exceed such Lender's Commitment. Within the limits of each Lender's Commitment, and subject to the other terms and conditions hereof, the Borrower may borrow under this Section 2.01, prepay under Section 2.05, and reborrow under this Section 2.01. Committed Loans may be Base Rate Committed Loans, Term SOFR Loans, Alternative Currency Daily Rate Loans or Alternative Currency Term Rate Loans, as further provided herein.

Section 2.02 Committed Borrowings; Conversions and Continuations of Committed Loans.

(a) Each Committed Borrowing, each conversion of Term SOFR Loans to Base Rate Committed Loans, each conversion of Base Rate Committed Loans to Term SOFR Loans, and each continuation of Term SOFR Loans or Alternative Currency Term Rate Loans, as applicable, shall be made upon the Borrower's irrevocable notice to the Administrative Agent, which may be given by telephone or a Committed Loan Notice; provided, that, any telephonic notice must be confirmed promptly by delivery to the Administrative Agent of a Committed Loan Notice. Each such notice must be received by the Administrative Agent not later than 11:00 a.m. (i) two (2) Business Days prior to the requested date of any

Committed Borrowing of, conversion to or continuation of Term SOFR Loans, or of any conversion of Term SOFR Loans to Base Rate Committed Loans, (ii) four (4) Business Days (or five (5) Business Days in the case of a Special Notice Currency) prior to the requested date of any Committed Borrowing of Alternative Currency Loans, (iii) four (4) Business Days (or five (5) Business Days in the case of a Special Notice Currency) prior to the requested date of any continuation of Alternative Currency Term Rate Loans, and (iv) on the requested date of any Borrowing of Base Rate Committed Loans. Each Committed Borrowing of, conversion to, or continuation of Term SOFR Loans or Alternative Currency Loans shall be in a principal amount of the Dollar Equivalent of $5,000,000 or a whole multiple of the Dollar Equivalent of $1,000,000 in excess thereof. Except as provided in Sections 2.03(c) and 2.04(c), each Committed Borrowing of or conversion to Base Rate Committed Loans shall be in a principal amount of the Dollar Equivalent of $500,000 or a whole multiple of the Dollar Equivalent of $100,000 in excess thereof. Each Committed Loan Notice shall specify (A) whether the Borrower is requesting a Committed Borrowing, a conversion of Committed Loans from Term SOFR Loans to Base Rate Committed Loans, a conversion of Base Rate Committed Loans to Term SOFR Loans, or a continuation of Term SOFR Loans or Alternative Currency Term Rate Loans, (B) the requested date of the Committed Borrowing, conversion or continuation, as the case may be (which shall be a Business Day), (C) the principal amount of Committed Loans to be borrowed, converted or continued, (D) the Type of Committed Loans to be borrowed or to which existing Committed Loans are to be converted, (E) if applicable, the duration of the Interest Period with respect thereto, and (F) the currency of the Committed Loans to be borrowed. If the Borrower fails to specify a currency in a Committed Loan Notice requesting a Committed Borrowing, then the Committed Loans so requested shall be made in Dollars. If the Borrower fails to specify a Type of Committed Loan in a Committed Loan Notice or if the Borrower fails to give a timely notice requesting a conversion or continuation, then the applicable Committed Loans shall be made as, or converted to, Base Rate Committed Loans; provided, that, in the case of a failure to timely request a continuation of Alternative Currency Term Rate Loans, such Loans shall be continued as Alternative Currency Term Rate Loans in their original currency with an Interest Period of one month. Any such automatic conversion to Base Rate Committed Loans shall be effective as of the last day of the Interest Period then in effect with respect to the applicable Term SOFR Loans. If the Borrower requests a Committed Borrowing of, conversion to, or continuation of Term SOFR Loans or Alternative Currency Term Rate Loans in any such Committed Loan Notice, but fails to specify an Interest Period, it will be deemed to have specified an Interest Period of one month. Except as otherwise provided in this Agreement, no Committed Loan may be converted into or continued as a Committed Loan denominated in a different currency, but instead must be repaid in the original currency of such Committed Loan and reborrowed in the other currency.

(b) Following receipt of a Committed Loan Notice, the Administrative Agent shall promptly notify each Lender of the amount (and currency) of its Applicable Percentage of the applicable Committed Loans, and if no timely notice of a conversion or continuation is provided by the Borrower, the Administrative Agent shall notify each Lender of the details of any automatic conversion to Base Rate Committed Loans or continuation of Alternative Currency Loans, in each case as described in the preceding subsection. In the case of a Committed Borrowing, each Lender shall make the amount of its Committed Loan available to the Administrative Agent in Same Day Funds at the Administrative Agent's Office for the applicable currency not later than 1:00 p.m., in the case of any Committed Loan denominated in Dollars, and not later than the Applicable Time specified by the Administrative Agent, in the case of any Alternative Currency Loan, in each case on the Business Day specified in the applicable Committed Loan Notice. Upon satisfaction of the applicable conditions set forth in Section 4.02 (and, if such Committed Borrowing is the initial Credit Extension, Section 4.01), the Administrative Agent shall make all funds so received available to the Borrower in like funds as received by the Administrative Agent either by (i) crediting the account of the Borrower on the books of Bank of America with the amount of such funds or (ii) wire transfer of such funds, in each case in accordance with instructions provided to (and reasonably acceptable to) the Administrative Agent by the Borrower; provided, that, if, on the date the Committed Loan Notice with respect to such Committed Borrowing in Dollars is given by the Borrower, there are L/C Borrowings

outstanding, then the proceeds of such Committed Borrowing, first, shall be applied to the payment in full of any such L/C Borrowings, and second, shall be made available to the Borrower as provided above.

(c) Except as otherwise provided herein, a Term SOFR Loan or an Alternative Currency Term Rate Loan may be continued or converted only on the last day of an Interest Period for such Loan. During the existence of a Default, no Loans may be requested as, converted to or continued as Term SOFR Loans or Alternative Currency Term Rate Loans without the consent of the Required Lenders.

(d) Each determination of an interest rate by the Administrative Agent pursuant to any provision of this Agreement shall be conclusive and binding on the Borrower and the Lenders in the absence of manifest error.

(e) After giving effect to all Committed Borrowings, all conversions of Committed Loans from Term SOFR Loans to Base Rate Committed Loans, all conversions of Committed Loans from Base Rate Committed Loans to Term SOFR Loans, and all continuations of Committed Loans as the same Type, there shall not be more than ten (10) Interest Periods in effect with respect to Committed Loans.

(f) Notwithstanding anything to the contrary in this Agreement, any Lender may exchange, continue or rollover all or the portion of its Committed Loans in connection with any refinancing, extension, loan modification or similar transaction permitted by the terms of this Agreement, pursuant to a cashless settlement mechanism approved by the Borrower, the Administrative Agent and such Lender.

Section 2.03 Letters of Credit.

(a) The Letter of Credit Commitment.

(i) Subject to the terms and conditions set forth herein, (A) the L/C Issuer agrees, in reliance upon (among other things) the agreements of the Lenders set forth in this Section 2.03, (1) from time to time during the Availability Period on any Business Day during the period from the Closing Date until the Letter of Credit Expiration Date, to issue Letters of Credit denominated in Dollars or in one or more Alternative Currencies for the account of the Borrower, and to amend or extend Letters of Credit previously issued by it, in accordance with subsection (b) below, and (2) to honor drawings under the Letters of Credit; and (B) the Lenders severally agree to participate in Letters of Credit issued for the account of the Borrower and any drawings thereunder; provided, that, after giving effect to any L/C Credit Extension with respect to any Letter of Credit, (x) the Total Outstandings shall not exceed the Aggregate Commitments, (y) the aggregate Outstanding Amount of the Committed Loans of any Lender, plus such Lender's Applicable Percentage of the Outstanding Amount of all L/C Obligations, plus such Lender's Applicable Percentage of the Outstanding Amount of all Swing Line Loans shall not exceed such Lender's Commitment, and (z) the Outstanding Amount of the L/C Obligations shall not exceed the Letter of Credit Sublimit; provided, further, that, after giving effect to all L/C Credit Extensions, the aggregate outstanding amount of all L/C Obligations of the L/C Issuer shall not exceed the L/C Issuer's L/C Commitment. Each request by the Borrower for the issuance or amendment of a Letter of Credit shall be deemed to be a representation by the Borrower that the L/C Credit Extension so requested complies with the conditions set forth in the preceding sentence. Within the foregoing limits, and subject to the terms and conditions hereof, the Borrower's ability to obtain Letters of Credit shall be fully revolving, and accordingly the Borrower may, during the foregoing period, obtain Letters of Credit to replace Letters of Credit that have expired or that have been drawn upon and reimbursed.

(ii) The L/C Issuer shall not issue any Letter of Credit, if:

(A) the expiry date of such requested Letter of Credit would occur more than twelve (12) months after the date of issuance, unless the L/C Issuer and the Required Lenders have approved such expiry date; or

(B) the expiry date of such requested Letter of Credit would occur after the Letter of Credit Expiration Date, unless the L/C Issuer and all the Lenders have approved such expiry date.

(iii) The L/C Issuer shall not be under any obligation to issue any Letter of Credit if:

(A) any order, judgment or decree of any Governmental Authority or arbitrator shall by its terms purport to enjoin or restrain the L/C Issuer from issuing such Letter of Credit, or any Law applicable to the L/C Issuer or any request or directive (whether or not having the force of law) from any Governmental Authority with jurisdiction over the L/C Issuer shall prohibit, or request that the L/C Issuer refrain from, the issuance of letters of credit generally or such Letter of Credit in particular or shall impose upon the L/C Issuer with respect to such Letter of Credit any restriction, reserve or capital requirement (for which the L/C Issuer is not otherwise compensated hereunder) not in effect on the Closing Date, or shall impose upon the L/C Issuer any unreimbursed loss, cost or expense which was not applicable on the Closing Date and which the L/C Issuer in good faith deems material to it;

(B) the issuance of such Letter of Credit would violate one or more policies of the L/C Issuer applicable to letters of credit generally;

(C) except as otherwise agreed by the Administrative Agent and the L/C Issuer, such Letter of Credit is in an initial stated amount less than $500,000;

(D) (1) such Letter of Credit is to be denominated in a currency other than Dollars or an Alternative Currency, or (2) the L/C Issuer does not as of the issuance date of the requested Letter of Credit issue Letters of Credit in the requested currency;

(E) any Lender is at that time a Defaulting Lender, unless the L/C Issuer has entered into arrangements, including the delivery of Cash Collateral, satisfactory to the L/C Issuer (in its sole discretion) with the Borrower or such Lender to eliminate the L/C Issuer's actual or potential Fronting Exposure (after giving effect to Section 2.15(a)(iv)) with respect to the Defaulting Lender arising from either the Letter of Credit then proposed to be issued or that Letter of Credit and all other L/C Obligations as to which the L/C Issuer has actual or potential Fronting Exposure, as it may elect in its sole discretion; or

(F) such Letter of Credit contains any provisions for automatic reinstatement of the stated amount after any drawing thereunder.

(iv) The L/C Issuer shall not amend any Letter of Credit if the L/C Issuer would not be permitted at such time to issue the Letter of Credit in its amended form under the terms hereof.

(v) The L/C Issuer shall not be under any obligation to amend any Letter of Credit if (A) the L/C Issuer would have no obligation at such time to issue such Letter of Credit in its amended form under the terms hereof, or (B) the beneficiary of such Letter of Credit does not accept the proposed amendment to such Letter of Credit.

(vi) The L/C Issuer shall act on behalf of the Lenders with respect to any Letters of Credit issued by it and the documents associated therewith, and the L/C Issuer shall have all of the benefits and immunities (A) provided to the Administrative Agent in Article IX with respect to any acts taken or omissions suffered by the L/C Issuer in connection with Letters of Credit issued by it or proposed to be issued by it and Issuer Documents pertaining to such Letters of Credit as fully as if the term "Administrative Agent" as used in Article IX included the L/C Issuer with respect to such acts or omissions, and (B) as additionally provided herein with respect to the L/C Issuer.

(b) Procedures for Issuance and Amendment of Letters of Credit.

(i) Each Letter of Credit shall be issued or amended, as the case may be, upon the request of the Borrower delivered to the L/C Issuer (with a copy to the Administrative Agent) in the form of a Letter of Credit Application, appropriately completed and signed by a Responsible Officer of the Borrower. Such Letter of Credit Application may be sent by facsimile, by United States mail, by overnight courier, by electronic transmission using the system provided by the L/C Issuer, by personal delivery or by any other means acceptable to the L/C Issuer. Such Letter of Credit Application must be received by the L/C Issuer and the Administrative Agent not later than 11:00 a.m. at least three (3) Business Days (or five (5) Business Days in the case of a Letter of Credit to be issued in an Alternative Currency (or, in each case, such later date and time as the Administrative Agent and the L/C Issuer may agree in a particular instance in their sole discretion)) prior to the proposed issuance date or date of amendment, as the case may be. In the case of a request for an initial issuance of a Letter of Credit, such Letter of Credit Application shall specify in form and detail reasonably satisfactory to the L/C Issuer: (A) the proposed issuance date of the requested Letter of Credit (which shall be a Business Day); (B) the amount and currency thereof (and in the absence of specification of currency shall be deemed a request for a Letter of Credit denominated in Dollars); (C) the expiry date thereof; (D) the name and address of the beneficiary thereof; (E) the documents to be presented by such beneficiary in case of any drawing thereunder;
(F) the full text of any certificate or other documents to be presented by such beneficiary in case of any drawing thereunder; (G) the purpose and nature of the requested Letter of Credit; and (H) such other matters as the L/C Issuer may require. In the case of a request for an amendment of any outstanding Letter of Credit, such Letter of Credit Application shall specify in form and detail reasonably satisfactory to the L/C Issuer: (1) the Letter of Credit to be amended; (2) the proposed date of amendment thereof (which shall be a Business Day); (3) the nature of the proposed amendment; and (4) such other matters as the L/C Issuer may reasonably require. Additionally, the Borrower shall furnish to the L/C Issuer and the Administrative Agent such other documents and information pertaining to such requested Letter of Credit issuance or amendment, including any Issuer Documents, as the L/C Issuer or the Administrative Agent may reasonably require.

(ii) Unless the L/C Issuer has received written notice from any Lender, the Administrative Agent or the Borrower, at least one Business Day prior to the requested date of issuance or amendment of the applicable Letter of Credit, that one or more applicable conditions contained in Article IV shall not then be satisfied, then, subject to the terms and conditions hereof, the L/C Issuer shall, on the requested date, issue a Letter of Credit for the account of the Borrower or enter into the applicable amendment, as the case may be, in each case in accordance with the L/C Issuer's usual and customary business practices. Immediately upon the issuance of each Letter of Credit, each Lender shall be deemed to, and hereby irrevocably and unconditionally agrees to, purchase from the L/C Issuer a risk participation in such Letter of Credit in an amount equal to the product of such Lender's Applicable Percentage times the amount of such Letter of Credit.

(iii) If the Borrower so requests in any applicable Letter of Credit Application, the L/C Issuer may, in its sole discretion, agree to issue a Letter of Credit that has automatic extension

provisions (each, an "Auto-Extension Letter of Credit"); provided, that, any such Auto-Extension Letter of Credit must permit the L/C Issuer to prevent any such extension at least once in each twelve-month period (commencing with the date of issuance of such Letter of Credit) by giving prior notice to the beneficiary thereof not later than a day (the "Non-Extension Notice Date") in each such twelve-month period to be agreed upon at the time such Letter of Credit is issued. Unless otherwise directed by the L/C Issuer, the Borrower shall not be required to make a specific request to the L/C Issuer for any such extension. Once an Auto-Extension Letter of Credit has been issued, the Lenders shall be deemed to have authorized (but may not require) the L/C Issuer to permit the extension of such Letter of Credit at any time to an expiry date not later than the Letter of Credit Expiration Date; provided, that, the L/C Issuer shall not permit any such extension if (A) the L/C Issuer has determined that it would not be permitted, or would have no obligation, at such time to issue such Letter of Credit in its revised form (as extended) under the terms hereof (by reason of the provisions of clause (ii) or (iii) of Section 2.03(a) or otherwise), or (B) it has received notice (which may be by telephone or in writing) on or before the day that is seven (7) Business Days before the Non-Extension Notice Date (1) from the Administrative Agent that the Required Lenders have elected not to permit such extension or (2) from the Administrative Agent, any Lender or the Borrower that one or more of the applicable conditions specified in Section 4.02 is not then satisfied, and in each case directing the L/C Issuer not to permit such extension.

(iv) Promptly after its delivery of any Letter of Credit or any amendment to a Letter of Credit to an advising bank with respect thereto or to the beneficiary thereof, the L/C Issuer will also deliver to the Borrower and the Administrative Agent a true and complete copy of such Letter of Credit or amendment.

(c) Drawings and Reimbursements; Funding of Participations.

(i) Upon receipt from the beneficiary of any Letter of Credit of any notice of a drawing under such Letter of Credit, the L/C Issuer shall notify the Borrower and the Administrative Agent thereof. In the case of a Letter of Credit denominated in an Alternative Currency, the Borrower shall reimburse the L/C Issuer in such Alternative Currency, unless (A) the L/C Issuer (at its option) shall have specified in such notice that it will require reimbursement in Dollars, or (B) in the absence of any such requirement for reimbursement in Dollars, the Borrower shall have notified the L/C Issuer promptly following receipt of the notice of drawing that the Borrower will reimburse the L/C Issuer in Dollars. In the case of any such reimbursement in Dollars of a drawing under a Letter of Credit denominated in an Alternative Currency, the L/C Issuer shall notify the Borrower of the Dollar Equivalent of the amount of the drawing promptly following the determination thereof. Not later than 11:00 a.m. on the date of any payment by the L/C Issuer under a Letter of Credit to be reimbursed in Dollars, or the Applicable Time on the date of any payment by the L/C Issuer under a Letter of Credit to be reimbursed in an Alternative Currency (each such date, an "Honor Date"), the Borrower shall reimburse the L/C Issuer through the Administrative Agent in an amount equal to the amount of such drawing and in the applicable currency. In the event that
(1) a drawing denominated in an Alternative Currency is to be reimbursed in Dollars pursuant to the second sentence of this Section 2.03(c)(i) and (2) the Dollar amount paid by the Borrower, whether on or after the Honor Date, shall not be adequate on the date of that payment to purchase in accordance with normal banking procedures a sum denominated in the Alternative Currency equal to the drawing, the Borrower agrees, as a separate and independent obligation, to indemnify the L/C Issuer for the loss resulting from its inability on that date to purchase the Alternative Currency in the full amount of the drawing. If the Borrower fails to so reimburse the L/C Issuer by such time, the Administrative Agent shall promptly notify each Lender of the Honor Date, the amount of the unreimbursed drawing (expressed in Dollars in the amount of the Dollar Equivalent thereof in the case of a Letter of Credit denominated in an Alternative Currency) (the

"Unreimbursed Amount"), and the amount of such Lender's Applicable Percentage thereof. In such event, the Borrower shall be deemed to have requested a Committed Borrowing of Base Rate Committed Loans to be disbursed on the Honor Date in an amount equal to the Unreimbursed Amount, without regard to the minimum and multiples specified in Section 2.02 for the principal amount of Base Rate Committed Loans, but subject to the amount of the unutilized portion of the Aggregate Commitments and the conditions set forth in Section 4.02 (other than the delivery of a Committed Loan Notice). Any notice given by the L/C Issuer or the Administrative Agent pursuant to this Section 2.03(c)(i) may be given by telephone if immediately confirmed in writing; provided, that, the lack of such an immediate confirmation shall not affect the conclusiveness or binding effect of such notice.

(ii) Each Lender shall upon any notice by the Administrative Agent pursuant to Section 2.03(c)(i) make funds available (and the Administrative Agent may apply Cash Collateral provided for this purpose) to the Administrative Agent for the account of the L/C Issuer at the Administrative Agent's Office in an amount equal to its Applicable Percentage of the Unreimbursed Amount not later than 1:00 p.m. (or the Applicable Time, in the case of any Letter of Credit denominated in an Alternative Currency) on the Business Day specified in such notice by the Administrative Agent, whereupon, subject to the provisions of Section 2.03(c)(iii), each Lender that so makes funds available shall be deemed to have made a Base Rate Committed Loan to the Borrower in such amount. The Administrative Agent shall remit the funds so received to the L/C Issuer.

(iii) With respect to any Unreimbursed Amount that is not fully refinanced by a Committed Borrowing of Base Rate Committed Loans because the conditions set forth in Section 4.02 cannot be satisfied or for any other reason, the Borrower shall be deemed to have incurred from the L/C Issuer an L/C Borrowing in the amount of the Unreimbursed Amount that is not so refinanced, which L/C Borrowing shall be due and payable on demand (together with interest) and shall bear interest at the Default Rate. In such event, each Lender's payment to the Administrative Agent for the account of the L/C Issuer pursuant to Section 2.03(c)(ii) shall be deemed payment in respect of its participation in such L/C Borrowing and shall constitute an L/C Advance from such Lender in satisfaction of its participation obligation under this Section 2.03.

(iv) Until each Lender funds its Committed Loan or L/C Advance pursuant to this Section 2.03(c) to reimburse the L/C Issuer for any amount drawn under any Letter of Credit, interest in respect of such Lender's Applicable Percentage of such amount shall be solely for the account of the L/C Issuer.

(v) Each Lender's obligation to make Committed Loans or L/C Advances to reimburse the L/C Issuer for amounts drawn under Letters of Credit, as contemplated by this Section 2.03(c), shall be absolute and unconditional and shall not be affected by any circumstance, including (A) any setoff, counterclaim, recoupment, defense or other right which such Lender may have against the L/C Issuer, the Borrower or any other Person for any reason whatsoever, (B) the occurrence or continuance of a Default, or (C) any other occurrence, event or condition, whether or not similar to any of the foregoing; provided, that, each Lender's obligation to make Committed Loans pursuant to this Section 2.03(c) is subject to the conditions set forth in Section 4.02 (other than delivery by the Borrower of a Committed Loan Notice). No such making of an L/C Advance shall relieve or otherwise impair the obligation of the Borrower to reimburse the L/C Issuer for the amount of any payment made by the L/C Issuer under any Letter of Credit, together with interest as provided herein.

(vi) If any Lender fails to make available to the Administrative Agent for the account of the L/C Issuer any amount required to be paid by such Lender pursuant to the foregoing provisions of this Section 2.03(c) by the time specified in Section 2.03(c)(ii), then, without limiting the other provisions of this Agreement, the L/C Issuer shall be entitled to recover from such Lender (acting through the Administrative Agent), on demand, such amount with interest thereon for the period from the date such payment is required to the date on which such payment is immediately available to the L/C Issuer at a rate per annum equal to the greater of the Overnight Rate and a rate determined by the L/C Issuer in accordance with banking industry rules on interbank compensation, plus any administrative, processing or similar fees customarily charged by the L/C Issuer in connection with the foregoing. If such Lender pays such amount (with interest and fees as aforesaid), the amount so paid shall constitute such Lender's Committed Loan included in the relevant Committed Borrowing or L/C Advance in respect of the relevant L/C Borrowing, as the case may be. A certificate of the L/C Issuer submitted to any Lender (through the Administrative Agent) with respect to any amounts owing under this subsection (vi) shall be conclusive absent manifest error.

(d) Repayment of Participations.

(i) At any time after the L/C Issuer has made a payment under any Letter of Credit and has received from any Lender such Lender's L/C Advance in respect of such payment in accordance with Section 2.03(c), if the Administrative Agent receives for the account of the L/C Issuer any payment in respect of the related Unreimbursed Amount or interest thereon (whether directly from the Borrower or otherwise, including proceeds of Cash Collateral applied thereto by the Administrative Agent), the Administrative Agent will distribute to such Lender its Applicable Percentage thereof (appropriately adjusted, in the case of interest payments, to reflect the period of time during which such Lender's L/C Advance was outstanding) in the same funds as those received by the Administrative Agent.

(ii) If any payment received by the Administrative Agent for the account of the L/C Issuer pursuant to Section 2.03(c)(i) is required to be returned under any of the circumstances described in Section 10.05 (including pursuant to any settlement entered into by the L/C Issuer in its discretion), each Lender shall pay to the Administrative Agent for the account of the L/C Issuer its Applicable Percentage thereof on demand of the Administrative Agent, plus interest thereon from the date of such demand to the date such amount is returned by such Lender, at a rate per annum equal to the Federal Funds Rate from time to time in effect. The obligations of the Lenders under this subsection (ii) shall survive the payment in full of the Obligations and the termination of this Agreement.

(e) Obligations Absolute. The obligation of the Borrower to reimburse the L/C Issuer for each drawing under each Letter of Credit and to repay each L/C Borrowing shall be absolute, unconditional and irrevocable, and shall be paid strictly in accordance with the terms of this Agreement under all circumstances, including the following:

(i) any lack of validity or enforceability of such Letter of Credit, this Agreement, or any other Loan Document;

(ii) the existence of any claim, counterclaim, setoff, defense or other right that the Borrower or any Subsidiary may have at any time against any beneficiary or any transferee of such Letter of Credit (or any Person for whom any such beneficiary or any such transferee may be acting), the L/C Issuer or any other Person, whether in connection with this Agreement, the

transactions contemplated hereby or by such Letter of Credit or any agreement or instrument relating thereto, or any unrelated transaction;

(iii) any draft, demand, certificate or other document presented under such Letter of Credit proving to be forged, fraudulent, invalid or insufficient in any respect or any statement therein being untrue or inaccurate in any respect; or any loss or delay in the transmission or otherwise of any document required in order to make a drawing under such Letter of Credit;

(iv) waiver by the L/C Issuer of any requirement that exists for the L/C Issuer's protection and not the protection of the Borrower or any waiver by the L/C Issuer which does not in fact materially prejudice the Borrower;

(v) honor of a demand for payment presented electronically even if such Letter of Credit requires that demand be in the form of a draft;

(vi) any payment made by the L/C Issuer in respect of an otherwise complying item presented after the date specified as the expiration date of, or the date by which documents must be received under such Letter of Credit if presentation after such date is authorized by the Uniform Commercial Code or the ISP, as applicable;

(vii) any payment by the L/C Issuer under such Letter of Credit against presentation of a draft, certificate or other document that does not strictly comply with the terms of such Letter of Credit; or any payment made by the L/C Issuer under such Letter of Credit to any Person purporting to be a trustee in bankruptcy, debtor-in-possession, assignee for the benefit of creditors, liquidator, receiver or other representative of or successor to any beneficiary or any transferee of such Letter of Credit, including any arising in connection with any proceeding under any Debtor Relief Law;

(viii) any other circumstance or happening whatsoever, whether or not similar to any of the foregoing, including any other circumstance that might otherwise constitute a defense available to, or a discharge of, the Borrower or any Subsidiary; or

(ix) any adverse change in the relevant exchange rates or in the availability of the relevant Alternative Currency to the Borrower or any Subsidiary or in the relevant currency markets generally.

The Borrower shall promptly examine a copy of each Letter of Credit and each amendment thereto that is delivered to it and, in the event of any claim of noncompliance with the Borrower's instructions or other irregularity, the Borrower will immediately notify the L/C Issuer. The Borrower shall be conclusively deemed to have waived any such claim against the L/C Issuer and its correspondents unless such notice is given as aforesaid.

(f) Role of L/C Issuer. Each Lender and the Borrower agree that, in paying any drawing under a Letter of Credit, the L/C Issuer shall not have any responsibility to obtain any document (other than any sight draft, certificates and documents expressly required by the Letter of Credit) or to ascertain or inquire as to the validity or accuracy of any such document or the authority of the Person executing or delivering any such document. None of the L/C Issuer, the Administrative Agent, any of their respective Related Parties nor any correspondent, participant or assignee of the L/C Issuer shall be liable to any Lender for: (i) any action taken or omitted in connection herewith at the request or with the approval of the Lenders or the Required Lenders, as applicable; (ii) any action taken or omitted in the absence of gross negligence or willful misconduct as determined by a court of competent jurisdiction in a final and nonappealable judgment; or (iii) the due execution, effectiveness, validity or enforceability of any document or instrument

related to any Letter of Credit or Issuer Document or underlying transaction. The Borrower hereby assumes all risks of the acts or omissions of any beneficiary or transferee with respect to its use of any Letter of Credit; provided, that, this assumption is not intended to, and shall not, preclude the Borrower's pursuing such rights and remedies as it may have against the beneficiary or transferee at law or under any other agreement. None of the L/C Issuer, the Administrative Agent, any of their respective Related Parties nor any correspondent, participant or assignee of the L/C Issuer shall be liable or responsible for any of the matters described in subsections (i) through (ix) of Section 2.03(e); provided, that, anything in such subsections to the contrary notwithstanding, the Borrower may have a claim against the L/C Issuer, and the L/C Issuer may be liable to the Borrower, to the extent, but only to the extent, of any direct, as opposed to consequential, special, indirect or incidental, punitive or exemplary, damages suffered by the Borrower which the Borrower proves were caused by the L/C Issuer's willful misconduct or gross negligence as determined by a court of competent jurisdiction in a final and nonappealable judgment or the L/C Issuer's willful failure to pay under any Letter of Credit after the presentation to it by the beneficiary of a sight draft, certificate(s) or other documents strictly complying with the terms and conditions of a Letter of Credit unless the L/C Issuer is prevented or prohibited from so paying as a result of any order or directive of any court or other Governmental Authority. In furtherance and not in limitation of the foregoing, the L/C Issuer may accept documents that appear on their face to be in order, without responsibility for further investigation, regardless of any notice or information to the contrary, and the L/C Issuer shall not be responsible for the validity or sufficiency of any instrument transferring or assigning or purporting to transfer or assign a Letter of Credit or the rights or benefits thereunder or proceeds thereof, in whole or in part, which may prove to be invalid or ineffective for any reason. The L/C Issuer may send a Letter of Credit or conduct any communication to or from the beneficiary via the Society for Worldwide Interbank Financial Telecommunication ("SWIFT") message or overnight courier, or any other commercially reasonable means of communicating with a beneficiary.

(g) Applicability of ISP; Limitation of Liability. Unless otherwise expressly agreed by the L/C Issuer and the Borrower when a Letter of Credit is issued, the rules of the ISP shall apply to each Letter of Credit. Notwithstanding the foregoing, the L/C Issuer shall not be responsible to the Borrower for, and the L/C Issuer's rights and remedies against the Borrower shall not be impaired by, any action or inaction of the L/C Issuer required or permitted under any law, order, or practice referred to below that is required or permitted to be applied to any Letter of Credit or this Agreement, including the Law or any order of a jurisdiction where the L/C Issuer or the beneficiary is located, the practice stated in the ISP, or in the decisions, opinions, practice statements, or official commentary of the ICC Banking Commission, the Bankers Association for Finance and Trade - International Financial Services Association (BAFT-IFSA), or the Institute of International Banking Law & Practice, whether or not any Letter of Credit chooses such law or practice.

(h) Letter of Credit Fees. The Borrower shall pay to the Administrative Agent, for the account of each Lender, in accordance, subject to Section 2.15, with its Applicable Percentage a Letter of Credit fee (the "Letter of Credit Fee") for each Letter of Credit equal to the Applicable Rate times the Dollar Equivalent of the daily amount available to be drawn under such Letter of Credit. For purposes of computing the daily amount available to be drawn under any Letter of Credit, the amount of such Letter of Credit shall be determined in accordance with Section 1.06. Letter of Credit Fees shall be (i) due and payable on the first Business Day after the end of each March, June, September and December, commencing with the first such date to occur after the issuance of such Letter of Credit, on the Letter of Credit Expiration Date and thereafter on demand and (ii) computed on a quarterly basis in arrears. If there is any change in the Applicable Rate during any quarter, the daily amount available to be drawn under each Letter of Credit shall be computed and multiplied by the Applicable Rate separately for each period during such quarter that such Applicable Rate was in effect. Notwithstanding anything to the contrary contained herein, upon the request of the Required Lenders, while any Event of Default exists, all Letter of Credit Fees shall accrue at the Default Rate.

(i) Fronting Fee and Documentary and Processing Charges Payable to L/C Issuer. The Borrower shall pay directly to the L/C Issuer for its own account a fronting fee with respect to each Letter of Credit, at the rate per annum specified in the Agent Fee Letter, computed on the Dollar Equivalent of the daily amount available to be drawn under such Letter of Credit and on a quarterly basis in arrears. Such fronting fee shall be due and payable on the tenth Business Day after the end of each March, June, September and December in respect of the most recently-ended quarterly period (or portion thereof, in the case of the first payment), commencing with the first such date to occur after the issuance of such Letter of Credit, on the Letter of Credit Expiration Date and thereafter on demand. For purposes of computing the Dollar Equivalent of the daily amount available to be drawn under any Letter of Credit, the amount of such Letter of Credit shall be determined in accordance with Section 1.06. In addition, the Borrower shall pay directly to the L/C Issuer for its own account the customary issuance, presentation, amendment and other processing fees, and other standard costs and charges, of the L/C Issuer relating to letters of credit as from time to time in effect. Such customary fees and standard costs and charges are due and payable on demand and are nonrefundable.

(j) Conflict with Issuer Documents. In the event of any conflict between the terms hereof and the terms of any Issuer Document, the terms hereof shall control.

Section 2.04 Swing Line Loans.

(a) The Swing Line. Subject to the terms and conditions set forth herein, the Swing Line Lender agrees, in reliance upon the agreements of the other Lenders set forth in this Section 2.04, to make loans (each such loan, a "Swing Line Loan") denominated in Dollars to the Borrower from time to time on any Business Day during the Availability Period in an aggregate amount not to exceed at any time outstanding the amount of the Swing Line Sublimit, notwithstanding the fact that such Swing Line Loans, when aggregated with the Applicable Percentage of the Outstanding Amount of Committed Loans and L/C Obligations of the Lender acting as Swing Line Lender, may exceed the amount of such Lender's Commitment; provided, that, (x) after giving effect to any Swing Line Loan, (i) the Total Outstandings shall not exceed the Aggregate Commitments, and (ii) the aggregate Outstanding Amount of the Committed Loans of any Lender, plus such Lender's Applicable Percentage of the Outstanding Amount of all L/C Obligations, plus such Lender's Applicable Percentage of the Outstanding Amount of all Swing Line Loans shall not exceed such Lender's Commitment, (y) the Borrower shall not use the proceeds of any Swing Line Loan to refinance any outstanding Swing Line Loan, and (z) the Swing Line Lender shall not be under any obligation to make any Swing Line Loan to the extent it shall determine (which determination shall be conclusive and binding absent manifest error) that it has, or by such Credit Extension may have, Fronting Exposure. Within the foregoing limits, and subject to the other terms and conditions hereof, the Borrower may borrow under this Section 2.04, prepay under Section 2.05, and reborrow under this Section 2.04. Each Swing Line Loan shall be a Base Rate Loan. Immediately upon the making of a Swing Line Loan, each Lender shall be deemed to, and hereby irrevocably and unconditionally agrees to, purchase from the Swing Line Lender a risk participation in such Swing Line Loan in an amount equal to the product of such Lender's Applicable Percentage times the amount of such Swing Line Loan.

(b) Borrowing Procedures. Each Swing Line Borrowing shall be made upon the Borrower's irrevocable notice to the Swing Line Lender and the Administrative Agent, which may be given by telephone or by a Swing Line Loan Notice; provided, that, any telephonic notice must be confirmed promptly by delivery to the Swing Line Lender and the Administrative Agent of a Swing Line Loan Notice. Each such notice must be received by the Swing Line Lender and the Administrative Agent not later than 1:00 p.m. on the requested borrowing date, and shall specify (i) the amount to be borrowed, which shall be a minimum of $100,000, and (ii) the requested borrowing date, which shall be a Business Day. Promptly after receipt by the Swing Line Lender of any Swing Line Loan Notice, the Swing Line Lender will confirm with the Administrative Agent that the Administrative Agent has also received such Swing Line Loan

Notice and, if not, the Swing Line Lender will notify the Administrative Agent (by telephone or in writing) of the contents thereof. Unless the Swing Line Lender has received notice (by telephone or in writing) from the Administrative Agent (including at the request of any Lender) prior to 2:00 p.m. on the date of the proposed Swing Line Borrowing (A) directing the Swing Line Lender not to make such Swing Line Loan as a result of the limitations set forth in the first proviso to the first sentence of Section 2.04(a), or (B) that one or more of the applicable conditions specified in Article IV is not then satisfied, then, subject to the terms and conditions hereof, the Swing Line Lender will, not later than 3:00 p.m. on the borrowing date specified in such Swing Line Loan Notice, make the amount of its Swing Line Loan available to the Borrower.

(c) Refinancing of Swing Line Loans.

(i) The Swing Line Lender at any time in its sole and absolute discretion may request, on behalf of the Borrower (which hereby irrevocably requests and authorizes the Swing Line Lender to so request on its behalf), that each Lender make a Base Rate Committed Loan in an amount equal to such Lender's Applicable Percentage of the amount of Swing Line Loans then outstanding. Such request shall be made in writing (which written request shall be deemed to be a Committed Loan Notice for purposes hereof) and in accordance with the requirements of Section 2.02, without regard to the minimum and multiples specified therein for the principal amount of Base Rate Committed Loans, but subject to the unutilized portion of the Aggregate Commitments and the conditions set forth in Section 4.02 (other than delivery of a Committed Loan Notice). The Swing Line Lender shall furnish the Borrower with a copy of the applicable Committed Loan Notice promptly after delivering such notice to the Administrative Agent. Each Lender shall make an amount equal to its Applicable Percentage of the amount specified in such Committed Loan Notice available to the Administrative Agent in Same Day Funds (and the Administrative Agent may apply Cash Collateral available with respect to the applicable Swing Line Loan) for the account of the Swing Line Lender at the Administrative Agent's Office for Dollar-denominated payments not later than 1:00 p.m. on the day specified in such Committed Loan Notice, whereupon, subject to Section 2.04(c)(ii), each Lender that so makes funds available shall be deemed to have made a Base Rate Committed Loan to the Borrower in such amount. The Administrative Agent shall remit the funds so received to the Swing Line Lender.

(ii) If for any reason any Swing Line Loan cannot be refinanced by such a Committed Borrowing in accordance with Section 2.04(c)(i), the request for Base Rate Committed Loans submitted by the Swing Line Lender as set forth herein shall be deemed to be a request by the Swing Line Lender that each of the Lenders fund its risk participation in the relevant Swing Line Loan and each Lender's payment to the Administrative Agent for the account of the Swing Line Lender pursuant to Section 2.04(c)(i) shall be deemed payment in respect of such participation.

(iii) If any Lender fails to make available to the Administrative Agent for the account of the Swing Line Lender any amount required to be paid by such Lender pursuant to the foregoing provisions of this Section 2.04(c) by the time specified in Section 2.04(c)(i), the Swing Line Lender shall be entitled to recover from such Lender (acting through the Administrative Agent), on demand, such amount with interest thereon for the period from the date such payment is required to the date on which such payment is immediately available to the Swing Line Lender at a rate per annum equal to the applicable Overnight Rate from time to time in effect, plus any administrative, processing or similar fees customarily charged by the Swing Line Lender in connection with the foregoing. If such Lender pays such amount (with interest and fees as aforesaid), the amount so paid shall constitute such Lender's Committed Loan included in the relevant Committed Borrowing or funded participation in the relevant Swing Line Loan, as the case may be. A certificate of the

Swing Line Lender submitted to any Lender (through the Administrative Agent) with respect to any amounts owing under this subsection (iii) shall be conclusive absent manifest error.

(iv) Each Lender's obligation to make Committed Loans or to purchase and fund risk participations in Swing Line Loans pursuant to this Section 2.04(c) shall be absolute and unconditional and shall not be affected by any circumstance, including (A) any setoff, counterclaim, recoupment, defense or other right which such Lender may have against the Swing Line Lender, the Borrower or any other Person for any reason whatsoever, (B) the occurrence or continuance of a Default, or (C) any other occurrence, event or condition, whether or not similar to any of the foregoing; provided, that, each Lender's obligation to make Committed Loans pursuant to this Section 2.04(c) is subject to the conditions set forth in Section 4.02. No such funding of risk participations shall relieve or otherwise impair the obligation of the Borrower to repay Swing Line Loans, together with interest as provided herein.

(d) Repayment of Participations.

(i) At any time after any Lender has purchased and funded a risk participation in a Swing Line Loan, if the Swing Line Lender receives any payment on account of such Swing Line Loan, the Swing Line Lender will distribute to such Lender its Applicable Percentage of such payment (appropriately adjusted, in the case of interest payments, to reflect the period of time during which such Lender's risk participation was funded) in the same funds as those received by the Swing Line Lender.

(ii) If any payment received by the Swing Line Lender in respect of principal or interest on any Swing Line Loan is required to be returned by the Swing Line Lender under any of the circumstances described in Section 10.05 (including pursuant to any settlement entered into by the Swing Line Lender in its discretion), each Lender shall pay to the Swing Line Lender its Applicable Percentage thereof on demand of the Administrative Agent, plus interest thereon from the date of such demand to the date such amount is returned, at a rate per annum equal to the applicable Overnight Rate. The Administrative Agent will make such demand upon the request of the Swing Line Lender. The obligations of the Lenders under this subsection (ii) shall survive the payment in full of the Obligations and the termination of this Agreement.

(e) Interest for Account of Swing Line Lender. The Swing Line Lender shall be responsible for invoicing the Borrower for interest on the Swing Line Loans. Until each Lender funds its Base Rate Committed Loan or risk participation pursuant to this Section 2.04 to refinance such Lender's Applicable Percentage of any Swing Line Loan, interest in respect of such Applicable Percentage shall be solely for the account of the Swing Line Lender.

(f) Payments Directly to Swing Line Lender. The Borrower shall make all payments of principal and interest in respect of the Swing Line Loans directly to the Swing Line Lender.

Section 2.05 Prepayments.

(a) Voluntary Prepayments. The Borrower may, upon notice to the Administrative Agent, at any time or from time to time voluntarily prepay Committed Loans in whole or in part without premium or penalty; provided, that, unless otherwise agreed by the Administrative Agent in its sole discretion, (i) such notice must be received by the Administrative Agent not later than 11:00 a.m. (A) two (2) Business Days prior to any date of prepayment of Term SOFR Loans, (B) four (4) Business Days (or five (5) Business Days, in the case of prepayment of Alternative Currency Loans denominated in Special Notice Currencies) prior to any date of prepayment of Alternative Currency Loans, and (C) on the date of prepayment of Base

Rate Committed Loans; (ii) any prepayment of Term SOFR Loans or Alternative Currency Loans shall be in a principal amount of $5,000,000 or a whole multiple of $1,000,000 in excess thereof (or, if less, the entire principal amount thereof then outstanding); and (iii) any prepayment of Base Rate Committed Loans shall be in a principal amount of $500,000 or a whole multiple of $100,000 in excess thereof (or, if less, the entire principal amount thereof then outstanding). Each such notice shall be irrevocable and shall specify the date, currency and amount of such prepayment and the Type(s) of Committed Loans to be prepaid and, if Term SOFR Loans or Alternative Currency Term Rate Loans are to be prepaid, the Interest Period(s) of such Loans. The Administrative Agent will promptly notify each Lender of its receipt of each such notice, and of the amount of such Lender's Applicable Percentage of such prepayment. If such notice is given by the Borrower, the Borrower shall make such prepayment and the payment amount specified in such notice shall be due and payable on the date specified therein. Any prepayment of a Term SOFR Loan or an Alternative Currency Term Rate Loan shall be accompanied by all accrued interest on the amount prepaid, together with any additional amounts required pursuant to Section 3.05. Each such prepayment shall be applied to the Committed Loans of the Lenders in accordance with their respective Applicable Percentages.

(b) Swing Line Loans. The Borrower may, upon notice to the Swing Line Lender (with a copy to the Administrative Agent), at any time or from time to time, voluntarily prepay Swing Line Loans in whole or in part without premium or penalty; provided, that, unless otherwise agreed by the Swing Line Lender in its sole discretion, (i) such notice must be received by the Swing Line Lender and the Administrative Agent not later than 1:00 p.m. on the date of the prepayment, and (ii) any such prepayment shall be in a minimum principal amount of $100,000 or a whole multiple of $100,000 in excess thereof (or, if less, the entire principal thereof then outstanding). Each such notice shall specify the date and amount of such prepayment. If such notice is given by the Borrower, the Borrower shall make such prepayment and the payment amount specified in such notice shall be due and payable on the date specified therein.

(c) Mandatory Prepayments. If for any reason the Total Outstandings at any time exceed the Aggregate Commitments then in effect, the Borrower shall immediately prepay Loans and/or Cash Collateralize the L/C Obligations in an aggregate amount equal to such excess; provided, that, the Borrower shall not be required to Cash Collateralize the L/C Obligations pursuant to this Section 2.05(c) unless after the prepayment in full of the Loans the Total Outstandings exceed the Aggregate Commitments then in effect. All prepayments under this Section 2.05(c) shall be applied ratably to Committed Loans and Swing Line Loans and, after all Committed Loans and Swing Line Loans have been repaid, to Cash Collateralize L/C Obligations. Within the parameters of the applications set forth above, prepayments shall be applied first to Base Rate Loans and then ratably to Term SOFR Loans and Alternative Currency Loans (and, in the case of Term SOFR Loans and Alternative Currency Term Rate Loans, in direct order of Interest Period maturities). All prepayments under this Section 2.05(c) shall be subject to Section 3.05, but otherwise without premium or penalty, and shall be accompanied by interest on the principal amount prepaid through the date of prepayment.

Section 2.06 Termination or Reduction of Aggregate Commitments.

(a) Optional Reductions. The Borrower may, upon notice to the Administrative Agent, terminate the Aggregate Commitments, the Letter of Credit Sublimit or the Swing Line Sublimit, or from time to time permanently reduce the Aggregate Commitments (to an amount not less than the Total Outstandings), the Letter of Credit Sublimit or the Swing Line Sublimit; provided, that, unless otherwise agreed by the Administrative Agent in its sole discretion, (i) any such notice shall be received by the Administrative Agent not later than 12:00 noon five (5) Business Days prior to the date of termination or reduction, (ii) any such partial reduction shall be in an aggregate amount of $10,000,000 or any whole multiple of $1,000,000 in excess thereof and (iii) the Borrower shall not terminate or reduce (A) the Aggregate Commitments if, after giving effect thereto and to any concurrent prepayments hereunder, the Total Outstandings would exceed the Aggregate Commitments, (B) the Letter of Credit Sublimit if, after

giving effect thereto, the Outstanding Amount of L/C Obligations not fully Cash Collateralized hereunder would exceed the Letter of Credit Sublimit, or (C) the Swing Line Sublimit if, after giving effect thereto and to any concurrent prepayments hereunder, the Outstanding Amount of Swing Line Loans would exceed the Swing Line Sublimit.

(b) Mandatory Reductions. If after giving effect to any reduction or termination of the Aggregate Commitments under this Section 2.06, the Letter of Credit Sublimit or the Swing Line Sublimit exceeds the Aggregate Commitments at such time, the Letter of Credit Sublimit or the Swing Line Sublimit, as the case may be, shall be automatically reduced by the amount of such excess.

(c) Notice. The Administrative Agent will promptly notify the Lenders of any termination or reduction of the Letter of Credit Sublimit, the Swing Line Sublimit or the Aggregate Commitments under this Section 2.06. Upon any reduction of the Aggregate Commitments, the Commitment of each Lender shall be reduced by such Lender's Applicable Percentage of such reduction amount. All fees in respect of the Aggregate Commitments accrued until the effective date of any termination of the Aggregate Commitments shall be paid on the effective date of such termination.

Section 2.07 Repayment of Loans.

(a) The Borrower shall repay to the Lenders on the Maturity Date the aggregate principal amount of Committed Loans outstanding on such date.

(b) The Borrower shall repay each Swing Line Loan on the earlier to occur of (i) the date ten (10) Business Days after such Swing Line Loan is made and (ii) the Maturity Date.

Section 2.08 Interest.

(a) Subject to the provisions of subsection (b) below: (i) each Term SOFR Loan shall bear interest on the outstanding principal amount thereof for each Interest Period at a rate per annum equal to Term SOFR for such Interest Period plus the Applicable Rate; (ii) each Alternative Currency Term Rate Loan shall bear interest on the outstanding principal amount thereof for each Interest Period at a rate per annum equal to the applicable Alternative Currency Term Rate for such Interest Period plus the Applicable Rate; (iii) each Alternative Currency Daily Rate Loan shall bear interest on the outstanding principal amount thereof from the applicable borrowing date at a rate per annum equal to the applicable Alternative Currency Daily Rate plus the Applicable Rate; (iv) each Base Rate Committed Loan shall bear interest on the outstanding principal amount thereof from the applicable borrowing date at a rate per annum equal to the Base Rate plus the Applicable Rate; and (v) each Swing Line Loan shall bear interest on the outstanding principal amount thereof from the applicable borrowing date at a rate per annum equal to the Base Rate plus the Applicable Rate.

(b) (i) If any amount of principal of any Loan is not paid when due (without regard to any applicable grace periods), whether at stated maturity, by acceleration or otherwise, such amount shall thereafter bear interest at a fluctuating interest rate per annum at all times equal to the Default Rate to the fullest extent permitted by applicable Laws.

(ii) If any amount (other than principal of any Loan) payable by the Borrower under any Loan Document is not paid when due (after giving effect to any applicable grace periods), whether at stated maturity, by acceleration or otherwise, then upon the request of the Required Lenders, such amount shall thereafter bear interest at a fluctuating interest rate per annum at all times equal to the Default Rate to the fullest extent permitted by applicable Laws.

(iii) Accrued and unpaid interest on past due amounts (including interest on past due interest) shall be due and payable upon demand.

(c) Interest on each Loan shall be due and payable in arrears on each Interest Payment Date applicable thereto and at such other times as may be specified herein. Interest hereunder shall be due and payable in accordance with the terms hereof before and after judgment, and before and after the commencement of any proceeding under any Debtor Relief Law.

Section 2.09 Fees. In addition to certain fees described in subsections (h) and (i) of Section 2.03:

(a) Commitment Fee. The Borrower shall pay to the Administrative Agent for the account of each Lender in accordance with its Applicable Percentage, a commitment fee (the "Commitment Fee") in Dollars equal to the Applicable Rate times the actual daily amount by which the Aggregate Commitments exceed the sum of (i) the Outstanding Amount of Committed Loans and (ii) the Outstanding Amount of L/C Obligations, subject to adjustment as provided in Section 2.15. For the avoidance of doubt, the Outstanding Amount of Swing Line Loans shall not be counted towards or considered usage of the Aggregate Commitments for purposes of determining the Commitment Fee. The Commitment Fee shall accrue at all times during the Availability Period, including at any time during which one or more of the conditions in Article IV is not met, and shall be due and payable quarterly in arrears on the last Business Day of each March, June, September and December, commencing with the first such date to occur after the Closing Date, and on the last day of the Availability Period. The Commitment Fee shall be calculated quarterly in arrears, and if there is any change in the Applicable Rate during any quarter, the actual daily amount shall be computed and multiplied by the Applicable Rate separately for each period during such quarter that such Applicable Rate was in effect.

(b) Other Fees.

(ii) The Borrower shall pay to BofA Securities and the Administrative Agent, for their own respective accounts, fees in the amounts and at the times specified in the Agent Fee Letter. Such fees shall be fully earned when paid and shall not be refundable for any reason whatsoever.

(iii) The Borrower shall pay to the Lenders such fees as shall have been separately agreed upon in writing in the amounts and at the times so specified. Such fees shall be fully earned when paid and shall not be refundable for any reason whatsoever.

Section 2.10 Computation of Interest and Fees. All computations of interest for Base Rate Loans (including Base Rate Committed Loans determined by reference to Term SOFR) and for Alternative Currency Loans (other than Alternative Currency Loans determined by reference to EURIBOR) shall be made on the basis of a year of 365 or 366 days, as the case may be, and actual days elapsed, or, in the case of interest in respect of Alternative Currency Loans as to which market practice differs from the foregoing, in accordance with such market practice. All other computations of fees and interest, including those with respect to Alternative Currency Loans determined by reference to EURIBOR, shall be made on the basis of a 360-day year and actual days elapsed (which results in more fees or interest, as applicable, being paid than if computed on the basis of a 365-day year). Interest shall accrue on each Loan for the day on which the Loan is made, and shall not accrue on a Loan, or any portion thereof, for the day on which the Loan or such portion is paid; provided, that, any Loan that is repaid on the same day on which it is made shall, subject to Section 2.12(a), bear interest for one day. Each determination by the Administrative Agent of an interest rate or fee hereunder shall be conclusive and binding for all purposes, absent manifest error.

Section 2.11 Evidence of Debt.

(a) The Credit Extensions made by each Lender shall be evidenced by one or more accounts or records maintained by such Lender in the ordinary course of business. The Administrative Agent shall maintain the Register in accordance with Section 10.06(c). The accounts or records maintained by each Lender shall be conclusive absent manifest error of the amount of the Credit Extensions made by the Lenders to the Borrower and the interest and payments thereon. Any failure to so record or any error in doing so shall not, however, limit or otherwise affect the obligation of the Borrower hereunder to pay any amount owing with respect to the Obligations. In the event of any conflict between the accounts and records maintained by any Lender and the Register, the Register shall control in the absence of manifest error. Upon the request of any Lender made through the Administrative Agent, the Borrower shall execute and deliver to such Lender (through the Administrative Agent) a Note which shall evidence such Lender's Loans in addition to such accounts or records. Each Lender may attach schedules to its Note and endorse thereon the date, Type (if applicable), amount, currency and maturity of its Loans and payments with respect thereto.

(b) In addition to the accounts and records referred to in subsection (a) above, each Lender and the Administrative Agent shall maintain in accordance with its usual practice accounts or records evidencing the purchases and sales by such Lender of participations in Letters of Credit and Swing Line Loans. In the event of any conflict between the accounts and records maintained by the Administrative Agent and the accounts and records of any Lender in respect of such matters, the accounts and records of the Administrative Agent shall control in the absence of manifest error.

Section 2.12 Payments Generally; Administrative Agent's Clawback.

(a) General. All payments to be made by the Borrower shall be made free and clear of and without condition or deduction for any counterclaim, defense, recoupment or setoff. Except as otherwise expressly provided herein and except with respect to principal of and interest on Alternative Currency Loans, all payments by the Borrower hereunder shall be made to the Administrative Agent, for the account of the respective Lenders or the L/C Issuer, as applicable, to which such payment is owed, at the Administrative Agent's Office in Dollars and in Same Day Funds not later than 2:00 p.m. on the date specified herein. Except as otherwise expressly provided herein, all payments by the Borrower hereunder with respect to principal and interest on Alternative Currency Loans shall be made to the Administrative Agent, for the account of the respective Lenders to which such payment is owed, at the Administrative Agent's Office in such Alternative Currency and in Same Day Funds not later than the Applicable Time specified by the Administrative Agent on the dates specified herein. Without limiting the generality of the foregoing, the Administrative Agent may require that any payments due under this Agreement be made in the United States. If, for any reason, the Borrower is prohibited by any Law from making any required payment hereunder in an Alternative Currency, the Borrower shall make such payment in Dollars in the Dollar Equivalent of the Alternative Currency payment amount. The Administrative Agent will promptly distribute to each Lender or the L/C Issuer, as applicable, its Applicable Percentage (or other applicable share as provided herein) of such payment in like funds as received by wire transfer to such Lender's Lending Office or to the L/C Issuer, as applicable. All payments received by the Administrative Agent (i) after 2:00 p.m., in the case of payments in Dollars, or (ii) after the Applicable Time specified by the Administrative Agent in the case of payments in an Alternative Currency, shall in each case be deemed received on the next succeeding Business Day and any applicable interest or fee shall continue to accrue. Subject to the definition of "Interest Period", if any payment to be made by the Borrower shall come due on a day other than a Business Day, payment shall be made on the next following Business Day, and such extension of time shall be reflected in computing interest or fees, as the case may be.

(b) (i) Funding by Lenders; Presumptions by Administrative Agent. Unless the Administrative Agent shall have received notice from a Lender prior to the proposed date of any Committed Borrowing of Term SOFR Loans or Alternative Currency Loans (or, in the case of any Committed Borrowing of Base Rate Committed Loans, prior to 12:00 noon on the date of such Committed Borrowing) that such Lender will not make available to the Administrative Agent such Lender's share of such Committed Borrowing, the Administrative Agent may assume that such Lender has made such share available on such date in accordance with Section 2.02 (or, in the case of any Committed Borrowing of Base Rate Committed Loans, that such Lender has made such share available in accordance with and at the time required by Section 2.02) and may, in reliance upon such assumption, make available to the Borrower a corresponding amount. In such event, if a Lender has not in fact made its share of the applicable Committed Borrowing available to the Administrative Agent, then the applicable Lender and the Borrower severally agree to pay to the Administrative Agent forthwith on demand such corresponding amount in Same Day Funds with interest thereon, for each day from and including the date such amount is made available to the Borrower to but excluding the date of payment to the Administrative Agent, at (A) in the case of a payment to be made by such Lender, the Overnight Rate, plus any administrative, processing or similar fees customarily charged by the Administrative Agent in connection with the foregoing, and (B) in the case of a payment to be made by the Borrower, the interest rate applicable to Base Rate Committed Loans (or, in the case of Alternative Currencies, in accordance with such market practice, as applicable). If the Borrower and such Lender shall pay such interest to the Administrative Agent for the same or an overlapping period, the Administrative Agent shall promptly remit to the Borrower the amount of such interest paid by the Borrower for such period. If such Lender pays its share of the applicable Committed Borrowing to the Administrative Agent, then the amount so paid shall constitute such Lender's Committed Loan included in such Committed Borrowing. Any payment by the Borrower shall be without prejudice to any claim the Borrower may have against a Lender that shall have failed to make such payment to the Administrative Agent.

(ii) Payments by Borrower; Presumptions by Administrative Agent. Unless the Administrative Agent shall have received notice from the Borrower prior to the date on which any payment is due to the Administrative Agent for the account of the Lenders or the L/C Issuer hereunder that the Borrower will not make such payment, the Administrative Agent may assume that the Borrower has made such payment on such date in accordance herewith and may, in reliance upon such assumption, distribute to the Lenders or the L/C Issuer, as the case may be, the amount due. With respect to any payment that the Administrative Agent makes for the account of the Lenders or the L/C Issuer hereunder as to which the Administrative Agent determines (which determination shall be conclusive absent manifest error) that any of the following applies (such payment referred to as the "Rescindable Amount"): (A) the Borrower has not in fact made such payment; (B) the Administrative Agent has made a payment in excess of the amount so paid by the Borrower (whether or not then owed); or (C) the Administrative Agent has for any reason otherwise erroneously made such payment; then each of the Lenders or the L/C Issuer, as the case may be, severally agrees to repay to the Administrative Agent forthwith on demand the Rescindable Amount so distributed to such Lender or the L/C Issuer, in Same Day Funds with interest thereon, for each day from and including the date such amount is distributed to it to but excluding the date of payment to the Administrative Agent, at the Overnight Rate.

A notice of the Administrative Agent to any Lender or the Borrower with respect to any amount owing under this subsection (b) shall be conclusive, absent manifest error.

(c) Failure to Satisfy Conditions Precedent. If any Lender makes available to the Administrative Agent funds for any Loan to be made by such Lender as provided in the foregoing provisions

of this Article II, and such funds are not made available to the Borrower by the Administrative Agent because the conditions to the applicable Credit Extension set forth in Article IV are not satisfied or waived in accordance with the terms hereof, the Administrative Agent promptly shall return such funds (in like funds as received from such Lender) to such Lender, without interest.

(d) Obligations of Lenders Several. The obligations of the Lenders hereunder to make Committed Loans, to fund participations in Letters of Credit and Swing Line Loans and to make payments pursuant to Section 10.04(c) are several and not joint. The failure of any Lender to make any Committed Loan, to fund any such participation or to make any payment under Section 10.04(c) on any date required hereunder shall not relieve any other Lender of its corresponding obligation to do so on such date, and no Lender shall be responsible for the failure of any other Lender to so make its Committed Loan, to purchase its participation or to make its payment under Section 10.04(c).

(e) Funding Source. Nothing herein shall be deemed to obligate any Lender to obtain the funds for any Loan in any particular place or manner or to constitute a representation by any Lender that it has obtained or will obtain the funds for any Loan in any particular place or manner. Each Lender at its option may make any Credit Extension or otherwise perform its obligations hereunder through any Lending Office (each, a "Designated Lender"); provided, that, any exercise of such option shall not affect the obligation of the Borrower to repay any Credit Extension in accordance with the terms of this Agreement. Any Designated Lender shall be considered a Lender; provided, that, the designation of a Designated Lender is for administrative convenience only and does not expand the scope of liabilities or obligations of any Lender or Designated Lender beyond those of the Lender designating such Person as a Designated Lender as provided in this Agreement.

Section 2.13 Sharing of Payments by Lenders. If any Lender shall, by exercising any right of setoff or counterclaim or otherwise, obtain payment in respect of any principal of or interest on any of the Committed Loans made by it, or the participations in L/C Obligations or in Swing Line Loans held by it (excluding any amounts applied by the Swing Line Lender to outstanding Swing Line Loans) resulting in such Lender's receiving payment of a proportion of the aggregate amount of such Committed Loans or participations and accrued interest thereon greater than its pro rata share thereof as provided herein, then the Lender receiving such greater proportion shall (a) notify the Administrative Agent of such fact, and (b) purchase (for cash at face value) participations in the Committed Loans and subparticipations in L/C Obligations and Swing Line Loans of the other Lenders, or make such other adjustments as shall be equitable, so that the benefit of all such payments shall be shared by the Lenders ratably in accordance with the aggregate amount of principal of and accrued interest on their respective Committed Loans and other amounts owing them; provided, that:

(i) if any such participations or subparticipations are purchased and all or any portion of the payment giving rise thereto is recovered, such participations or subparticipations shall be rescinded and the purchase price restored to the extent of such recovery, without interest; and

(ii) the provisions of this Section 2.13 shall not be construed to apply to (x) any payment made by or on behalf of the Borrower pursuant to and in accordance with the express terms of this Agreement (including the application of funds arising from the existence of a Defaulting Lender), (y) the application of Cash Collateral provided for in Section 2.14, or (z) any payment obtained by a Lender as consideration for the assignment of or sale of a participation in any of its Committed Loans or subparticipations in L/C Obligations or Swing Line Loans to any assignee or participant, other than to the Borrower or any Subsidiary (as to which the provisions of this Section 2.13 shall apply).

The Borrower consents to the foregoing and agrees, to the extent it may effectively do so under applicable law, that any Lender acquiring a participation pursuant to the foregoing arrangements may exercise against the Borrower rights of setoff and counterclaim with respect to such participation as fully as if such Lender were a direct creditor of the Borrower in the amount of such participation.

Section 2.14 Cash Collateral.

(a) Certain Credit Support Events. If (i) the L/C Issuer has honored any full or partial drawing request under any Letter of Credit and such drawing has resulted in an L/C Borrowing, (ii) as of the Letter of Credit Expiration Date, any L/C Obligation for any reason remains outstanding, (iii) the Borrower shall be required to provide Cash Collateral pursuant to Section 8.02(c), or (iv) there shall exist a Defaulting Lender, the Borrower shall immediately (in the case of subsection (iii) above) or within one Business Day (in all other cases) following any request by the Administrative Agent or the L/C Issuer, provide Cash Collateral in an amount not less than the applicable Minimum Collateral Amount (determined in the case of Cash Collateral provided pursuant to subsection (iv) above, after giving effect to Section 2.15(a)(iv) and any Cash Collateral provided by the Defaulting Lender). Additionally, if the Administrative Agent notifies the Borrower at any time that the Outstanding Amount of all L/C Obligations at such time exceeds one hundred five percent (105%) of the Letter of Credit Sublimit then in effect, then within two (2) Business Days after receipt of such notice, the Borrower shall provide Cash Collateral for the Outstanding Amount of the L/C Obligations in an amount not less than the amount by which the Outstanding Amount of all L/C Obligations exceeds the Letter of Credit Sublimit.

(b) Grant of Security Interest. The Borrower, and to the extent provided by any Defaulting Lender, such Defaulting Lender, hereby grants to (and subjects to the control of) the Administrative Agent, for the benefit of the Administrative Agent, the L/C Issuer and the Lenders, and agrees to maintain, a first priority security interest in all such cash, deposit accounts and all balances therein, and all other property so provided as collateral pursuant hereto, and in all proceeds of the foregoing, all as security for the obligations to which such Cash Collateral may be applied pursuant to Section 2.14(c). If at any time the Administrative Agent reasonably determines that Cash Collateral is subject to any right or claim of any Person other than the Administrative Agent or the L/C Issuer as herein provided, or that the total amount of such Cash Collateral is less than the Minimum Collateral Amount, the Borrower will, promptly upon demand by the Administrative Agent, pay or provide to the Administrative Agent additional Cash Collateral in an amount sufficient to eliminate such deficiency. All Cash Collateral (other than credit support not constituting funds subject to deposit) shall be maintained in blocked deposit accounts at Bank of America. The Borrower shall pay on demand therefor from time to time all customary account opening, activity and other administrative fees and charges in connection with the maintenance and disbursement of Cash Collateral.

(c) Application. Notwithstanding anything to the contrary contained in this Agreement, Cash Collateral provided under any of this Section 2.14 or Sections 2.03, 2.05, 2.15 or 8.02 in respect of Letters of Credit shall be held and applied in satisfaction of the specific L/C Obligations, obligations to fund participations therein (including, as to Cash Collateral provided by a Defaulting Lender, any interest accrued on such obligation) and other obligations for which the Cash Collateral was so provided, prior to any other application of such property as may otherwise be provided for herein.

(d) Release. Cash Collateral (or the appropriate portion thereof) shall be released promptly following (i) the elimination of the applicable Fronting Exposure or other obligations giving rise thereto (including by the termination of Defaulting Lender status of the applicable Lender) (or, as appropriate, its assignee following compliance with Section 10.06(b)(vi)) or (ii) the reasonable determination by the Administrative Agent and the L/C Issuer that there exists excess Cash Collateral; provided, that, (x) any such release shall be without prejudice to, and any disbursement or other transfer of Cash Collateral shall

be and remain subject to, any other Lien conferred under the Loan Documents and the other applicable provisions of the Loan Documents, and (y) the Person providing Cash Collateral and the L/C Issuer may agree that Cash Collateral shall not be released but instead held to support future anticipated Fronting Exposure or other obligations.

Section 2.15 Defaulting Lenders.

(a) Adjustments. Notwithstanding anything to the contrary contained in this Agreement, if any Lender becomes a Defaulting Lender, then, until such time as that Lender is no longer a Defaulting Lender, to the extent permitted by applicable Law:

(i) Waivers and Amendment. Such Defaulting Lender's right to approve or disapprove any amendment, waiver or consent with respect to this Agreement shall be restricted as set forth in the definition of "Required Lenders" and Section 10.01.

(ii) Defaulting Lender Waterfall. Any payment of principal, interest, fees or other amount received by the Administrative Agent for the account of such Defaulting Lender (whether voluntary or mandatory, at maturity, pursuant to Article IX or otherwise) or received by the Administrative Agent from a Defaulting Lender pursuant to Section 10.08), shall be applied at such time or times as may be determined by the Administrative Agent as follows: first, to the payment of any amounts owing by such Defaulting Lender to the Administrative Agent hereunder; second, to the payment on a pro rata basis of any amounts owing by such Defaulting Lender to the L/C Issuer or the Swing Line Lender hereunder; third, to Cash Collateralize the L/C Issuer's Fronting Exposure with respect to such Defaulting Lender in accordance with Section 2.14; fourth, as the Borrower may request (so long as no Default or Event of Default exists), to the funding of any Loan in respect of which such Defaulting Lender has failed to fund its portion thereof as required by this Agreement, as determined by the Administrative Agent; fifth, if so determined by the Administrative Agent and the Borrower, to be held in a deposit account and released pro rata in order to (x) satisfy such Defaulting Lender's potential future funding obligations with respect to Loans under this Agreement and (y) Cash Collateralize the L/C Issuer's future Fronting Exposure with respect to such Defaulting Lender with respect to future Letters of Credit issued under this Agreement, in accordance with Section 2.14; sixth, to the payment of any amounts owing to the Lenders, the L/C Issuer or the Swing Line Lender as a result of any judgment of a court of competent jurisdiction obtained by any Lender, the L/C Issuer or the Swing Line Lender against such Defaulting Lender as a result of such Defaulting Lender's breach of its obligations under this Agreement; seventh, so long as no Default or Event of Default exists, to the payment of any amounts owing to the Borrower as a result of any judgment of a court of competent jurisdiction obtained by the Borrower against that Defaulting Lender as a result of that Defaulting Lender's breach of its obligations under this Agreement; and eighth, to such Defaulting Lender or as otherwise directed by a court of competent jurisdiction; provided, that, if (x) such payment is a payment of the principal amount of any Loans or L/C Borrowings in respect of which such Defaulting Lender has not fully funded its appropriate share, and (y) such Loans were made or the related Letters of Credit were issued at a time when the conditions set forth in Section 4.02 were satisfied or waived, such payment shall be applied solely to the pay the Loans of, and L/C Obligations owed to, all Non-Defaulting Lenders on a pro rata basis prior to being applied to the payment of any Loans of, or L/C Obligations owed to, such Defaulting Lender until such time as all Loans and funded and unfunded participations in L/C Obligations and Swing Line Loans are held by the Lenders pro rata in accordance with the Commitments hereunder without giving effect to Section 2.15(a)(iv). Any payments, prepayments or other amounts paid or payable to a Defaulting Lender that are applied (or held) to pay amounts owed by a Defaulting Lender or to post

Cash Collateral pursuant to this Section 2.15(a)(ii) shall be deemed paid to and redirected by such Defaulting Lender, and each Lender irrevocably consents hereto.

(iii) Certain Fees.

(A) No Defaulting Lender shall be entitled to receive any fee payable under Section 2.09(a) for any period during which that Lender is a Defaulting Lender (and the Borrower shall not be required to pay any such fee that otherwise would have been required to have been paid to that Defaulting Lender).

(B) Each Defaulting Lender shall be entitled to receive Letter of Credit Fees for any period during which that Lender is a Defaulting Lender only to the extent allocable to its Applicable Percentage of the stated amount of Letters of Credit for which it has provided Cash Collateral pursuant to Section 2.14.

(C) With respect to any Letter of Credit Fee not required to be paid to any Defaulting Lender pursuant to subsection (B) above, the Borrower shall (x) pay to each Non-Defaulting Lender that portion of any such fee otherwise payable to such Defaulting Lender with respect to such Defaulting Lender's participation in L/C Obligations that has been reallocated to such Non-Defaulting Lender pursuant to subsection (iv) below, (y) pay to the L/C Issuer the amount of any such fee otherwise payable to such Defaulting Lender to the extent allocable to the L/C Issuer's Fronting Exposure to such Defaulting Lender, and (z) not be required to pay the remaining amount of any such fee.

(iv) Reallocation of Applicable Percentages to Reduce Fronting Exposure. All or any part of such Defaulting Lender's participation in L/C Obligations and Swing Line Loans shall be reallocated among the Non-Defaulting Lenders in accordance with their respective Applicable Percentages (calculated without regard to such Defaulting Lender's Commitment) but only to the extent that such reallocation does not cause the aggregate Outstanding Amount of the Committed Loans of any Non-Defaulting Lender, plus such Non-Defaulting Lender's Applicable Percentage of the Outstanding Amount of all L/C Obligations, plus such Non-Defaulting Lender's Applicable Percentage of the Outstanding Amount of all Swing Line Loans to exceed such Non-Defaulting Lender's Commitment. Subject to Section 10.20, no reallocation hereunder shall constitute a waiver or release of any claim of any party hereunder against a Defaulting Lender arising from that Lender having become a Defaulting Lender, including any claim of a Non-Defaulting Lender as a result of such Non-Defaulting Lender's increased exposure following such reallocation.

(v) Cash Collateral, Repayment of Swing Line Loans. If the reallocation described in subsection (a)(iv) above cannot, or can only partially, be effected, the Borrower shall, without prejudice to any right or remedy available to it hereunder or under applicable Law, (x) first, prepay Swing Line Loans in an amount equal to the Swing Line Lenders' Fronting Exposure and (y) second, Cash Collateralize the L/C Issuer's Fronting Exposure in accordance with the procedures set forth in Section 2.14.

(b) Defaulting Lender Cure. If the Borrower, the Administrative Agent, the Swing Line Lender and the L/C Issuer agree in writing that a Lender is no longer a Defaulting Lender, the Administrative Agent will so notify the parties hereto, whereupon as of the effective date specified in such notice and subject to any conditions set forth therein (which may include arrangements with respect to any Cash Collateral), that Lender will, to the extent applicable, purchase at par that portion of outstanding Loans of the other Lenders or take such other actions as the Administrative Agent may determine to be necessary to cause the Loans and funded and unfunded participations in Letters of Credit and Swing Line Loans to be

held on a pro rata basis by the Lenders in accordance with their Applicable Percentages (without giving effect to Section 2.15(a)(iv)), whereupon such Lender will cease to be a Defaulting Lender; provided, that, no adjustments will be made retroactively with respect to fees accrued or payments made by or on behalf of the Borrower while that Lender was a Defaulting Lender; provided, further, that, except to the extent otherwise expressly agreed by the affected parties, no change hereunder from Defaulting Lender to Lender will constitute a waiver or release of any claim of any party hereunder arising from that Lender having been a Defaulting Lender.

Section 2.16 Extension of Maturity Date.

(a) The Borrower may request in writing that the Lenders extend the then-current Maturity Date for an additional one year (and the Administrative Agent shall promptly give the Lenders notice of any such request); provided, that, the Maturity Date may be extended under this Section 2.16 no more than two times in the aggregate; provided, further, that, any such request shall be made not less than twenty (20) days prior to the then-current Maturity Date. Each Lender shall provide the Administrative Agent, not more than fifteen (15) days subsequent to any such request by the Borrower (or such other date as the Borrower and the Administrative Agent may agree; such date, the "Extension Request Date"), with written notice regarding whether it agrees to extend the then-current Maturity Date (each Lender agreeing to a requested extension being called an "Extending Lender", and each Lender declining to agree to a requested extension being called a "Non-Extending Lender"). Each decision by a Lender shall be in its sole discretion and any Lender who fails to give timely written notice hereunder shall be deemed a Non-Extending Lender.

(b) If all Lenders agree in writing to the extension request by the Extension Request Date, then the Maturity Date shall be extended to the first anniversary of the Maturity Date then in effect. If Lenders constituting Required Lenders, but not all Lenders, agree in writing to the extension request by the Extension Request Date, then the Borrower may, on the Extension Request Date, notify the Administrative Agent in writing that it wishes to extend the Maturity Date, and the Maturity Date shall, as to the Commitments and Loans of the Extending Lenders, be extended to the first anniversary of the Maturity Date then in effect prior to giving effect to any such extension (such Maturity Date, the "Existing Maturity Date"). The Borrower shall, on the Existing Maturity Date, pay to the Non-Extending Lenders in effect immediately prior to such extension in immediately available funds the principal of and interest accrued on the portion of the Loans hereunder held by the Non-Extending Lenders, as well as all other amounts due and payable to the Non-Extending Lenders (including amounts required pursuant to Section 3.05), on such date. Upon such Existing Maturity Date, (i) the Commitments of each such Non-Extending Lender shall terminate, (ii) each such Non-Extending Lender shall cease to be a Lender hereunder, (iii) the Aggregate Commitments shall be reduced by an amount equal to the aggregate Commitments of each such Non- Extending Lender and (iv) notwithstanding anything to the contrary in Section 2.13, all outstanding Loans of each such Non-Extending Lender shall be paid in full.

(c) Notwithstanding the foregoing provisions of this Section 2.16, the Borrower shall have the right, at its own discretion and at its own expense, at any time prior to the Existing Maturity Date to replace, in accordance with the terms of Section 10.13, a Non-Extending Lender with an Eligible Assignee that will agree to the applicable Maturity Date extension request, and any such replacement Lender shall for all purposes constitute an Extending Lender.

(d) As a condition precedent to any extension pursuant to this Section 2.16, the Borrower shall deliver to the Administrative Agent a certificate of the Borrower (i) certifying and attaching the resolutions adopted by the Borrower approving or consenting to such extension and (ii) certifying that, before and after giving effect to such extension, (A) the representations and warranties of the Borrower contained in Article V or any other Loan Document, or which are contained in any document furnished at any time under or in connection herewith or therewith, shall be true and correct in all material respects on and as of the date of

such extension, except to the extent that such representations and warranties specifically refer to an earlier date, in which case they shall be true and correct in all material respects as of such earlier date, and except that for purposes of this Section 2.16, the representations and warranties contained in Sections 5.05(a) and (b) shall be deemed to refer to the most recent statements furnished pursuant to Sections 6.01(a) and (b), respectively (provided, that, any representation and warranty that is qualified as to "materiality", "Material Adverse Effect" or similar language shall be true and correct (after giving effect to any qualification therein) in all respects), and (B) no Event of Default exists.

(e) Notwithstanding anything to the contrary contained herein, the L/C Issuer shall not have its L/C Commitment extended beyond the Existing Maturity Date without its consent.

(f) This Section 2.16 shall supersede any provisions in Section 2.13 or 10.01 to the contrary.

Section 2.17 Increase in Aggregate Commitments.The Borrower may, upon prior written notice by the Borrower to the Administrative Agent, increase the Aggregate Commitments (but not the Letter of Credit Sublimit or the Swing Line Sublimit) by a maximum aggregate amount for all such increases not to exceed $250,000,000, with additional Commitments from any existing Lender or new Commitments from one or more other Persons selected by the Borrower and reasonably acceptable to the Administrative Agent, the L/C Issuer and the Swing Line Lender (so long as such Persons would be Eligible Assignees); provided, that: (a) any such increase shall be in a minimum principal amount of $10,000,000 and in integral multiples of $1,000,000 in excess thereof (or such other minimum and multiples as are agreed by the Administrative Agent in its sole discretion); (b) at the time of such increase and after giving effect thereto: (i) no Default shall exist and be continuing, and (ii) the representations and warranties of the Borrower contained in Article V or any other Loan Document, or which are contained in any document furnished at any time under or in connection herewith or therewith, shall be true and correct in all material respects on and as of the date of such increase, except to the extent that such representations and warranties specifically refer to an earlier date, in which case they shall be true and correct in all material respects as of such earlier date, and except that for purposes of this Section 2.17, the representations and warranties contained in Sections 5.05(a) and (b) shall be deemed to refer to the most recent statements furnished pursuant to Sections 6.01(a) and (b), respectively (provided, that, any representation and warranty that is qualified as to "materiality", "Material Adverse Effect" or similar language shall be true and correct (after giving effect to any qualification therein) in all respects); (c) no existing Lender shall be under any obligation to increase its Commitment and any such decision whether to increase its Commitment shall be in such Lender's sole and absolute discretion; (d)(i) any new Lender shall join this Agreement by executing such joinder documents as are required by the Administrative Agent, and/or (ii) any existing Lender electing to increase its Commitment shall have executed a commitment agreement reasonably satisfactory to the Administrative Agent; and (e) the Borrower shall have delivered to the Administrative Agent a certificate of a Responsible Officer of the Borrower dated as of the date of such increase (i) certifying that (A) the conditions set forth in clause (b) above have been met, and (B) attached thereto are resolutions adopted by the Borrower approving or consenting to such increase, and (ii) demonstrating that, upon giving effect to such increase on a pro forma basis (and assuming for such calculation that such increase is fully drawn), the Borrower would be in compliance with the financial covenant set forth in Section 7.05 as of the most recently ended fiscal quarter of the Borrower for which the Borrower was required to deliver financial statements pursuant to Section 6.01(a) or Section 6.01(b). The Borrower shall prepay any Committed Loans owing by it and outstanding on the date of any such increase (and pay any additional amounts required pursuant to Section 3.05) to the extent necessary to keep the outstanding Committed Loans ratable with any revised Commitments arising from any non-ratable increase in the Aggregate Commitments pursuant to this Section 2.17.

ARTICLE III.
TAXES, YIELD PROTECTION AND ILLEGALITY

Section 3.01 Taxes.

(a) Payments Free of Taxes; Obligation to Withhold; Payments on Account of Taxes.

(i) Any and all payments by or on account of any obligation of the Borrower under any Loan Document shall be made without deduction or withholding for any Taxes, except as required by applicable Laws. If any applicable Laws (as determined in the good faith discretion of the Administrative Agent or the Borrower) require the deduction or withholding of any Tax from any such payment by the Administrative Agent or the Borrower, then the Administrative Agent or the Borrower shall be entitled to make such deduction or withholding, upon the basis of the information and documentation received pursuant to subsection (e) below.

(ii) If the Borrower or the Administrative Agent shall be required by the Code to withhold or deduct any Taxes, including both United States Federal backup withholding and withholding taxes, from any payment, then (A) the Administrative Agent shall withhold or make such deductions as are determined by the Administrative Agent to be required based upon the information and documentation it has received pursuant to subsection (e) below, (B) the Administrative Agent shall timely pay the full amount withheld or deducted to the relevant Governmental Authority in accordance with the Code, and (C) to the extent that the withholding or deduction is made on account of Indemnified Taxes, the sum payable by the Borrower shall be increased as necessary so that after any required withholding or the making of all required deductions (including deductions applicable to additional sums payable under this Section 3.01) the applicable Recipient receives an amount equal to the sum it would have received had no such withholding or deduction been made.

(iii) If the Borrower or the Administrative Agent shall be required by any applicable Laws other than the Code to withhold or deduct any Taxes from any payment, then (A) the Borrower or the Administrative Agent, as required by such Laws, shall withhold or make such deductions as are determined by it to be required based upon the information and documentation it has received pursuant to subsection (e) below, (B) the Borrower or the Administrative Agent, to the extent required by such Laws, shall timely pay the full amount withheld or deducted to the relevant Governmental Authority in accordance with such Laws, and (C) to the extent that the withholding or deduction is made on account of Indemnified Taxes, the sum payable by the Borrower shall be increased as necessary so that after any required withholding or the making of all required deductions (including deductions applicable to additional sums payable under this Section 3.01) the applicable Recipient receives an amount equal to the sum it would have received had no such withholding or deduction been made.

(b) Payment of Other Taxes by the Borrower. The Borrower shall timely pay to the relevant Governmental Authority in accordance with applicable law, or at the option of the Administrative Agent timely reimburse it for the payment of, any Other Taxes.

(c) Tax Indemnifications.

(i) The Borrower shall, and does hereby, indemnify each Recipient, and shall make payment in respect thereof within 10 days after demand therefor, for the full amount of any Indemnified Taxes (including Indemnified Taxes imposed or asserted on or attributable to amounts payable under this Section 3.01) payable or paid by such Recipient or required to be withheld or deducted from a payment to such Recipient, and any penalties, interest and reasonable expenses arising therefrom or with respect thereto, whether or not such Indemnified Taxes were correctly or legally imposed or asserted by the relevant Governmental Authority. A certificate as to the amount

of such payment or liability delivered to the Borrower by a Lender or the L/C Issuer (with a copy to the Administrative Agent), or by the Administrative Agent on its own behalf or on behalf of a Lender or the L/C Issuer, shall be conclusive absent manifest error. The Borrower shall, and does hereby, indemnify the Administrative Agent, and shall make payment in respect thereof within 10 days after demand therefor, for any amount which a Lender or the L/C Issuer for any reason fails to pay indefeasibly to the Administrative Agent as required pursuant to Section 3.01(c)(ii), except to the extent that such amount is determined by a court of competent jurisdiction to have resulted from the gross negligence or willful misconduct of the Administrative Agent. To the extent that the Borrower pays an amount to the Administrative Agent pursuant to the preceding sentence (a "Back-Up Indemnity Payment"), the Administrative Agent shall use commercially reasonable efforts to exercise its set-off rights described in the last sentence of subsection (ii) below to collect the applicable Back-Up Indemnity Payment amount from the applicable Lender or the L/C Issuer and shall pay the amount so collected to the Borrower net of any reasonable expenses incurred by the Administrative Agent in its efforts to collect (through set-off or otherwise) from such Lender or the L/C Issuer with respect to subsection (ii) below.

(ii) Each Lender and the L/C Issuer shall, and does hereby, severally indemnify, and shall make payment in respect thereof within 10 days after demand therefor, (x) the Administrative Agent against any Indemnified Taxes attributable to such Lender or the L/C Issuer (but only to the extent that the Borrower has not already indemnified the Administrative Agent for such Indemnified Taxes and without limiting the obligation of the Borrower to do so), (y) the Administrative Agent and the Borrower, as applicable, against any Taxes attributable to such Lender's failure to comply with the provisions of Section 10.06(d) relating to the maintenance of a Participant Register and (z) the Administrative Agent and the Borrower, as applicable, against any Excluded Taxes attributable to such Lender or the L/C Issuer, in each case, that are payable or paid by the Administrative Agent or the Borrower in connection with any Loan Document, and any reasonable expenses arising therefrom or with respect thereto, whether or not such Taxes were correctly or legally imposed or asserted by the relevant Governmental Authority. A certificate as to the amount of such payment or liability delivered to any Lender by the Administrative Agent shall be conclusive absent manifest error. Each Lender and the L/C Issuer hereby authorizes the Administrative Agent to set off and apply any and all amounts at any time owing to such Lender or the L/C Issuer, as the case may be, under this Agreement or any other Loan Document against any amount due to the Administrative Agent under this subsection (ii).

(d) Evidence of Payments. Upon request by the Borrower or the Administrative Agent, as the case may be, after any payment of Taxes by the Borrower or by the Administrative Agent to a Governmental Authority as provided in this Section 3.01, the Borrower shall deliver to the Administrative Agent or the Administrative Agent shall deliver to the Borrower, as the case may be, the original or a certified copy of a receipt issued by such Governmental Authority evidencing such payment, a copy of any return required by Laws to report such payment or other evidence of such payment reasonably satisfactory to the Borrower or the Administrative Agent, as the case may be.

(e) Status of Lenders; Tax Documentation.

(i) Any Lender that is entitled to an exemption from or reduction of withholding Tax with respect to payments made under any Loan Document shall deliver to the Borrower and the Administrative Agent, at the time or times reasonably requested by the Borrower or the Administrative Agent, such properly completed and executed documentation reasonably requested by the Borrower or the Administrative Agent as will permit such payments to be made without withholding or at a reduced rate of withholding. In addition, any Lender, if reasonably requested by the Borrower or the Administrative Agent, shall deliver such other documentation prescribed by

applicable law or reasonably requested by the Borrower or the Administrative Agent as will enable the Borrower or the Administrative Agent to determine whether or not such Lender is subject to backup withholding or information reporting requirements. Notwithstanding anything to the contrary in the preceding two sentences, the completion, execution and submission of such documentation (other than such documentation set forth in Section 3.01(e)(ii)(A), (ii)(B) and (ii)(D)) shall not be required if in the Lender's reasonable judgment such completion, execution or submission would subject such Lender to any material unreimbursed cost or expense or would materially prejudice the legal or commercial position of such Lender; provided, that, this sentence shall not apply to documentation described in Section 3.01(e)(ii)(C) if such documentation is in substance essentially equivalent to, and not materially more onerous to provide, than the documentation set forth in Section 3.01(e)(ii)(A), (ii)(B), or (ii)(D).

(ii) Without limiting the generality of the foregoing, in the event that the Borrower is a U.S. Person,

(A) any Lender that is a U.S. Person shall deliver to the Borrower and the Administrative Agent on or prior to the date on which such Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of the Borrower or the Administrative Agent), executed copies of IRS Form W-9 certifying that such Lender is exempt from U.S. federal backup withholding tax;

(B) any Foreign Lender shall, to the extent it is legally entitled to do so, deliver to the Borrower and the Administrative Agent (in such number of copies as shall be requested by the recipient) on or prior to the date on which such Foreign Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of the Borrower or the Administrative Agent), whichever of the following is applicable:

(I) in the case of a Foreign Lender claiming the benefits of an income tax treaty to which the United States is a party (x) with respect to payments of interest under any Loan Document, executed copies of IRS Form W-8BEN-E (or W-8BEN, as applicable) establishing an exemption from, or reduction of, U.S. federal withholding Tax pursuant to the "interest" article of such tax treaty and (y) with respect to any other applicable payments under any Loan Document, IRS Form W-8BEN-E (or W-8BEN, as applicable) establishing an exemption from, or reduction of, U.S. federal withholding Tax pursuant to the "business profits" or "other income" article of such tax treaty;

(II) executed copies of IRS Form W-8ECI,

(III) in the case of a Foreign Lender claiming the benefits of the exemption for portfolio interest under Section 881(c) of the Code, (x) a certificate substantially in the form of Exhibit G-1 to the effect that such Foreign Lender is not a "bank" within the meaning of Section 881(c)(3)(A) of the Code, a "10 percent shareholder" of the Borrower within the meaning of Section 881(c)(3)(B) of the Code, or a "controlled foreign corporation" described in Section 881(c)(3)(C) of the Code (a "U.S. Tax Compliance Certificate") and (y) executed copies of IRS Form W-8BEN-E (or W-8BEN, as applicable); or

(IV) to the extent a Foreign Lender is not the beneficial owner, executed copies of IRS Form W-8IMY, accompanied by IRS Form W-8ECI, IRS

Form W-8BEN-E (or W-8BEN, as applicable), a U.S. Tax Compliance Certificate substantially in the form of Exhibit G-2 or Exhibit G-3, IRS Form W-9, and/or other certification documents from each beneficial owner, as applicable; provided, that, if the Foreign Lender is a partnership and one or more direct or indirect partners of such Foreign Lender are claiming the portfolio interest exemption, such Foreign Lender may provide a U.S. Tax Compliance Certificate substantially in the form of Exhibit G-4 on behalf of each such direct and indirect partner;

(C) any Foreign Lender shall, to the extent it is legally entitled to do so, deliver to the Borrower and the Administrative Agent (in such number of copies as shall be requested by the recipient) on or prior to the date on which such Foreign Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of the Borrower or the Administrative Agent), executed copies of any other form prescribed by applicable law as a basis for claiming exemption from or a reduction in U.S. federal withholding Tax, duly completed, together with such supplementary documentation as may be prescribed by applicable law to permit the Borrower or the Administrative Agent to determine the withholding or deduction required to be made; and

(D) if a payment made to a Lender under any Loan Document would be subject to U.S. federal withholding Tax imposed pursuant to FATCA if such Lender were to fail to comply with the applicable reporting, registration or other requirements of FATCA (including those contained in Section 1471(b) or 1472(b) of the Code, as applicable), such Lender shall deliver to the Borrower and the Administrative Agent at the time or times prescribed by law and at such time or times reasonably requested by the Borrower or the Administrative Agent such documentation prescribed by applicable law (including as prescribed by Section 1471(b)(3)(C)(i) of the Code) and such additional documentation reasonably requested by the Borrower or the Administrative Agent as may be necessary for the Borrower and the Administrative Agent to comply with their obligations under FATCA and to determine that such Lender has complied with such Lender's obligations under FATCA or to determine the amount to deduct and withhold from such payment. Solely for purposes of this subsection (D), "FATCA" shall include any amendments made to FATCA after the Closing Date.

(iii) Each Lender agrees that if any form or certification it previously delivered pursuant to this Section 3.01 expires or becomes obsolete or inaccurate in any respect, it shall update such form or certification or promptly notify the Borrower and the Administrative Agent in writing of its legal inability to do so.

(f) Treatment of Certain Refunds. Unless required by applicable Laws, at no time shall the Administrative Agent have any obligation to file for or otherwise pursue on behalf of a Lender or the L/C Issuer, or have any obligation to pay to any Lender or the L/C Issuer, any refund of Taxes withheld or deducted from funds paid for the account of such Lender or the L/C Issuer, as the case may be. If any Recipient determines, in its sole discretion exercised in good faith, that it has received a refund of any Taxes as to which it has been indemnified by the Borrower or with respect to which the Borrower has paid additional amounts pursuant to this Section 3.01, it shall pay to the Borrower an amount equal to such refund (but only to the extent of indemnity payments made, or additional amounts paid, by the Borrower under this Section 3.01 with respect to the Taxes giving rise to such refund), net of all reasonable out-of- pocket expenses (including Taxes) incurred by such Recipient, and without interest (other than any interest paid by the relevant Governmental Authority with respect to such refund), provided, that, the Borrower, upon the request of the Recipient, agrees to repay the amount paid over to the Borrower (plus any penalties, interest or other charges imposed by the relevant Governmental Authority) to the Recipient in the event the

Recipient is required to repay such refund to such Governmental Authority. Notwithstanding anything to the contrary in this subsection (f), in no event will the applicable Recipient be required to pay any amount to the Borrower pursuant to this subsection (f) the payment of which would place the Recipient in a less favorable net after-Tax position than such Recipient would have been in if the Tax subject to indemnification and giving rise to such refund had not been deducted, withheld or otherwise imposed and the indemnification payments or additional amounts with respect to such Tax had never been paid. This subsection (f) shall not be construed to require any Recipient to make available its tax returns (or any other information relating to its taxes that it deems confidential) to the Borrower or any other Person.

(g) Survival. Each party's obligations under this Section 3.01 shall survive the resignation or replacement of the Administrative Agent or any assignment of rights by, or the replacement of, a Lender or the L/C Issuer, the termination of the Aggregate Commitments and the repayment, satisfaction or discharge of all other Obligations.

Section 3.02 Illegality. If any Lender determines in good faith that any Law has made it unlawful, or that any Governmental Authority has asserted that it is unlawful, for any Lender or its applicable Lending Office to make, maintain or fund Loans whose interest is determined by reference to SOFR, Term SOFR, or any Relevant Rate, or to determine or charge interest rates based upon SOFR, Term SOFR or any Relevant Rate, or to purchase or sell, or to take deposits of, any Alternative Currency in the applicable interbank market, then, on notice thereof by such Lender to the Borrower through the Administrative Agent, (a) any obligation of such Lender to make or continue Term SOFR Loans or Alternative Currency Loans in the affected currency or currencies or, in the case of Term SOFR Loans, to convert Base Rate Committed Loans to Term SOFR Loans, shall be suspended, and (b) if such notice asserts the illegality of such Lender making or maintaining Base Rate Committed Loans the interest rate on which is determined by reference to the Term SOFR component of the Base Rate, the interest rate on which Base Rate Committed Loans of such Lender shall, if necessary to avoid such illegality, be determined by the Administrative Agent without reference to the Term SOFR component of the Base Rate, in each case until such Lender in good faith notifies the Administrative Agent and the Borrower that the circumstances giving rise to such determination no longer exist. Upon receipt of such notice, (i) the Borrower shall, upon demand from such Lender (with a copy to the Administrative Agent), prepay in full such Term SOFR Loans or Alternative Currency Loans then outstanding (which prepayment shall be made (A) with respect to Term SOFR Loans or Alternative Currency Term Rate Loans, on the last day of the relevant Interest Periods of such Loans, if such Lender may lawfully continue to maintain such Loans to such day, or immediately, if such Lender may not lawfully continue to maintain such Loans to such day, and (B) with respect to Alternative Currency Daily Rate Loans, on the next Interest Payment Date for such Loans, if such Lender may lawfully continue to maintain such Loans to such day, or immediately, if such Lender may not lawfully continue to maintain such Loans to such day) or, if applicable and such Loans are Term SOFR Loans, convert such Term SOFR Loans of such Lender to Base Rate Committed Loans (the interest rate on which Base Rate Committed Loans of such Lender shall, if necessary to avoid such illegality, be determined by the Administrative Agent without reference to the Term SOFR component of the Base Rate) on the last day of the Interest Period therefor, if such Lender may lawfully continue to maintain such Term SOFR Loans to such day, or immediately, if such Lender may not lawfully continue to maintain such Term SOFR Loans, and (ii) if such notice asserts the illegality of such Lender determining or charging interest rates based upon Term SOFR, the Administrative Agent shall during the period of such suspension compute the Base Rate applicable to such Lender without reference to the Term SOFR component thereof until the Administrative Agent is advised in writing by such Lender that it is no longer illegal for such Lender to determine or charge interest rates based upon Term SOFR. Upon any such prepayment or conversion, the Borrower shall also pay accrued interest on the amount so prepaid or converted, together with any additional amounts required pursuant to Section 3.05.

Section 3.03 Inability to Determine Rates.

(a) If in connection with any request for a Term SOFR Loan or an Alternative Currency Loan, or a request for a conversion of Base Rate Committed Loans to Term SOFR Loans, or a request for a continuation of Term SOFR Loans or Alternative Currency Term Rate Loans, as applicable, (i) the Administrative Agent determines (which determination shall be conclusive absent manifest error) that (A)(1) no Term SOFR Successor Rate has been determined in accordance with Section 3.03(b) and the circumstances under Section 3.03(b)(i) or the Term SOFR Scheduled Unavailability Date has occurred, or (2) no Alternative Currency Successor Rate for the applicable Relevant Rate has been determined in accordance with Section 3.03(c) and the circumstances under Section 3.03(c)(i) or the Alternative Currency Scheduled Unavailability Date has occurred, as applicable, (B) adequate and reasonable means do not otherwise exist for determining Term SOFR or the applicable Relevant Rate, as applicable, for any determination date(s) or requested Interest Period, as applicable, with respect to a proposed Term SOFR Loan or Alternative Currency Loan, or in connection with an existing or proposed Base Rate Committed Loan, or (C) a fundamental change has occurred in the foreign exchange or interbank markets with respect to any Alternative Currency (including changes in national or international financial, political or economic conditions or currency exchange rates or exchange controls), or (ii) the Administrative Agent or the Required Lenders determine that for any reason Term SOFR or the applicable Relevant Rate, as applicable, for any determination date(s) or requested Interest Period, as applicable, does not adequately and fairly reflect the cost to such Lenders of funding such Loan, the Administrative Agent will promptly so notify the Borrower and each Lender. Thereafter, (x) the obligation of the Lenders to make or maintain Term SOFR Loans or the applicable Alternative Currency Loans shall be suspended (to the extent of the affected Term SOFR Loans, Alternative Currency Loans, Interest Periods or determination date(s), as applicable), and (y) in the event of a determination described above with respect to the Term SOFR component of the Base Rate, the utilization of the Term SOFR component in determining the Base Rate shall be suspended, in each case until the Administrative Agent (or, in the case of a determination by the Required Lenders described in clause (a)(ii) above, until the Administrative Agent upon instruction of the Required Lenders) revokes such notice. Upon receipt of such notice, (1) the Borrower may revoke any pending request for a Committed Borrowing of, conversion to or continuation of the applicable Loans (to the extent of the affected Term SOFR Loans, Alternative Currency Loans, Interest Periods or determination date(s), as applicable) or, failing that, with respect to any request for a Committed Borrowing of, conversion to, or continuation of Term SOFR Loans, will be deemed to have converted such request into a request for a Borrowing of, or conversion to, Base Rate Committed Loans in the amount specified therein, (2) any outstanding affected Term SOFR Loans shall be converted to Base Rate Committed Loans at the end of their respective applicable Interest Periods, and (3) any outstanding affected Alternative Currency Loans shall either (I) be converted into Base Rate Committed Loans denominated in Dollars (in an amount equal to the Dollar Equivalent thereof), or (II) be prepaid in full (such conversion or prepayment, as applicable, to occur on the next applicable Interest Payment Dates, in the case of Alternative Currency Daily Rate Loans, or at the end of the applicable Interest Periods, in the case of Alternative Currency Term Rate Loans); provided, that, if no election is made by the Borrower by the date that is three (3) Business Days after receipt by the Borrower of such notice the Borrower shall be deemed to have elected clause (3)(I) above.

(b) Notwithstanding anything to the contrary in this Agreement or any other Loan Document, if the Administrative Agent determines (which determination shall be conclusive absent manifest error), or the Borrower or Required Lenders notify the Administrative Agent (with, in the case of the Required Lenders, a copy to the Borrower) that the Borrower or Required Lenders (as applicable) have determined, that: (i) adequate and reasonable means do not exist for ascertaining one month, three month, and six month interest periods of Term SOFR, including because the Term SOFR Screen Rate is not available or published on a current basis and such circumstances are unlikely to be temporary; or (ii) CME or any successor administrator of the Term SOFR Screen Rate or a Governmental Authority having jurisdiction over the Administrative Agent or such administrator with respect to its publication of Term SOFR, in each case acting in such capacity, has made a public statement identifying a specific date after which one month, three month, and six month interest periods of Term SOFR or the Term SOFR Screen Rate shall no longer be

made available, or permitted to be used for determining the interest rate of syndicated loans, or shall or will otherwise cease; provided, that, at the time of such statement, there is no successor administrator that is reasonably satisfactory to the Administrative Agent that will continue to provide such interest periods of Term SOFR after such specific date (the latest date on which one month, three month, and six month interest periods of Term SOFR or the Term SOFR Screen Rate are no longer available permanently or indefinitely, the "Term SOFR Scheduled Unavailability Date"); then, on a date and time determined by the Administrative Agent (any such date, the "Term SOFR Replacement Date"), which date shall be at the end of an Interest Period or on the relevant interest payment date, as applicable, for interest calculated and, solely with respect to clause (ii) above, no later than the Term SOFR Scheduled Unavailability Date, Term SOFR will be replaced hereunder and under any Loan Document with Daily Simple SOFR plus the SOFR Adjustment for any payment period for interest calculated that can be determined by the Administrative Agent, in each case, without any amendment to, or further action or consent of any other party to, this Agreement or any other Loan Document (the "Term SOFR Successor Rate"). If the Term SOFR Successor Rate is Daily Simple SOFR plus the SOFR Adjustment, all interest payments will be payable on a monthly basis.

Notwithstanding anything to the contrary herein, (a) if the Administrative Agent determines that Daily Simple SOFR is not available on or prior to the Term SOFR Replacement Date, or (ii) if the events or circumstances of the type described in in clause (i) above or clause (ii) of the immediately preceding paragraph have occurred with respect to the Term SOFR Successor Rate then in effect, then in each case, the Administrative Agent and the Borrower may amend this Agreement solely for the purpose of replacing Term SOFR or any then-current Term SOFR Successor Rate in accordance with this Section 3.03(b) at the end of any Interest Period, relevant interest payment date or payment period for interest calculated, as applicable, with an alternative benchmark rate giving due consideration to any evolving or then-existing convention for similar credit facilities syndicated and agented in the United States for such alternative benchmark and, in each case, including any mathematical or other adjustments to such benchmark giving due consideration to any evolving or then-existing convention for similar credit facilities syndicated and agented in the United States for such benchmark. For the avoidance of doubt, any such proposed rate and adjustments shall constitute a "Term SOFR Successor Rate". Any such amendment shall become effective at 5:00 p.m. on the fifth (5^{th}) Business Day after the Administrative Agent shall have posted such proposed amendment to all Lenders and the Borrower unless, prior to such time, Lenders comprising the Required Lenders have delivered to the Administrative Agent written notice that such Required Lenders object to such amendment.

The Administrative Agent will promptly (in one or more notices) notify the Borrower and each Lender of the implementation of any Term SOFR Successor Rate. Any Term SOFR Successor Rate shall be applied in a manner consistent with market practice; provided, that, to the extent such market practice is not administratively feasible for the Administrative Agent, such Term SOFR Successor Rate shall be applied in a manner as otherwise reasonably determined by the Administrative Agent. Notwithstanding anything else herein, if at any time any Term SOFR Successor Rate as so determined would otherwise be less than zero, such Term SOFR Successor Rate will be deemed to be zero for the purposes of this Agreement and the other Loan Documents.

In connection with the implementation of a Term SOFR Successor Rate, the Administrative Agent will have the right to make Term SOFR Conforming Changes from time to time and, notwithstanding anything to the contrary herein or in any other Loan Document, any amendments implementing such Term SOFR Conforming Changes will become effective without any further action or consent of any other party to this Agreement; provided, that, with respect to any such amendment effected, the Administrative Agent shall post each such amendment implementing such Term SOFR Conforming Changes to the Borrower and the Lenders reasonably promptly after such amendment becomes effective.

For purposes of this Section 3.03(b), those Lenders that either have not made, or do not have an obligation under this Agreement to make, Term SOFR Loans (or Loans accruing interest by reference to a Term SOFR Successor Rate, as applicable) shall be excluded from any determination of Required Lenders.

(c) Notwithstanding anything to the contrary in this Agreement or any other Loan Documents, if the Administrative Agent determines (which determination shall be conclusive absent manifest error), or the Borrower or Required Lenders notify the Administrative Agent (with, in the case of the Required Lenders, a copy to the Borrower) that the Borrower or Required Lenders (as applicable) have determined, that: (i) adequate and reasonable means do not exist for ascertaining the Relevant Rate for an Alternative Currency because none of the tenors of such Relevant Rate (including any forward-looking term rate thereof) is available or published on a current basis and such circumstances are unlikely to be temporary; or (ii) the Applicable Authority has made a public statement identifying a specific date after which all tenors of the Relevant Rate for an Alternative Currency (including any forward-looking term rate thereof) shall or will no longer be representative or made available, or used for determining the interest rate of loans denominated in such Alternative Currency, or shall or will otherwise cease; provided, that, in each case, at the time of such statement, there is no successor administrator that is reasonably satisfactory to the Administrative Agent that will continue to provide such representative tenor(s) of the Relevant Rate for such Alternative Currency (the latest date on which all tenors of the Relevant Rate for such Alternative Currency (including any forward-looking term rate thereof) are no longer representative or available permanently or indefinitely, the "Alternative Currency Scheduled Unavailability Date" for such Relevant Rate); or (iii) syndicated loans currently being executed and agented in the United States are being executed or amended (as applicable) to incorporate or adopt a new benchmark interest rate to replace the Relevant Rate for an Alternative Currency; or if the events or circumstances of the type described in clause (i) above, clause (ii) above or clause (iii) above have occurred with respect to an Alternative Currency Successor Rate then in effect, then the Administrative Agent and the Borrower may amend this Agreement solely for the purpose of replacing the Relevant Rate for an Alternative Currency or any then-current Alternative Currency Successor Rate for an Alternative Currency in accordance with this Section 3.03(c) with an alternative benchmark rate giving due consideration to any evolving or then-existing convention for similar credit facilities syndicated and agented in the United States and denominated in such Alternative Currency for such alternative benchmark, and, in each case, including any mathematical or other adjustments to such benchmark giving due consideration to any evolving or then-existing convention for similar credit facilities syndicated and agented in the United States and denominated in such Alternative Currency for such benchmark (any such propose rate, including any adjustments thereto, being an "Alternative Currency Successor Rate"). Any such amendment shall become effective at 5:00 p.m. on the fifth (5^{th}) Business Day after the Administrative Agent shall have posted such proposed amendment to all Lenders and the Borrower unless, prior to such time, Lenders comprising the Required Lenders have delivered to the Administrative Agent written notice that such Required Lenders object to such amendment.

The Administrative Agent will promptly (in one or more notices) notify the Borrower and each Lender of the implementation of any Alternative Currency Successor Rate. Any Alternative Currency Successor Rate shall be applied in a manner consistent with market practice; provided, that, to the extent such market practice is not administratively feasible for the Administrative Agent, such Alternative Currency Successor Rate shall be applied in a manner as otherwise reasonably determined by the Administrative Agent. Notwithstanding anything else herein, if at any time any Alternative Currency Successor Rate as so determined would otherwise be less than zero, the Alternative Currency Successor Rate will be deemed to be zero for the purposes of this Agreement and the other Loan Documents.

In connection with the implementation of an Alternative Currency Successor Rate, the Administrative Agent will have the right to make Alternative Currency Conforming Changes from time to time and, notwithstanding anything to the contrary herein or in any other Loan Document, any amendments implementing such Alternative Currency Conforming Changes will become effective without any further

action or consent of any other party to this Agreement; provided, that, with respect to any such amendment effected, the Administrative Agent shall post each such amendment implementing such Alternative Currency Conforming Changes to the Borrower and the Lenders reasonably promptly after such amendment becomes effective.

For purposes of this Section 3.03(c), those Lenders that either have not made, or do not have an obligation under this Agreement to make, Loans denominated in the applicable Alternative Currency shall be excluded from any determination of Required Lenders for purposes of the establishment of an Alternative Currency Successor Rate with respect to Alternative Currency.

Section 3.04 Increased Costs.

(a) Increased Costs Generally. If any Change in Law shall:

(i) impose, modify or deem applicable any reserve, special deposit, compulsory loan, insurance charge or similar requirement against assets of, deposits with or for the account of, or credit extended or participated in by, any Lender or the L/C Issuer;

(ii) subject any Recipient to any Taxes (other than (A) Indemnified Taxes and (B) Excluded Taxes) on its loans, loan principal, letters of credit, commitments, or other obligations, or its deposits, reserves, other liabilities or capital attributable thereto; or

(iii) impose on any Lender or the L/C Issuer or the applicable interbank market any other condition, cost or expense affecting this Agreement or Term SOFR Loans or Alternative Currency Loans made by such Lender or any Letter of Credit or participation therein;

and the result of any of the foregoing shall be to increase the cost to such Lender of making, converting to, continuing or maintaining any Loan (or of maintaining its obligation to make any such Loan), or to increase the cost to such Lender or the L/C Issuer of participating in, issuing or maintaining any Letter of Credit (or of maintaining its obligation to participate in or to issue any Letter of Credit), or to reduce the amount of any sum received or receivable by such Lender or the L/C Issuer hereunder (whether of principal, interest or any other amount) then, upon request of such Lender or the L/C Issuer, the Borrower will pay to such Lender or the L/C Issuer, as the case may be, such additional amount or amounts as will compensate such Lender or the L/C Issuer, as the case may be, for such additional costs incurred or reduction suffered.

(b) Capital Requirements. If any Lender or the L/C Issuer reasonably determines that any Change in Law affecting such Lender or the L/C Issuer or any Lending Office of such Lender or such Lender's or the L/C Issuer's holding company, if any, regarding capital or liquidity requirements has or would have the effect of reducing the rate of return on such Lender's or the L/C Issuer's capital or on the capital of such Lender's or the L/C Issuer's holding company, if any, as a consequence of this Agreement, the Commitment of such Lender or the Loans made by, or participations in Letters of Credit or Swing Line Loans held by, such Lender, or the Letters of Credit issued by the L/C Issuer, to a level below that which such Lender or the L/C Issuer or such Lender's or the L/C Issuer's holding company could have achieved but for such Change in Law (taking into consideration such Lender's or the L/C Issuer's policies and the policies of such Lender's or the L/C Issuer's holding company with respect to capital adequacy and liquidity), then from time to time the Borrower will pay to such Lender or the L/C Issuer, as the case may be, such additional amount or amounts as will compensate such Lender or the L/C Issuer or such Lender's or the L/C Issuer's holding company for any such reduction suffered.

(c) Certificates for Reimbursement. A certificate of a Lender or the L/C Issuer setting forth in reasonable detail calculation of the amount or amounts necessary to compensate such Lender or the L/C

Issuer or its holding company, as the case may be, as specified in subsection (a) or (b) of this Section 3.04 and delivered to the Borrower shall be conclusive absent manifest error. The Borrower shall pay such Lender or the L/C Issuer, as the case may be, the amount shown as due on any such certificate within ten (10) days after receipt thereof.

(d) [Reserved].

(e) Delay in Requests. Failure or delay on the part of any Lender or the L/C Issuer to demand compensation pursuant to the foregoing provisions of this Section 3.04 shall not constitute a waiver of such Lender's or the L/C Issuer's right to demand such compensation; provided, that, the Borrower shall not be required to compensate a Lender or the L/C Issuer pursuant to the foregoing provisions of this Section 3.04 for any increased costs incurred or reductions suffered more than six (6) months prior to the date that such Lender or the L/C Issuer, as the case may be, notifies the Borrower of the Change in Law giving rise to such increased costs or reductions and of such Lender's or the L/C Issuer's intention to claim compensation therefor (except that, if the Change in Law giving rise to such increased costs or reductions is retroactive, then the six-month period referred to above shall be extended to include the period of retroactive effect thereof).

Section 3.05 Compensation for Losses. Upon demand of any Lender (with a copy to the Administrative Agent) from time to time, the Borrower shall promptly compensate such Lender for and hold such Lender harmless from any loss (other than loss of Applicable Rate), cost or expense incurred by it as a result of:

(a) any continuation, conversion, payment or prepayment of any Loan other than a Base Rate Committed Loan on a day other than the last day of the Interest Period, relevant Interest Payment Date or payment period, as applicable, for such Loan (whether voluntary, mandatory, automatic, by reason of acceleration, or otherwise);

(b) any failure by the Borrower (for a reason other than the failure of such Lender to make a Loan) to prepay, borrow, continue or convert any Loan other than a Base Rate Committed Loan on the date or in the amount notified by the Borrower;

(c) any failure by the Borrower to make payment of any Alternative Currency Loan or drawing under any Letter of Credit (or interest due thereon) denominated in an Alternative Currency on its scheduled due date or any payment thereof in a different currency; or

(d) any assignment of a Term SOFR Loan or an Alternative Currency Term Rate Loan on a day other than the last day of the Interest Period therefor as a result of a request by the Borrower pursuant to Section 10.13;

excluding any loss of anticipated profits and including any loss or expense arising from the liquidation or reemployment of funds obtained by it to maintain such Loan or from fees payable to terminate the deposits from which such funds were obtained. The Borrower shall also pay any customary administrative fees charged by such Lender in connection with the foregoing.

Section 3.06 Mitigation Obligations; Replacement of Lenders.

(a) Designation of a Different Lending Office. If any Lender requests compensation under Section 3.04, or requires the Borrower to pay any Indemnified Taxes or additional amounts to any Lender, the L/C Issuer or any Governmental Authority for the account of any Lender or the L/C Issuer pursuant to Section 3.01, or if any Lender gives a notice pursuant to Section 3.02, then at the request of the Borrower

such Lender or the L/C Issuer shall, as applicable, use reasonable efforts to designate a different Lending Office for funding or booking its Loans hereunder or to assign its rights and obligations hereunder to another of its offices, branches or affiliates, if, in the judgment of such Lender or the L/C Issuer, such designation or assignment (i) would eliminate or reduce amounts payable pursuant to Section 3.01 or 3.04, as the case may be, in the future, or eliminate the need for the notice pursuant to Section 3.02, as applicable, and (ii) in each case, would not subject such Lender or the L/C Issuer, as the case may be, to any unreimbursed cost or expense and would not otherwise be disadvantageous to such Lender or the L/C Issuer, as the case may be. The Borrower hereby agrees to pay all reasonable costs and expenses incurred by any Lender or the L/C Issuer in connection with any such designation or assignment.

(b) Replacement of Lenders. If any Lender requests compensation under Section 3.04, or if the Borrower is required to pay any Indemnified Taxes or additional amounts to any Lender or any Governmental Authority for the account of any Lender pursuant to Section 3.01 and, in each case, such Lender has declined or is unable to designate a different lending office in accordance with Section 3.06(a), the Borrower may replace such Lender in accordance with Section 10.13.

Section 3.07 Survival. All of the Borrower's obligations under this Article III shall survive termination of the Aggregate Commitments, repayment of all other Obligations hereunder, and resignation of the Administrative Agent.

ARTICLE IV.
CONDITIONS PRECEDENT TO CREDIT EXTENSIONS

Section 4.01 Conditions Precedent to Effectiveness. This Agreement shall become effective upon, and the obligation of the L/C Issuer and each Lender to make its initial Credit Extension hereunder is subject to, the satisfaction of the following conditions precedent:

(a) The Administrative Agent's receipt of the following, each of which shall be originals or telecopies (followed promptly by originals) unless otherwise specified, each properly executed by a Responsible Officer of the Borrower (and, in the case of this Agreement, each Lender), if applicable, each dated the Closing Date (or, in the case of certificates of governmental officials, a recent date before the Closing Date) and each in form and substance reasonably satisfactory to the Administrative Agent and each of the Lenders:

(i) executed counterparts of this Agreement, sufficient in number for distribution to the Administrative Agent, each Lender, the L/C Issuer and the Borrower;

(ii) a Note executed by the Borrower in favor of each Lender requesting a Note;

(iii) such certificates of resolutions or other action, incumbency certificates and/or other certificates of Responsible Officers of the Borrower as the Administrative Agent may reasonably require evidencing the identity, authority and capacity of each Responsible Officer thereof authorized to act as a Responsible Officer in connection with this Agreement and the other Loan Documents to which the Borrower is a party;

(iv) such documents and certifications as the Administrative Agent may reasonably require to evidence that the Borrower is duly organized or formed, and that the Borrower is validly existing, in good standing and qualified to engage in business in the jurisdiction of its organization;

(v) a favorable opinion of Foley Hoag LLP, counsel to the Borrower, addressed to the Administrative Agent and each Lender, as to the matters set forth in Exhibit F and such other matters concerning the Borrower and the Loan Documents as the Required Lenders may reasonably request;

(vi) a certificate signed by a Responsible Officer of the Borrower certifying:
(A) that (i) no Default or Event of Default exists as of the Closing Date and (ii) the representations and warranties contained in Article V or any other Loan Document, or which are contained in any document furnished in connection herewith or therewith, are true and correct in all material respects on and as of the Closing Date except to the extent that such representations and warranties specifically refer to an earlier date, in which case they are true and correct in all material respects as of such earlier date (provided, that, any representation and warranty that is qualified as to "materiality", "Material Adverse Effect" or other similar language shall be true and correct (after giving effect to any qualification therein) in all respects); (B) that there has been no event or circumstance since the date of the Audited Financial Statements that has had or could be reasonably expected to have, either individually or in the aggregate, a Material Adverse Effect; and (C) as to the current Debt Ratings; and

(vii) such other certificates and documents, consents or opinions as the Administrative Agent reasonably may require, as set forth in the list of closing documents set forth in Exhibit H.

(b) The Administrative Agent and each Lender shall have received from the Borrower such documentation and other information reasonably requested by the Administrative Agent or such Lender in order to comply with applicable law, including the PATRIOT Act. If the Borrower qualifies as a "legal entity customer" under the Beneficial Ownership Regulation, each Lender shall have received, to the extent requested by such Lender, a Beneficial Ownership Certification in relation to the Borrower.

(c) All existing indebtedness under the Existing Credit Agreement shall be repaid in full, and all commitments in connection therewith shall be terminated.

(d) Any fees required to be paid on or before the Closing Date shall have been paid.

(e) Unless waived by the Administrative Agent, the Borrower shall have paid all reasonable fees, charges and disbursements of counsel to the Administrative Agent (directly to such counsel if requested by the Administrative Agent) to the extent invoiced prior to the Closing Date.

Without limiting the generality of the provisions of the last paragraph of Section 9.03, for purposes of determining compliance with the conditions specified in this Section 4.01, each Lender that has signed this Agreement shall be deemed to have consented to, approved or accepted or to be satisfied with, each document or other matter required thereunder to be consented to or approved by or acceptable or satisfactory to a Lender unless the Administrative Agent shall have received notice from such Lender prior to the proposed Closing Date specifying its objection thereto.

Section 4.02 Conditions to all Credit Extensions. The obligation of each Lender and the L/C Issuer to honor any Request for Credit Extension (other than a Committed Loan Notice requesting (x) a conversion of Term SOFR Loans to Base Rate Committed Loans, (y) a conversion of Base Rate Committed Loans to Term SOFR Loans, or (z) a continuation of Term SOFR Loans or Alternative Currency Term Rate Loans) is subject to the following conditions precedent:

(a) The representations and warranties of the Borrower contained in Article V or any other Loan Document, or which are contained in any document furnished at any time under or in connection herewith or therewith, shall be true and correct in all material respects on and as of the date of such Credit Extension, except (i) to the extent that such representations and warranties specifically refer to an earlier date, in which case they shall be true and correct in all material respects as of such earlier date, and except that for purposes of this Section 4.02, the representations and warranties contained in Sections 5.05(a) and (b) shall be deemed to refer to the most recent statements furnished pursuant to Sections 6.01(a) and (b), respectively and (ii) the representations and warranties contained in Section 5.05(c) and Section 5.15 shall only be made by the Borrower on the date of the initial Credit Extension hereunder; provided, that, any representation and warranty that is qualified as to "materiality", "Material Adverse Effect" or similar language shall be true and correct (after giving effect to any qualification therein) in all respects.

(b) No Default shall exist, or would result from such proposed Credit Extension or from the application of the proceeds thereof.

(c) The Administrative Agent and, if applicable, the L/C Issuer or the Swing Line Lender shall have received a Request for Credit Extension in accordance with the requirements hereof.

(d) In the case of a Credit Extension to be denominated in an Alternative Currency, such currency remains an Eligible Currency.

Each Request for Credit Extension (other than a Committed Loan Notice requesting (x) a conversion of Term SOFR Loans to Base Rate Committed Loans, (y) a conversion of Base Rate Committed Loans to Term SOFR Loans, or (z) a continuation of Term SOFR Loans or Alternative Currency Term Rate Loans) submitted by the Borrower shall be deemed to be a representation and warranty that the conditions specified in Sections 4.02(a) and (b) have been satisfied on and as of the date of the applicable Credit Extension.

ARTICLE V. REPRESENTATIONS AND WARRANTIES

The Borrower represents and warrants to the Administrative Agent, the L/C Issuer and the Lenders that:

Section 5.01 Existence, Qualification and Power. The Borrower and each Subsidiary (a) is duly organized or formed, validly existing and, as applicable, in good standing under the Laws of the jurisdiction of its incorporation or organization, (b) has all requisite power and authority and all requisite governmental licenses, authorizations, consents and approvals to (i) own or lease its assets and carry on its business and (ii) execute, deliver and perform its obligations under the Loan Documents to which it is a party, and (c) is duly qualified and is licensed and, as applicable, in good standing under the Laws of each jurisdiction where its ownership, lease or operation of properties or the conduct of its business requires such qualification or license; except in each case referred to in subsection (b)(i) or (c), to the extent that failure to do so could not reasonably be expected to have a Material Adverse Effect.

Section 5.02 Authorization; No Contravention. The execution, delivery and performance by the Borrower of each Loan Document to which it is party, have been duly authorized by all necessary corporate or other organizational action, and do not and will not (a) contravene the terms of any of the Borrower's Organization Documents, (b) conflict with or result in any breach or contravention of, or the creation of any Lien under, or require any payment to be made under (i) any material Contractual Obligation

to which the Borrower is a party or affecting the Borrower or the properties of the Borrower or any of its Subsidiaries or (ii) any order, injunction, writ or decree of any Governmental Authority or any arbitral award to which the Borrower or its property is subject, or (c) violate any Law.

Section 5.03 Governmental Authorization; Other Consents. No approval, consent, exemption, authorization, or other action by, or notice to, or filing with, any Governmental Authority or any other Person is necessary or required in connection with the execution, delivery or performance by, or enforcement against, the Borrower of this Agreement or any other Loan Document.

Section 5.04 Binding Effect. This Agreement has been, and each other Loan Document, when delivered hereunder, will have been, duly executed and delivered by the Borrower. This Agreement constitutes, and each other Loan Document when so delivered will constitute, a legal, valid and binding obligation of the Borrower, enforceable against the Borrower in accordance with its terms, subject to bankruptcy, insolvency, moratorium and other laws of general application affecting creditors and general principles of equity.

Section 5.05 Financial Statements; No Material Adverse Effect.

(a) The Audited Financial Statements (i) were prepared in accordance with GAAP consistently applied throughout the period covered thereby, except as otherwise expressly noted therein, (ii) fairly present in all material respects the financial condition of the Borrower and its Subsidiaries as of the date thereof and their results of operations for the period covered thereby in accordance with GAAP consistently applied throughout the period covered thereby, except as otherwise expressly noted therein, and (iii) show all material indebtedness and other material liabilities, direct or contingent, of the Borrower and its Subsidiaries as of the date thereof, including material liabilities for taxes, material commitments and indebtedness.

(b) The unaudited consolidated balance sheet of the Borrower and its Subsidiaries dated September 30, 2019, and the related consolidated statements of income or operations and cash flows for the fiscal quarter ended on that date (the "Interim Financial Statements") (i) were prepared in accordance with GAAP consistently applied throughout the period covered thereby, except as otherwise expressly noted therein, and (ii) fairly present in all material respects the financial condition of the Borrower and its Subsidiaries as of the date thereof and their results of operations for the period covered thereby, subject, in the case of subsections (i) and (ii) above, to the absence of footnotes and to normal year-end audit adjustments.

(c) Since the date of the Audited Financial Statements, there has been no event or circumstance, either individually or in the aggregate, that has had or could reasonably be expected to have a Material Adverse Effect.

Section 5.06 Litigation. There are no actions, suits, proceedings, claims or disputes pending or, to the knowledge of the Borrower after due and diligent investigation, threatened or contemplated (to the extent contemplated in writing), at law, in equity, in arbitration or before any Governmental Authority, by or against the Borrower or any of its Subsidiaries or against any of their properties or revenues that (a) purport to affect or pertain to this Agreement or any other Loan Document, or any of the transactions contemplated hereby, or (b) except for litigation disclosed in the Borrower's Annual Report on Form 10-K for the year ended December 31, 2018 or in any subsequent disclosures filed with the SEC for any period ending on or prior to September 30, 2019, either individually or in the aggregate could reasonably be expected to have a Material Adverse Effect.

Section 5.07 No Default. Neither the Borrower nor any Subsidiary is in default under or with respect to any material Contractual Obligation that could, either individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. No Default has occurred and is continuing or would result from the consummation of the transactions contemplated by this Agreement or any other Loan Document.

Section 5.08 Environmental Compliance. The Borrower and its Subsidiaries conduct in the ordinary course of business a review of the effect of existing Environmental Laws and claims alleging potential liability or responsibility for violation of any Environmental Law or their respective businesses, operations and properties, and as a result thereof the Borrower has reasonably concluded that such Environmental Laws and claims could not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

Section 5.09 Use of Proceeds. The Borrower and its Subsidiaries will have only used the proceeds of the Credit Extensions as permitted by Section 6.10.

Section 5.10 Taxes. The Borrower and its Subsidiaries have filed all Federal, state and other material tax returns and reports required to be filed, and have paid all Federal, state and other material taxes, assessments, fees and other governmental charges levied or imposed upon them or their properties, income or assets otherwise due and payable, except those which are being contested in good faith by appropriate proceedings diligently conducted and for which adequate reserves have been provided in accordance with GAAP. There is no proposed tax assessment against the Borrower or any Subsidiary that would reasonably be expected to have a Material Adverse Effect. As of the Closing Date, neither the Borrower nor any Subsidiary is party to any tax sharing agreement.

Section 5.11 ERISA Compliance.

(a) Each Plan is in compliance in all material respects with the applicable provisions of ERISA, the Code and other Federal or state Laws, except to the extent failure to so comply would not reasonably be expected to result in a Material Adverse Effect. Each Pension Plan that is intended to be a qualified plan under Section 401(a) of the Code has received a favorable determination or opinion letter from the IRS to the effect that the form of such Plan is qualified under Section 401(a) of the Code and the trust related thereto has been determined by the IRS to be exempt from federal income tax under Section 501(a) of the Code or an application for such a letter is currently being processed by the IRS. To the best knowledge of the Borrower, nothing has occurred that would prevent, or cause the loss of, such tax-qualified status.

(b) There are no pending or, to the best knowledge of the Borrower, threatened claims, actions or lawsuits, or action by any Governmental Authority, with respect to any Plan that could be reasonably be expected to have a Material Adverse Effect. There has been no non-exempt prohibited transaction or violation of the fiduciary responsibility rules of the ERISA or the Code with respect to any Plan that has resulted or could reasonably be expected to result in a Material Adverse Effect.

(c) (i) No ERISA Event has occurred or is reasonably expected to occur, which has resulted or could reasonably be expected to constitute or result in an ERISA Event with respect to any Pension Plan;
(ii) the Borrower and each ERISA Affiliate have met all applicable requirements under the Pension Funding Rules in respect of each Pension Plan, and no waiver of the minimum funding standards under the Pension Funding Rules has been applied for or obtained; (iii) neither the Borrower nor any ERISA Affiliate has incurred any material liability to the PBGC other than for the payment of premiums, and there are no material premium payments which have become due that are unpaid; and (iv) neither the Borrower nor any ERISA Affiliate has engaged in a transaction that could be subject to Section 4069 or Section 4212(c) of ERISA.

(d) As of the Closing Date, the Borrower is not and will not be using "plan assets" (within the meaning of Section 3(42) of ERISA or otherwise) of one or more Benefit Plans with respect to the Borrower's entrance into, participation in, administration of and performance of the Loans, the Letters of Credit, the Commitments or this Agreement.

Section 5.12 Margin Regulations; Investment Company Act.

(a) The Borrower is not engaged and will not engage, principally or as one of its important activities, in the business of purchasing or carrying margin stock (within the meaning of Regulation U issued by the FRB), or extending credit for the purpose of purchasing or carrying margin stock in a manner that would result in a violation of Regulation U of the FRB.

(b) None of the Borrower, any Person Controlling the Borrower, or any Subsidiary is or is required to be registered as an "investment company" under the Investment Company Act of 1940.

Section 5.13 Disclosure. The Borrower has disclosed to the Administrative Agent and the Lenders all agreements, instruments and corporate or other restrictions to which it or any of its Subsidiaries is subject, and all other matters known to it, that, individually or in the aggregate, could reasonably be expected to result in a Material Adverse Effect. No report, financial statement, certificate or other information furnished (whether in writing or orally) by or on behalf of the Borrower to the Administrative Agent or any Lender in connection with the transactions contemplated hereby and the negotiation of this Agreement or delivered hereunder or under any other Loan Document (in each case, as modified or supplemented by other information so furnished) contains any material misstatement of fact or omits to state any material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, that, with respect to projected financial information, the Borrower represents only that such information was prepared in good faith based upon assumptions believed to be reasonable at the time. As of the Closing Date, the information included in any Beneficial Ownership Certification delivered on or prior to the Closing Date, if applicable, is true and correct in all respects.

Section 5.14 Compliance with Laws. The Borrower and each Subsidiary is in compliance in all material respects with the requirements of all Laws (including the PATRIOT Act) and all orders, writs, injunctions and decrees applicable to it or to its properties, except in such instances in which (a) such requirement of Law or order, writ, injunction or decree is being contested in good faith by appropriate proceedings diligently conducted or (b) the failure to comply therewith, either individually or in the aggregate, could not reasonably be expected to have a Material Adverse Effect.

Section 5.15 Solvency. The Borrower and its Subsidiaries, taken as a whole, are Solvent.

Section 5.16 Sanctions. Neither the Borrower, nor any of its Subsidiaries, nor, to the knowledge of the Borrower and its Subsidiaries, any director, officer, employee, agent, affiliate or representative thereof, is an individual or entity that is, or is owned or controlled by one or more individuals or entities that are, (a) currently the subject of any Sanctions, (b) included on OFAC's List of Specially Designated Nationals, HMT's Consolidated List of Financial Sanctions Targets and the Investment Ban List, or any similar list enforced by any other relevant sanctions authority or (c) located (to the extent the same would violate Sanctions), organized or resident in a Designated Jurisdiction. The Borrower and its Subsidiaries have instituted and maintain policies and procedures designed to promote and achieve compliance with such laws.

Section 5.17 Anti-Corruption Laws. The Borrower and its Subsidiaries have conducted their businesses in compliance in all material respects with the United States Foreign Corrupt Practices Act of

1977, the UK Bribery Act 2010, and other applicable anti-corruption legislation in other jurisdictions in which the Borrower and its Subsidiaries conduct business, and have instituted and maintained policies and procedures designed to promote and achieve compliance with such laws.

Section 5.18 Affected Financial Institutions. The Borrower is not an Affected Financial Institution.

Section 5.19 Covered Entities. The Borrower is not a Covered Entity.

ARTICLE VI. AFFIRMATIVE COVENANTS

So long as any Lender shall have any Commitment hereunder, any Loan or other Obligation hereunder shall remain unpaid or unsatisfied, or any Letter of Credit shall remain outstanding, the Borrower shall, and shall (except in the case of the covenants set forth in Sections 6.01, 6.02, and 6.03) cause each Subsidiary to:

Section 6.01 Financial Statements. Deliver to the Administrative Agent (for distribution to the Lenders and the L/C Issuer), in form and detail reasonably satisfactory to the Administrative Agent and the Required Lenders:

(a) as soon as available, but in any event within ninety (90) days after the end of each fiscal year of the Borrower (commencing with the fiscal year ending December 31, 2019), a consolidated balance sheet of the Borrower and its Subsidiaries as at the end of such fiscal year, and the related consolidated statements of income or operations, shareholders' equity and cash flows for such fiscal year, setting forth in each case in comparative form the figures for the previous fiscal year, all in reasonable detail and prepared in accordance with GAAP, audited and accompanied by a report and opinion of an independent certified public accountant of nationally recognized standing reasonably acceptable to the Required Lenders, which report and opinion shall be prepared in accordance with generally accepted auditing standards and shall not be subject to any "going concern" or like qualification or exception or any qualification or exception as to the scope of such audit; and

(b) as soon as available, but in any event within forty-five (45) days after the end of each of the first three (3) fiscal quarters of each fiscal year of the Borrower, a consolidated balance sheet of the Borrower and its Subsidiaries as at the end of such fiscal quarter, and the related consolidated statements of income or operations and cash flows for the portion of the Borrower's fiscal year then ended, setting forth in each case in comparative form, as applicable, the figures for the corresponding fiscal quarter of the previous fiscal year or the corresponding portion of the previous fiscal year, all in reasonable detail, certified by the chief executive officer, chief financial officer, treasurer or controller that is a Responsible Officer of the Borrower as fairly presenting in all material respects the financial condition, results of operations and cash flows of the Borrower and its Subsidiaries in accordance with GAAP, subject only to normal year-end audit adjustments and the absence of footnotes.

As to any information contained in materials furnished pursuant to Section 6.02(b), the Borrower shall not be separately required to furnish such information under subsection (a) or (b) above, but the foregoing shall not be in derogation of the obligation of the Borrower to furnish the information and materials described in subsections (a) and (b) above at the times specified therein.

Section 6.02 Certificates; Other Information. Deliver to the Administrative Agent (for distribution to the Lenders), in form and detail reasonably satisfactory to the Administrative Agent and the Required Lenders:

(a) concurrently with the delivery of the financial statements referred to in Sections 6.01(a) and (b) (other than with respect to delivery of the financial statements referred to in Section 6.01(a) for the fiscal year of the Borrower ending December 31, 2019), a duly completed Compliance Certificate signed by the chief executive officer, chief financial officer, treasurer or controller that is a Responsible Officer of the Borrower (which delivery may, unless the Administrative Agent or a Lender requests executed originals, be by electronic communication including fax or email and shall be deemed to be an original authentic counterpart thereof for all purposes);

(b) promptly after the same are available, copies of each annual report, proxy or financial statement or other report or communication sent to the stockholders of the Borrower, and copies of all annual, regular, periodic and special reports and registration statements which the Borrower may file or be required to file with the SEC under Section 13 or 15(d) of the Securities Exchange Act of 1934, and not otherwise required to be delivered to the Administrative Agent pursuant hereto;

(c) promptly following any request therefor, any information and documentation reasonably requested by the Administrative Agent or any Lender for purposes of compliance with applicable "know your customer" and anti-money-laundering rules and regulations, including the PATRIOT Act and the Beneficial Ownership Regulation;

(d) promptly following any change in the information provided in any Beneficial Ownership Certification previously delivered to any Lender that would result in a change to the list of beneficial owners identified in such Beneficial Ownership Certification, an updated Beneficial Ownership Certification; and

(e) promptly, such additional information regarding the business, financial or corporate affairs of the Borrower or any Subsidiary, or compliance with the terms of the Loan Documents, as the Administrative Agent, the L/C Issuer or any Lender may from time to time reasonably request.

Documents required to be delivered pursuant to Section 6.01(a) or (b) or Section 6.02(b) (to the extent any such documents are included in materials otherwise filed with the SEC) may be delivered electronically and if so delivered, shall be deemed to have been delivered on the date (i) on which the Borrower posts such documents, or provides a link thereto on the Borrower's website on the Internet at the website address listed on Schedule 10.02, or (ii) on which such documents are posted on the Borrower's behalf on an Internet or intranet website, if any, to which each Lender, the L/C Issuer and the Administrative Agent have access (whether a commercial, third-party website or whether sponsored by the Administrative Agent); provided, that: (A) the Borrower shall deliver paper copies of such documents to the Administrative Agent, the L/C Issuer or any Lender that requests the Borrower to deliver such paper copies until a written request to cease delivering paper copies is given by the Administrative Agent, the L/C Issuer or such Lender and (B) the Borrower shall notify the Administrative Agent (by facsimile or electronic mail) of the posting of any such documents and provide to the Administrative Agent by electronic mail electronic versions (i.e., soft copies) of such documents. The Administrative Agent shall have no obligation to request the delivery of or to maintain copies of the documents referred to above, and in any event shall have no responsibility to monitor compliance by the Borrower with any such request for delivery by a Lender, and each Lender shall be solely responsible for requesting delivery to it or maintaining its copies of such documents.

The Borrower hereby acknowledges that (a) the Administrative Agent and/or the Arranger may, but shall not be obligated to, make available to the Lenders and the L/C Issuer materials and/or information provided by or on behalf of the Borrower hereunder (collectively, "Borrower Materials") by posting the Borrower Materials on Debt Domain, IntraLinks, Syndtrak or another similar electronic transmission system (the "Platform") and (b) certain of the Lenders (each, a "Public Lender") may have personnel who do not wish to receive material non-public information with respect to the Borrower or its Affiliates, or the respective securities of any of the foregoing, and who may be engaged in investment and other market-

related activities with respect to such Person's securities. The Borrower hereby agrees that (w) all Borrower Materials that are to be made available to Public Lenders shall be clearly and conspicuously marked "PUBLIC" which, at a minimum, shall mean that the word "PUBLIC" shall appear prominently on the first page thereof, (x) by marking Borrower Materials "PUBLIC," the Borrower shall be deemed to have authorized the Administrative Agent, the Arranger, the L/C Issuer and the Lenders to treat such Borrower Materials as not containing any material non-public information with respect to the Borrower or its securities for purposes of United States Federal and state securities laws (provided, that, to the extent such Borrower Materials constitute Information, they shall be treated as set forth in Section 10.07), (y) all Borrower Materials marked "PUBLIC" are permitted to be made available through a portion of the Platform designated "Public Side Information," and (z) the Administrative Agent and the Arranger shall be entitled to treat any Borrower Materials that are not marked "PUBLIC" as being suitable only for posting on a portion of the Platform not designated "Public Side Information."

Section 6.03 Notices. Promptly notify the Administrative Agent (for further notification to each Lender):

(a) of the occurrence of any Default;

(b) of any matter that has resulted or could reasonably be expected to result in a Material Adverse Effect, including such matters arising from (i) breach or non-performance of, or any default under, a Contractual Obligation of the Borrower or any Subsidiary, (ii) any dispute, litigation, investigation, proceeding or suspension between the Borrower or any Subsidiary and any Governmental Authority, or
(iii) the commencement of, or any material development in, any litigation or proceeding affecting the Borrower or any Subsidiary, including pursuant to any applicable Environmental Laws;

(c) of the occurrence of any ERISA Event; and

(d) of any announcement by Moody's or S&P of any change in a Debt Rating.

Each notice pursuant to this Section 6.03 (other than Section 6.03(d)) shall be accompanied by a statement of a Responsible Officer of the Borrower setting forth details of the occurrence referred to therein and stating what action the Borrower has taken and proposes to take with respect thereto. Each notice pursuant to Section 6.03(a) shall describe with particularity any and all provisions of this Agreement and any other Loan Document that have been breached.

Section 6.04 Payment of Obligations. Pay and discharge as the same shall become due and payable, all its obligations and liabilities, including (a) all material tax liabilities, assessments and governmental charges or levies upon it or its properties or assets, unless the same are being contested in good faith by appropriate proceedings diligently conducted and adequate reserves in accordance with GAAP are being maintained by the Borrower or such Subsidiary; (b) all lawful claims which, if unpaid, would by law become a Lien upon its property; and (c) all Indebtedness, as and when due and payable, but subject to any subordination provisions contained in any instrument or agreement evidencing such Indebtedness.

Section 6.05 Preservation of Existence, Etc. (a) Preserve, renew and maintain in full force and effect its legal existence and good standing under the Laws of the jurisdiction of its organization except in a transaction permitted by Section 7.03; (b) take all reasonable action to maintain all rights, privileges, permits, licenses and franchises necessary or desirable in the normal conduct of its business, except to the extent that failure to do so could not reasonably be expected to have a Material Adverse Effect; and (c) preserve or renew all of its registered patents, trademarks, trade names and service marks, the non-preservation of which could reasonably be expected to have a Material Adverse Effect.

Section 6.06 Maintenance of Properties. (a) Maintain, preserve and protect all of its material properties and equipment necessary in the operation of its business in good working order and condition, ordinary wear and tear excepted; and (b) make all necessary repairs thereto and renewals and replacements thereof except where the failure to do so could not reasonably be expected to have a Material Adverse Effect.

Section 6.07 Maintenance of Insurance. Maintain with financially sound and reputable insurance companies not Affiliates of the Borrower, insurance with respect to its properties and business against loss or damage of the kinds customarily insured against by Persons engaged in the same or similar business, of such types and in such amounts as are customarily carried under similar circumstances by such other Persons.

Section 6.08 Compliance with Laws. Comply in all material respects with the requirements of all Laws (including Environmental Laws) and all orders, writs, injunctions and decrees applicable to it or to its business or property, except in such instances in which (a) such requirement of Law or order, writ, injunction or decree is being contested in good faith by appropriate proceedings diligently conducted, or
(b) the failure to comply therewith could not reasonably be expected to have a Material Adverse Effect.

Section 6.09 Books and Records. Maintain proper books of record and account, in which full, true and correct entries in conformity with GAAP consistently applied shall be made of all financial transactions and matters involving the assets and business of the Borrower or such Subsidiary, as the case may be.

Section 6.10 Use of Proceeds. Use the proceeds of the Credit Extensions to refinance certain existing indebtedness (including indebtedness under the Existing Credit Agreement) and for other general corporate purposes, and not in contravention of any Law or of any Loan Document and not to purchase or carry margin stock (within the meaning of Regulation U of the FRB) or to extend credit to others for the purpose of purchasing or carrying margin stock or to refund indebtedness originally incurred for such purpose, in each case so as to result in a violation of Regulation U of the FRB.

Section 6.11 Anti-Corruption Laws. Conduct its businesses in compliance in all material respects with the United States Foreign Corrupt Practices Act of 1977, the UK Bribery Act 2010 and other applicable anti-corruption legislation in other jurisdictions in which the Borrower and its Subsidiaries conduct business and maintain policies and procedures designed to promote and achieve compliance by the Borrower, its Subsidiaries and their respective directors, officers, employees and agents with such laws.

Section 6.12 Sanctions. Maintain in effect and enforce policies and procedures designed to ensure, in its reasonable judgment, compliance in all material respects by the Borrower, its Subsidiaries and their respective directors, officers, employees and agents with applicable Sanctions.

ARTICLE VII. NEGATIVE COVENANTS

So long as any Lender shall have any Commitment hereunder, any Loan or other Obligation hereunder shall remain unpaid or unsatisfied, or any Letter of Credit shall remain outstanding, the Borrower shall not, nor shall it permit any Subsidiary to:

Section 7.01 Liens. Directly or indirectly create, incur, assume or suffer to exist any Lien upon any of its property, assets or revenues, whether now owned or hereafter acquired, other than the following:

(a) Liens pursuant to any Loan Document;

(b) Liens existing on the Closing Date and listed on Schedule 7.01 and any renewals or extensions thereof; provided, that, (i) the property covered thereby is not changed, (ii) the amount secured or benefited thereby is not increased except as contemplated by Section 7.02(b), (iii) the direct or any contingent obligor with respect thereto is not changed, and (iv) any renewal or extension of the obligations secured or benefited thereby is permitted by Section 7.02(b);

(c) Liens for taxes, assessments, governmental charges or levies not yet due or which are being contested in good faith and by appropriate proceedings diligently conducted, if adequate reserves with respect thereto are maintained on the books of the applicable Person in accordance with GAAP;

(d) Landlord liens and carriers', warehousemen's, mechanics', materialmen's, repairmen's or other like Liens arising in the ordinary course of business which are not overdue for a period of more than sixty (60) days or which are being contested in good faith and by appropriate proceedings diligently conducted, if adequate reserves with respect thereto are maintained on the books of the applicable Person;

(e) pledges or deposits in the ordinary course of business in connection with workers' compensation, unemployment insurance and other social security legislation, other than any Lien imposed by ERISA;

(f) deposits to secure the performance of bids, trade contracts and leases (other than Indebtedness), statutory obligations, surety and appeal bonds, performance bonds and other obligations of a like nature incurred in the ordinary course of business;

(g) easements, rights-of-way, restrictions and other similar encumbrances affecting real property which, in the aggregate, are not substantial in amount, and which do not in any case materially detract from the value of the property subject thereto or materially interfere with the ordinary conduct of the business of the applicable Person;

(h) Liens securing judgments for the payment of money not constituting an Event of Default under Section 8.01(h);

(i) Liens securing Indebtedness permitted to be incurred by the Borrower's Subsidiaries under Section 7.02(e) (and Indebtedness of the same type incurred by the Borrower); provided, that, (i) such Liens do not at any time encumber any property other than the property financed by such Indebtedness and (ii) the Indebtedness secured thereby does not exceed the cost or fair market value, whichever is lower, of the property being acquired on the date of acquisition;

(j) leases or subleases granted to others not interfering in any material respect with the business of the Borrower or its Subsidiaries;

(k) Liens deemed to exist in connection with Investments in repurchase agreements;

(l) normal and customary rights of setoff upon deposits of cash in favor of banks or other depository institutions;

(m) Liens of a collection bank arising under Section 4.210 of the Uniform Commercial Code on items in the course of collection;

(n) Liens, if any, in favor of the Administrative Agent in Cash Collateral delivered pursuant to Section 2.14(a);

(o) Liens on specific assets acquired by the Borrower or any of its Subsidiaries after the Closing Date securing Indebtedness of the type described in Section 7.02(e); provided, that, such Liens existed on the property at the time of its acquisition or existed on the property of any Person at the time such Person became a Subsidiary, such Lien does not extend to or cover any other assets (other than proceeds or products thereof or accessions or additions thereto) and such Lien was not created in contemplation of such acquisition or such Person becoming a Subsidiary; and

(p) Liens securing other Indebtedness and other obligations; provided, that, the aggregate outstanding principal amount of such Indebtedness and other obligations secured by such Liens, when taken together (without duplication) with the aggregate outstanding principal amount of Indebtedness incurred in reliance on Section 7.02(h), shall not exceed an amount equal to thirty-five percent (35%) of Consolidated Net Worth.

Section 7.02 Subsidiary Indebtedness. Directly or indirectly create, incur, assume or suffer to exist any Indebtedness of any Subsidiary, except:

(a) Indebtedness under the Loan Documents;

(b) Indebtedness outstanding on the Closing Date and listed on Schedule 7.02 and any refinancings, refundings, renewals or extensions thereof with Indebtedness of a similar type; provided, that, the amount of such Indebtedness is not increased at the time of such refinancing, refunding, renewal or extension except by an amount equal to a reasonable premium or other reasonable amount paid, and fees and expenses reasonably incurred, in connection with such refinancing and by an amount equal to any existing commitments unutilized thereunder;

(c) Guarantees provided by any Subsidiary in respect of Indebtedness of any wholly-owned Subsidiary otherwise permitted by this Section 7.02;

(d) obligations (contingent or otherwise) of any Subsidiary existing or arising under any Swap Contract, provided, that, (i) such obligations are (or were) entered into by such Person in the ordinary course of business for the purpose of directly mitigating risks associated with liabilities, commitments, investments, assets, or property held or reasonably anticipated by such Person, or changes in the value of securities issued by such Person, and not for purposes of speculation or taking a "market view;" and (ii) such Swap Contract does not contain any provision exonerating the non-defaulting party from its obligation to make payments on outstanding transactions to the defaulting party;

(e) Indebtedness in respect of capital leases, Synthetic Lease Obligations and purchase money obligations for fixed or capital assets within the limitations set forth in Section 7.01(i); provided, that, the aggregate amount of all such Indebtedness at any one time outstanding shall not exceed $50,000,000;

(f) Indebtedness of Foreign Subsidiaries under daylight or overnight overdraft facilities with local lenders;

(g) intercompany Indebtedness between one Subsidiary and another and between the Borrower and any Subsidiary; and

(h) other Indebtedness; provided, that, that aggregate outstanding principal amount of such Indebtedness, when taken together (without duplication) with the aggregate outstanding principal amount of Indebtedness and other obligations secured by Liens incurred in reliance on Section 7.01(p), shall not exceed an amount equal to thirty-five percent (35%) of Consolidated Net Worth.

Section 7.03 Fundamental Changes. Directly or indirectly merge, dissolve, liquidate, consolidate with or into another Person, or Dispose of (whether in one transaction or in a series of transactions) all or substantially all of the assets of the Borrower and its Subsidiaries (whether now owned or hereafter acquired) to or in favor of any Person, except that, so long as no Default exists or would result therefrom:

(a) any Subsidiary may merge with: (i) the Borrower; provided, that, the Borrower shall be the continuing or surviving Person; or (ii) any one or more other Subsidiaries; provided, that, when any wholly- owned Subsidiary is merging with another Subsidiary, a wholly-owned Subsidiary shall be the continuing or surviving Person; and

(b) any Subsidiary may Dispose of all or substantially all of its assets (upon voluntary liquidation or otherwise) to the Borrower or to another Subsidiary; provided, that, if the transferor in such a transaction is a wholly-owned Subsidiary, then the transferee must either be the Borrower or a wholly- owned Subsidiary.

Section 7.04 Change in Nature of Business. Directly or indirectly engage in any material line of business substantially different from those lines of business conducted by the Borrower and its Subsidiaries on the Closing Date, or any business substantially related, incidental or complementary thereto, including additional therapeutic areas.

Section 7.05 Financial Covenant. Directly or indirectly permit the Consolidated Leverage Ratio as of the last day of any period of four (4) fiscal quarters of the Borrower to be greater than 3.50 to 1.0; provided, that, upon notice by the Borrower to the Administrative Agent in connection with the consummation of any acquisition permitted by this Agreement that occurs after the Closing Date with aggregate consideration (including the assumption or incurrence of Indebtedness in connection with such acquisition) equal to or in excess of $1,000,000,000, for each of the four (4) fiscal quarters of the Borrower immediately following the consummation of such acquisition (including the fiscal quarter of the Borrower in which such acquisition is consummated) (each such period of increase, a "Leverage Increase Period"), the maximum permitted Consolidated Leverage Ratio shall be increased to 4.00 to 1.0; provided, further, that, (a) there shall be no more than two Leverage Increase Periods during the term of this Agreement, (b) for the fiscal quarter of the Borrower immediately preceding the second Leverage Increase Period, the Consolidated Leverage Ratio as of the end of such fiscal quarter shall not be greater than 3.50 to 1.0, and
(c) each Leverage Increase Period shall only apply with respect to the calculation of the financial covenant pursuant to this Section 7.05.

Section 7.06 Sanctions. Directly or, to the knowledge of the Borrower, indirectly, use the proceeds of any Credit Extension, or lend, contribute or otherwise make available such Credit Extension or the proceeds of any Credit Extension to any Person, to fund any activities of or business with any individual or entity, or in any Designated Jurisdiction, that, at the time of such funding, is the subject of Sanctions, or in any other manner that will result in a violation by any Person (including any Person participating in the transaction, whether as a Lender, the Arranger, the Administrative Agent, the L/C Issuer, the Swing Line Lender or otherwise) of Sanctions.

Section 7.07 Anti-Corruption. Directly or, to the knowledge of the Borrower, indirectly use the proceeds of any Credit Extension for any purpose which would breach the United States Foreign Corrupt Practices Act of 1977, the UK Bribery Act 2010 or other applicable anti-corruption legislation in other jurisdictions in which the Borrower and its Subsidiaries conduct business.

ARTICLE VIII.
EVENTS OF DEFAULT AND REMEDIES

Section 8.01 Events of Default. Any of the following shall constitute an "Event of Default":

(a) Non-Payment. The Borrower fails to pay (i) when and as required to be paid herein and in the currency required hereunder, any amount of principal of any Loan or any L/C Obligation, or (ii) within three (3) days after the same becomes due, any interest on any Loan or on any L/C Obligation, or any fee due hereunder, or (iii) within five (5) days after the same becomes due, any other amount payable hereunder or under any other Loan Document; or

(b) Specific Covenants. The Borrower fails to perform or observe any term, covenant or agreement contained in any of Section 6.03(a), 6.03(b), 6.05(a) (as to legal existence) or 6.10 or Article VII; or

(c) Other Defaults. The Borrower fails to perform or observe any other covenant or agreement (not specified in subsection (a) or (b) above) contained in any Loan Document on its part to be performed or observed and such failure continues for thirty (30) days after receipt of written notice thereof by the Borrower from the Administrative Agent or the Required Lenders; or

(d) Representations and Warranties. Any representation, warranty, certification or statement of fact made or deemed made by or on behalf of the Borrower herein, in any other Loan Document, or in any document delivered in connection herewith or therewith shall be incorrect or misleading in any material respect when made or deemed made; or

(e) Cross-Default. (i) The Borrower or any Subsidiary (A) fails to make any payment when due (whether by scheduled maturity, required prepayment, acceleration, demand, or otherwise) in respect of any Indebtedness or Guarantee (other than Indebtedness hereunder and Indebtedness under Swap Contracts) having an aggregate principal amount (including undrawn committed or available amounts and including amounts owing to all creditors under any combined or syndicated credit arrangement) of more than the Threshold Amount, or (B) fails to observe or perform any other agreement or condition relating to any such Indebtedness or Guarantee described in the preceding subsection (A) or contained in any instrument or agreement evidencing, securing or relating thereto, or any other event occurs, the effect of which default or other event is to cause, or to permit the holder or holders of such Indebtedness or the beneficiary or beneficiaries of such Guarantee (or a trustee or agent on behalf of such holder or holders or beneficiary or beneficiaries) to cause, with the giving of notice if required, such Indebtedness to be demanded or to become due or to be repurchased, prepaid, defeased or redeemed (automatically or otherwise), or an offer to repurchase, prepay, defease or redeem such Indebtedness to be made, prior to its stated maturity, or such Guarantee to become payable or cash collateral in respect thereof to be demanded; or (ii) there occurs under any Swap Contract an Early Termination Date (as defined in such Swap Contract) resulting from (A) any event of default under such Swap Contract as to which the Borrower or any Subsidiary is the Defaulting Party (as defined in such Swap Contract) or (B) any Termination Event (as defined in such Swap Contract) under such Swap Contract as to which the Borrower or any Subsidiary is an Affected Party (as defined in such Swap Contract) and, in either event, the Swap Termination Value owed by the Borrower or such Subsidiary as a result thereof is greater than the Threshold Amount; or

(f) Insolvency Proceedings, Etc. The Borrower or any of its Material Subsidiaries institutes or consents to the institution of any proceeding under any Debtor Relief Law, or makes an assignment for the benefit of creditors; or applies for or consents to the appointment of any receiver, trustee, custodian, conservator, liquidator, rehabilitator or similar officer for it or for all or any material part of its property; or any receiver, trustee, custodian, conservator, liquidator, rehabilitator or similar officer is appointed without the application or consent of such Person and the appointment continues undischarged or unstayed for sixty (60) calendar days; or any proceeding under any Debtor Relief Law relating to any such Person or to all or

any material part of its property is instituted without the consent of such Person and continues undismissed or unstayed for sixty (60) calendar days, or an order for relief is entered in any such proceeding; or

(g) Inability to Pay Debts; Attachment. (i) The Borrower or any Material Subsidiary becomes unable or admits in writing its inability or fails generally to pay its debts as they become due, or (ii) any writ or warrant of attachment or execution or similar process is issued or levied against all or any material part of the property of any such Person and is not released, vacated or fully bonded within thirty (30) days after its issue or levy; or

(h) Judgments. There is entered against the Borrower or any Subsidiary one or more final judgments or orders for the payment of money in an aggregate amount (as to all such judgments or orders) exceeding the Threshold Amount (to the extent not covered by independent third-party insurance as to which the insurer does not dispute coverage) and (i) enforcement proceedings are commenced by any creditor upon such judgment or order, or (ii) there is a period of thirty (30) consecutive days during which a stay of enforcement of such judgment, by reason of a pending appeal or otherwise, is not in effect; or

(i) ERISA. (i) An ERISA Event occurs with respect to a Pension Plan or Multiemployer Plan which has resulted or could reasonably be expected to result in liability of the Borrower under Title IV of ERISA to the Pension Plan, Multiemployer Plan or the PBGC in an aggregate amount in excess of the Threshold Amount, or (ii) the Borrower or any ERISA Affiliate fails to pay when due, after the expiration of any applicable grace period, any installment payment with respect to its withdrawal liability under Section 4201 of ERISA under a Multiemployer Plan in an aggregate amount in excess of the Threshold Amount; or

(j) Invalidity of Loan Documents. The Loan Documents, at any time after their execution and delivery and for any reason other than as expressly permitted hereunder or thereunder or satisfaction in full of all the Obligations, cease to be in full force and effect; or the Borrower or any other Person contests in any manner the validity or enforceability of the Loan Documents; or the Borrower denies that it has any or further liability or obligation under the Loan Documents, or purports to revoke, terminate or rescind the Loan Documents; or

(k) Change of Control. There occurs any Change of Control.

Section 8.02 Remedies Upon Event of Default. If any Event of Default occurs and is continuing, the Administrative Agent shall, at the request of, or may, with the consent of, the Required Lenders, take any or all of the following actions:

(a) declare the commitment of each Lender to make Loans and any obligation of the L/C Issuer to make L/C Credit Extensions to be terminated, whereupon such commitments and obligation shall be terminated;

(b) declare the unpaid principal amount of all outstanding Loans, all interest accrued and unpaid thereon, and all other amounts owing or payable hereunder or under any other Loan Document to be immediately due and payable, without presentment, demand, protest or other notice of any kind, all of which are hereby expressly waived by the Borrower;

(c) require that the Borrower Cash Collateralize the L/C Obligations (in an amount equal to the Minimum Collateral Amount with respect thereto); and

(d) exercise on behalf of itself, the Lenders and the L/C Issuer all rights and remedies available to it, the Lenders and the L/C Issuer under the Loan Documents;

provided, that, upon the occurrence of an actual or deemed entry of an order for relief with respect to the Borrower under the Bankruptcy Code of the United States, the obligation of each Lender to make Loans and any obligation of the L/C Issuer to make L/C Credit Extensions shall automatically terminate, the unpaid principal amount of all outstanding Loans and all interest and other amounts as aforesaid shall automatically become due and payable, and the obligation of the Borrower to Cash Collateralize the L/C Obligations as aforesaid shall automatically become effective, in each case without further act of the Administrative Agent or any Lender.

Section 8.03 Application of Funds. After the exercise of remedies provided for in Section 8.02 (or after the Loans have automatically become immediately due and payable and the L/C Obligations have automatically been required to be Cash Collateralized as set forth in the proviso to Section 8.02), or if at any time insufficient funds are received by and available to the Administrative Agent to pay fully all Obligations then due hereunder, any amounts received on account of the Obligations shall be applied by the Administrative Agent in the following order:

First, to payment of that portion of the Obligations constituting fees, indemnities, expenses and other amounts (including reasonable fees, charges and disbursements of counsel to the Administrative Agent and amounts payable under Article III) payable to the Administrative Agent in its capacity as such;

Second, to payment of that portion of the Obligations constituting fees, indemnities and other amounts (other than principal, interest and Letter of Credit Fees) payable to the Lenders and the L/C Issuer (including reasonable fees, charges and disbursements of counsel to the respective Lenders and the L/C Issuer to the extent the Borrower is obligated to reimburse such amounts and amounts payable under Article III), ratably among them in proportion to the respective amounts described in this clause Second payable to them;

Third, to payment of that portion of the Obligations constituting accrued and unpaid Letter of Credit Fees and interest on the Loans, L/C Borrowings and other Obligations, ratably among the Lenders and the L/C Issuer in proportion to the respective amounts described in this clause Third payable to them;

Fourth, to payment of that portion of the Obligations constituting unpaid principal of the Loans and L/C Borrowings, ratably among the Lenders and the L/C Issuer in proportion to the respective amounts described in this clause Fourth held by them;

Fifth, to the Administrative Agent, for the account of the L/C Issuer, to Cash Collateralize that portion of L/C Obligations comprised of the aggregate undrawn amount of Letters of Credit; and

Last, the balance, if any, after all of the Obligations have been indefeasibly paid in full, to the Borrower or as otherwise required by Law.

Subject to Section 2.03(c) and Section 2.14, amounts used to Cash Collateralize the aggregate undrawn amount of Letters of Credit pursuant to clause Fifth above shall be applied to satisfy drawings under such Letters of Credit as they occur. If any amount remains on deposit as Cash Collateral after all Letters of Credit have either been fully drawn or expired, such remaining amount shall be applied to the other Obligations, if any, in the order set forth above.

ARTICLE IX. ADMINISTRATIVE AGENT

Section 9.01 Appointment and Authority. Each of the Lenders and the L/C Issuer hereby irrevocably appoints Bank of America to act on its behalf as the Administrative Agent hereunder and under

the other Loan Documents and authorizes the Administrative Agent to take such actions on its behalf and to exercise such powers as are delegated to the Administrative Agent by the terms hereof or thereof, together with such actions and powers as are reasonably incidental thereto. Except with respect to Sections 9.06, the provisions of this Article are solely for the benefit of the Administrative Agent, the Lenders and the L/C Issuer, and the Borrower shall not have rights as a third party beneficiary of any of such provisions. It is understood and agreed that the use of the term "agent" herein or in any other Loan Documents (or any other similar term) with reference to the Administrative Agent is not intended to connote any fiduciary or other implied (or express) obligations arising under agency doctrine of any applicable Law. Instead such term is used as a matter of market custom, and is intended to create or reflect only an administrative relationship between contracting parties.

Section 9.02 Rights as a Lender. The Person serving as the Administrative Agent hereunder shall have the same rights and powers in its capacity as a Lender as any other Lender and may exercise the same as though it were not the Administrative Agent and the term "Lender" or "Lenders" shall, unless otherwise expressly indicated or unless the context otherwise requires, include the Person serving as the Administrative Agent hereunder in its individual capacity. Such Person and its Affiliates may accept deposits from, lend money to, own securities of, act as the financial advisor or in any other advisory capacity for and generally engage in any kind of business with the Borrower or any Subsidiary or other Affiliate thereof as if such Person were not the Administrative Agent hereunder and without any duty to account therefor to the Lenders.

Section 9.03 Exculpatory Provisions. Neither the Administrative Agent nor the Arranger shall have any duties or obligations except those expressly set forth herein and in the other Loan Documents, and each such Person's duties hereunder shall be administrative in nature. Without limiting the generality of the foregoing, neither the Administrative Agent nor the Arranger:

(a) shall be subject to any fiduciary or other implied duties, regardless of whether a Default has occurred and is continuing;

(b) shall have any duty to take any discretionary action or exercise any discretionary powers, except discretionary rights and powers expressly contemplated hereby or by the other Loan Documents that the Administrative Agent is required to exercise as directed in writing by the Required Lenders (or such other number or percentage of the Lenders as shall be expressly provided for herein or in the other Loan Documents); provided, that, the Administrative Agent shall not be required to take any action that, in its opinion or the opinion of its counsel, may expose the Administrative Agent to liability or that is contrary to any Loan Document or applicable law, including for the avoidance of doubt any action that may be in violation of the automatic stay under any Debtor Relief Law or that may effect a forfeiture, modification or termination of property of a Defaulting Lender in violation of any Debtor Relief Law; or

(c) shall, except as expressly set forth herein and in the other Loan Documents, have any duty to disclose, any credit or other information concerning the business, prospects, operations, property, financial and other condition or creditworthiness of the Borrower or any of its Affiliates that is communicated to, or in the possession of, the Administrative Agent, the Arranger or any of their Related Parties in any capacity, except for notices, reports and other documents expressly required to be furnished to the Lenders or the L/C Issuer by the Administrative Agent herein.

Neither the Administrative Agent nor any of its Related Parties shall be liable for any action taken or not taken by the Administrative Agent under or in connection with this Agreement or any other Loan Document or the transactions contemplated hereby or thereby (i) with the consent or at the request of the Required Lenders (or such other number or percentage of the Lenders as shall be necessary, or as the Administrative Agent shall believe in good faith shall be necessary, under the circumstances as provided in

Sections 10.01 and 8.02) or (ii) in the absence of its own gross negligence or willful misconduct as determined by a court of competent jurisdiction by final and nonappealable judgment. Any such action taken or failure to act pursuant to the foregoing shall be binding on all Lenders. The Administrative Agent shall be deemed not to have knowledge of any Default unless and until notice describing such Default is given in writing to the Administrative Agent by the Borrower, a Lender or the L/C Issuer.

Neither the Administrative Agent nor any of its Related Parties have any duty or obligation to any Lender or participant or any other Person to ascertain or inquire into (i) any statement, warranty or representation made in or in connection with this Agreement or any other Loan Document, (ii) the contents of any certificate, report or other document delivered hereunder or thereunder or in connection herewith or therewith, (iii) the performance or observance of any of the covenants, agreements or other terms or conditions set forth herein or therein or the occurrence of any Default, (iv) the validity, enforceability, effectiveness or genuineness of this Agreement, any other Loan Document or any other agreement, instrument or document or (vi) the satisfaction of any condition set forth in Article IV or elsewhere herein, other than to confirm receipt of items expressly required to be delivered to the Administrative Agent.

Section 9.04 Reliance by Administrative Agent. The Administrative Agent shall be entitled to rely upon, and shall be fully protected in relying and shall not incur any liability for relying upon, any notice, request, certificate, communication, consent, statement, instrument, document or other writing (including any electronic message, Internet or intranet website posting or other distribution) believed by it to be genuine and to have been signed, sent or otherwise authenticated by the proper Person. The Administrative Agent also may rely upon any statement made to it orally or by telephone and believed by it to have been made by the proper Person, and shall be fully protected in relying and shall not incur any liability for relying thereon. In determining compliance with any condition hereunder to the making of a Loan, or the issuance, extension, renewal, or increase of a Letter of Credit, that by its terms must be fulfilled to the satisfaction of a Lender or the L/C Issuer, the Administrative Agent may presume that such condition is satisfactory to such Lender or the L/C Issuer unless the Administrative Agent shall have received notice to the contrary from such Lender or the L/C Issuer prior to the making of such Loan or the issuance, extension, renewal, or increase of such Letter of Credit. The Administrative Agent may consult with legal counsel (who may be counsel for the Borrower), independent accountants and other experts selected by it, and shall not be liable for any action taken or not taken by it in accordance with the advice of any such counsel, accountants or experts.

Section 9.05 Delegation of Duties. The Administrative Agent may perform any and all of its duties and exercise its rights and powers hereunder or under any other Loan Document by or through any one or more sub agents appointed by the Administrative Agent. The Administrative Agent and any such sub agent may perform any and all of its duties and exercise its rights and powers by or through their respective Related Parties. The exculpatory provisions of this Article shall apply to any such sub agent and to the Related Parties of the Administrative Agent and any such sub agent, and shall apply to their respective activities in connection with the syndication of the credit facilities provided for herein as well as activities as Administrative Agent. The Administrative Agent shall not be responsible for the negligence or misconduct of any sub-agents except to the extent that a court of competent jurisdiction determines in a final and non-appealable judgment that the Administrative Agent acted with gross negligence or willful misconduct in the selection of such sub-agents.

Section 9.06 Resignation of Administrative Agent.

(a) The Administrative Agent may at any time give notice of its resignation to the Lenders, the L/C Issuer and the Borrower. Upon receipt of any such notice of resignation, the Required Lenders shall have the right, with approval of the Borrower, which approval shall not be unreasonably withheld or delayed and which shall not be required if a Default or Event of Default has occurred and is then continuing, to

appoint a successor, which shall be a bank with an office in the United States, or an Affiliate of any such bank with an office in the United States. If no such successor shall have been appointed by the Required Lenders and shall have accepted such appointment within thirty (30) days after the retiring Administrative Agent gives notice of its resignation (or such earlier day as shall be agreed by the Required Lenders) (the "Resignation Effective Date"), then the retiring Administrative Agent may (but shall not be obligated to) on behalf of the Lenders and the L/C Issuer, appoint a successor Administrative Agent meeting the qualifications set forth above; provided, that, in no event shall any successor Administrative Agent be a Defaulting Lender. Whether or not a successor has been appointed, such resignation shall become effective in accordance with such notice on the Resignation Effective Date.

(b) If the Person serving as Administrative Agent is a Defaulting Lender pursuant to clause (d) of the definition thereof, the Required Lenders may, to the extent permitted by applicable Law by notice in writing to the Borrower and such Person remove such Person as the Administrative Agent and, in consultation with the Borrower, appoint a successor. If no such successor shall have been so appointed by the Required Lenders and shall have accepted such appointment within thirty (30) days (or such earlier day as shall be agreed by the Required Lenders) (the "Removal Effective Date"), then such removal shall nonetheless become effective in accordance with such notice on the Removal Effective Date.

(c) With effect from the Resignation Effective Date or the Removal Effective Date (as applicable) (i) the retiring or removed Administrative Agent shall be discharged from its duties and obligations hereunder and under the other Loan Documents and (ii) except for any indemnity payments or other amounts then owed to the retiring or removed Administrative Agent, all payments, communications and determinations provided to be made by, to or through the Administrative Agent shall instead be made by or to each Lender and the L/C Issuer directly, until such time, if any, as the Required Lenders appoint a successor Administrative Agent as provided for above. Upon the acceptance of a successor's appointment as Administrative Agent hereunder, such successor shall succeed to and become vested with all of the rights, powers, privileges and duties of the retiring or removed Administrative Agent (other than as provided in Section 3.01(g) and other than any rights to indemnity payments or other amounts owed to the retiring or removed Administrative Agent as of the Resignation Effective Date or the Removal Effective Date, as applicable), and the retiring or removed Administrative Agent shall be discharged from all of its duties and obligations hereunder or under the other Loan Documents (if not already discharged therefrom as provided above in this Section 9.06(c)). The fees payable by the Borrower to a successor Administrative Agent shall be the same as those payable to its predecessor unless otherwise agreed between the Borrower and such successor. After the retiring or removed Administrative Agent's resignation or removal hereunder and under the other Loan Documents, the provisions of this Article and Section 10.04 shall continue in effect for the benefit of such retiring or removed Administrative Agent, its sub-agents and their respective Related Parties in respect of any actions taken or omitted to be taken by any of them (i) while the retiring or removed Administrative Agent was acting as Administrative Agent and (ii) after such resignation or removal for as long as any of them continues to act in any capacity hereunder or under the other Loan Documents, including in respect of any actions taken in connection with transferring the agency to any successor Administrative Agent.

Any resignation by or removal of Bank of America as Administrative Agent pursuant to this Section 9.06 shall also constitute its resignation or removal as the L/C Issuer and the Swing Line Lender. If Bank of America resigns as the L/C Issuer, it shall retain all the rights, powers, privileges and duties of the L/C Issuer hereunder with respect to all Letters of Credit outstanding as of the effective date of its resignation as the L/C Issuer and all L/C Obligations with respect thereto, including the right to require the Lenders to make Base Rate Committed Loans or fund risk participations in Unreimbursed Amounts pursuant to Section 2.03(c). If Bank of America resigns as the Swing Line Lender, it shall retain all the rights of the Swing Line Lender provided for hereunder with respect to Swing Line Loans made by it and outstanding as of the effective date of such resignation, including the right to require the Lenders to make Base Rate Committed

Loans or fund risk participations in outstanding Swing Line Loans pursuant to Section 2.04(c). Upon the appointment by the Borrower of a successor L/C Issuer or Swing Line Lender hereunder (which successor shall in all cases be a Lender other than a Defaulting Lender) and acceptance of the appointment by such successor, (a) such successor shall succeed to and become vested with all of the rights, powers, privileges and duties of the retiring L/C Issuer or Swing Line Lender, as applicable (b) the retiring L/C Issuer and Swing Line Lender shall be discharged from all of their respective duties and obligations hereunder or under the other Loan Documents, and (c) the successor L/C Issuer shall issue letters of credit in substitution for the Letters of Credit, if any, outstanding at the time of such succession or make other arrangements satisfactory to Bank of America to effectively assume the obligations of Bank of America with respect to such Letters of Credit.

Section 9.07 Non-Reliance on Administrative Agent, Arranger and Other Lenders. Each Lender and the L/C Issuer expressly acknowledges that neither the Administrative Agent nor the Arranger has made any representation or warranty to it, and that no act by the Administrative Agent or the Arranger hereafter taken, including any consent to, and acceptance of any assignment or review of the affairs of the Borrower or any Affiliate thereof, shall be deemed to constitute any representation or warranty by the Administrative Agent or the Arranger to any Lender or the L/C Issuer as to any matter, including whether the Administrative Agent or the Arranger has disclosed material information in their (or their Related Parties') possession. Each Lender and the L/C Issuer represents to the Administrative Agent and the Arranger that it has, independently and without reliance upon the Administrative Agent, the Arranger, any other Lender or any of their Related Parties and based on such documents and information as it has deemed appropriate, made its own credit analysis of, appraisal of, and investigation into, the business, prospects, operations, property, financial and other condition and creditworthiness of the Borrower and its Subsidiaries, and all applicable bank or other regulatory Laws relating to the transactions contemplated hereby, and made its own decision to enter into this Agreement and to extend credit to the Borrower hereunder. Each Lender and the L/C Issuer also acknowledges that it will, independently and without reliance upon the Administrative Agent, the Arranger, any other Lender or any of their Related Parties and based on such documents and information as it shall from time to time deem appropriate, continue to make its own credit analysis, appraisals and decisions in taking or not taking action under or based upon this Agreement, any other Loan Document or any related agreement or any document furnished hereunder or thereunder, and to make such investigations as it deems necessary to inform itself as to the business, prospects, operations, property, financial and other condition and creditworthiness of the Borrower. Each Lender and the L/C Issuer represents and warrants that (a) the Loan Documents set forth the terms of a commercial lending facility and (b) it is engaged in making, acquiring or holding commercial loans in the ordinary course and is entering into this Agreement as a Lender or the L/C Issuer for the purpose of making, acquiring or holding commercial loans and providing other facilities set forth herein as may be applicable to such Lender or the L/C Issuer, and not for the purpose of purchasing, acquiring or holding any other type of financial instrument, and each Lender and the L/C Issuer agrees not to assert a claim in contravention of the foregoing. Each Lender and the L/C Issuer represents and warrants that it is sophisticated with respect to decisions to make, acquire and/or hold commercial loans and to provide other facilities set forth herein, as may be applicable to such Lender or the L/C Issuer, and either it, or the Person exercising discretion in making its decision to make, acquire and/or hold such commercial loans or to provide such other facilities, is experienced in making, acquiring or holding such commercial loans or providing such other facilities.

Section 9.08 No Other Duties, Etc. Anything herein to the contrary notwithstanding, none of the bookrunner, the arranger or any co-syndication agent shall have any powers, duties or responsibilities under this Agreement or any of the other Loan Documents, except in its capacity, as applicable, as the Administrative Agent, a Lender or the L/C Issuer hereunder.

Section 9.09 Administrative Agent May File Proofs of Claim. In case of the pendency of any receivership, insolvency, liquidation, bankruptcy, reorganization, arrangement, adjustment, composition or

other judicial proceeding relative to the Borrower, the Administrative Agent (irrespective of whether the principal of any Loan or L/C Obligation shall then be due and payable as herein expressed or by declaration or otherwise and irrespective of whether the Administrative Agent shall have made any demand on the Borrower) shall be entitled and empowered, by intervention in such proceeding or otherwise: (a) to file and prove a claim for the whole amount of the principal and interest owing and unpaid in respect of the Loans, L/C Obligations and all other Obligations that are owing and unpaid and to file such other documents as may be necessary or advisable in order to have the claims of the Lenders, the L/C Issuer and the Administrative Agent (including any claim for the reasonable compensation, expenses, disbursements and advances of the Lenders, the L/C Issuer and the Administrative Agent and their respective agents and counsel and all other amounts due the Lenders, the L/C Issuer and the Administrative Agent under Sections 2.03(h) and (i), 2.09 and 10.04) allowed in such judicial proceeding; and (b) to collect and receive any monies or other property payable or deliverable on any such claims and to distribute the same; and any custodian, receiver, assignee, trustee, liquidator, sequestrator or other similar official in any such judicial proceeding is hereby authorized by each Lender and the L/C Issuer to make such payments to the Administrative Agent and, in the event that the Administrative Agent shall consent to the making of such payments directly to the Lenders and the L/C Issuer, to pay to the Administrative Agent any amount due for the reasonable compensation, expenses, disbursements and advances of the Administrative Agent and its agents and counsel, and any other amounts due the Administrative Agent under Sections 2.09 and 10.04. Nothing contained herein shall be deemed to authorize the Administrative Agent to authorize or consent to or accept or adopt on behalf of any Lender or the L/C Issuer any plan of reorganization, arrangement, adjustment or composition affecting the Obligations or the rights of any Lender or the L/C Issuer or to authorize the Administrative Agent to vote in respect of the claim of any Lender or the L/C Issuer in any such proceeding.

Section 9.10 Certain ERISA Matters.

(a) Each Lender (x) represents and warrants, as of the date such Person became a Lender party hereto, to, and (y) covenants, from the date such Person became a Lender party hereto to the date such Person ceases being a Lender party hereto, for the benefit of, the Administrative Agent and not, for the avoidance of doubt, to or for the benefit of the Borrower, that at least one of the following is and will be true:

(i) such Lender is not using "plan assets" (within the meaning of Section 3(42) of ERISA or otherwise) of one or more Benefit Plans with respect to such Lender's entrance into, participation in, administration of and performance of the Loans, the Letters of Credit, the Commitments, or this Agreement,

(ii) the transaction exemption set forth in one or more PTEs, such as PTE 84–14 (a class exemption for certain transactions determined by independent qualified professional asset managers), PTE 95–60 (a class exemption for certain transactions involving insurance company general accounts), PTE 90–1 (a class exemption for certain transactions involving insurance company pooled separate accounts), PTE 91–38 (a class exemption for certain transactions involving bank collective investment funds) or PTE 96– 23 (a class exemption for certain transactions determined by in-house asset managers), is applicable with respect to such Lender's entrance into, participation in, administration of and performance of the Loans, the Letters of Credit, the Commitments and this Agreement,

(iii) (A) such Lender is an investment fund managed by a "Qualified Professional Asset Manager" (within the meaning of Part VI of PTE 84–14), (B) such Qualified Professional Asset Manager made the investment decision on behalf of such Lender to enter into, participate in, administer and perform the Loans, the Letters of Credit,

the Commitments and this Agreement, (C) the entrance into, participation in, administration of and performance of the Loans, the Letters of Credit, the Commitments and this Agreement satisfies the requirements of sub-sections (b) through (g) of Part I of PTE 84–14 and (D) to the best knowledge of such Lender, the requirements of subsection
(a) of Part I of PTE 84–14 are satisfied with respect to such Lender's entrance into, participation in, administration of and performance of the Loans, the Letters of Credit, the Commitments and this Agreement, or

(iv) such other representation, warranty and covenant as may be agreed in writing between the Administrative Agent, in its sole discretion, and such Lender.

(b) In addition, unless either (1) subsection (a)(i) above is true with respect to a Lender, or (2) a Lender has provided another representation, warranty and covenant in accordance with subsection (a)(iv) above, such Lender further (x) represents and warrants, as of the date such Person became a Lender party hereto, to, and (y) covenants, from the date such Person became a Lender party hereto to the date such Person ceases being a Lender party hereto, for the benefit of, the Administrative Agent and not, for the avoidance of doubt, to or for the benefit of the Borrower, that the Administrative Agent is not a fiduciary with respect to the assets of such Lender involved in such Lender's entrance into, participation in, administration of and performance of the Loans, the Letters of Credit, the Commitments and this Agreement (including in connection with the reservation or exercise of any rights by the Administrative Agent under this Agreement, any other Loan Document or any documents related hereto or thereto).

Section 9.11 Recovery of Erroneous Payments. Without limitation of any other provision in this Agreement, if at any time the Administrative Agent makes a payment hereunder in error to any Lender Party, whether or not in respect of an Obligation due and owing by the Borrower at such time, where such payment is a Rescindable Amount, then in any such event, each Lender Party receiving a Rescindable Amount severally agrees to repay to the Administrative Agent forthwith on demand the Rescindable Amount received by such Lender Party in Same Day Funds in the currency so received, with interest thereon, for each day from and including the date such Rescindable Amount is received by it to but excluding the date of payment to the Administrative Agent, at the greater of the Federal Funds Rate and a rate determined by the Administrative Agent in accordance with banking industry rules on interbank compensation. Each Lender Party irrevocably waives any and all defenses, including any "discharge for value" (under which a creditor might otherwise claim a right to retain funds mistakenly paid by a third party in respect of a debt owed by another) or similar defense to its obligation to return any Rescindable Amount. The Administrative Agent shall inform each Lender Party promptly upon determining that any payment made to such Lender Party comprised, in whole or in part, a Rescindable Amount.

ARTICLE X. MISCELLANEOUS

Section 10.01 Amendments, Etc. No amendment or waiver of any provision of this Agreement or any other Loan Document, and no consent to any departure by the Borrower therefrom, shall be effective unless in writing signed by the Required Lenders and the Borrower, and acknowledged by the Administrative Agent, and each such waiver or consent shall be effective only in the specific instance and for the specific purpose for which given; provided, that:

(a) no such amendment, waiver or consent shall:

(i) extend or increase the Commitment of any Lender (or reinstate any Commitment terminated pursuant to Section 8.02) without the written consent of such Lender whose

Commitment is being extended or increased (it being understood and agreed that a waiver of any condition precedent set forth in Section 4.02 or of any Default or a mandatory reduction in Aggregate Commitments is not considered an extension or increase in the Commitment of any Lender);

(ii) postpone any date fixed by this Agreement or any other Loan Document for any payment of principal, interest, fees or other amounts due to the Lenders (or any of them) hereunder or under any other Loan Document without the written consent of each Lender entitled to receive such payment;

(iii) reduce the principal of, or the rate of interest specified herein on, any Loan or L/C Borrowing, or (subject to clause (D) of the final proviso to this Section 10.01(a)) any fees or other amounts payable hereunder or under any other Loan Document without the written consent of each Lender entitled to receive such payment of principal, interest, fees or other amounts; provided, that, only the consent of the Required Lenders shall be necessary to amend the definition of "Default Rate" or to waive any obligation of the Borrower to pay interest or Letter of Credit Fees at the Default Rate;

(iv) change any provision of this Section 10.01(a) or the definition of "Required Lenders" or any other provision hereof specifying the number or percentage of Lenders required to amend, modify or waive any term or provision in the Loan Documents without the written consent of each Lender directly affected thereby;

(v) change Section 2.13 or Section 8.03 in a manner that would alter the pro rata sharing of payments required thereby without the written consent of each Lender directly affected thereby;

(vi) release the Borrower without the written consent of each Lender; or

(vii) amend Section 1.08 or the definition of "Alternative Currency" without the written consent of each Lender directly affected thereby;

provided, further, that, notwithstanding anything to the contrary herein: (A) unless also signed by the L/C Issuer, no amendment, waiver or consent shall affect the rights or duties of the L/C Issuer under this Agreement or any Issuer Document relating to any Letter of Credit issued or to be issued by it; (B) unless also signed by the Swing Line Lender, no amendment, waiver or consent shall affect the rights or duties of the Swing Line Lender under this Agreement; (C) unless also signed by the Administrative Agent, no amendment, waiver or consent shall affect the rights or duties of the Administrative Agent under this Agreement or any other Loan Document; (D) the Agent Fee Letter may be amended, or rights or privileges thereunder waived, in a writing executed only by the parties thereto; (E) the L/C Commitment of the L/C Issuer may be increased or decreased in a writing executed by the L/C Issuer and the Borrower; (F) this Agreement may be amended to add additional Alternative Currencies as permitted pursuant to Section 1.08;
(G) without the consent of any Lender, the Administrative Agent may amend this Agreement to implement any changes of construction pursuant to Section 1.09(b); (H) no Defaulting Lender shall have any right to approve or disapprove any amendment, waiver or consent hereunder (and any amendment, waiver or consent which by its terms requires the consent of all Lenders or each affected Lender may be effected with the consent of the applicable Lenders other than Defaulting Lenders), except that (1) the Commitment of any Defaulting Lender may not be increased or extended without the consent of such Lender and (2) any waiver, amendment or modification requiring the consent of all Lenders or each affected Lender that by its terms affects any Defaulting Lender disproportionately adversely relative to other affected Lenders shall require the consent of such Defaulting Lender; (I) each Lender is entitled to vote as such Lender sees fit on

any bankruptcy reorganization plan that affects the Loans, and each Lender acknowledges that the provisions of Section 1126(c) of the Bankruptcy Code of the United States supersedes the unanimous consent provisions set forth herein; (J) the Required Lenders shall determine whether or not to allow the Borrower to use cash collateral in the context of a bankruptcy or insolvency proceeding and such determination shall be binding on all of the Lenders; (K) in order to implement any extension of the Maturity Date pursuant to Section 2.16, this Agreement may be amended for such purpose (but solely to the extent necessary to implement any such extension and otherwise in accordance with Section 2.16) by the Borrower, the Administrative Agent, and each Lender agreeing to such extension; (L) in order to implement any increase in the Aggregate Commitments pursuant to Section 2.17, this Agreement may be amended for such purpose (but solely to the extent necessary to implement such increase and otherwise in accordance with Section 2.17) by the Borrower, the Administrative Agent and each Lender providing a portion of such increase; (M)(1) in order to implement any Term SOFR Successor Rate or any Term SOFR Conforming Changes, in each case in accordance with Section 3.03(b), this Agreement and any other Loan Document may be amended for such purpose as provided in Section 3.03(b), and (2) in order to implement any Alternative Currency Successor Rate or any Alternative Currency Conforming Changes, in each case in accordance with Section 3.03(c), this Agreement and any other Loan Document may be amended for such purpose as provided in Section 3.03(c); and (N)(1) with respect to SOFR or Term SOFR, the Administrative Agent will have the right to make Term SOFR Conforming Changes from time to time and, notwithstanding anything to the contrary herein or in any other Loan Document, any amendments implementing such Term SOFR Conforming Changes will become effective without any further action or consent of any other party to this Agreement or any other Loan Document; provided, that, with respect to any such amendment effected, the Administrative Agent shall post each such amendment implementing such Term SOFR Conforming Changes to the Borrower and the Lenders reasonably promptly after such amendment becomes effective; and (2) with respect to any Relevant Rate, the Administrative Agent will have the right to make Alternative Currency Conforming Changes from time to time and, notwithstanding anything to the contrary herein or in any other Loan Document, any amendments implementing such Alternative Currency Conforming Changes will become effective without any further action or consent of any other party to this Agreement or any other Loan Document; provided, that, with respect to any such amendment effected, the Administrative Agent shall post each such amendment implementing such Alternative Currency Conforming Changes to the Borrower and the Lenders reasonably promptly after such amendment becomes effective.

(b) Notwithstanding any provision herein to the contrary, this Agreement may be amended (or amended and restated) with the written consent of the Required Lenders, the Administrative Agent, and the Borrower (i) to add one or more additional credit facilities to this Agreement, to permit the extensions of credit from time to time outstanding hereunder and the accrued interest and fees in respect thereof to share ratably in the benefits of this Agreement and the other Loan Documents with the Loans and the accrued interest and fees in respect thereof and to include appropriately the Lenders holding such credit facilities in any determination of the Required Lenders and (ii) to change, modify or alter Section 2.13 or Section 8.03 or any other provision hereof relating to the pro rata sharing of payments among the Lenders to the extent necessary to effectuate any of the amendments (or amendments and restatements) enumerated in subsection (b)(i) above.

(c) Notwithstanding any provision herein to the contrary, the Administrative Agent and the Borrower may amend, modify or supplement this Agreement or any other Loan Document to cure or correct administrative errors or omissions, any ambiguity, omission, defect or inconsistency or to effect administrative changes, and such amendment shall become effective without any further consent of any other party to such Loan Document so long as (i) such amendment, modification or supplement does not adversely affect the rights of any Lender, the L/C Issuer or other holder of Obligations in any material respect and (ii) the Lenders and the L/C Issuer shall have received at least five (5) Business Days' prior written notice thereof and the Administrative Agent shall not have received, within five (5) Business Days

of the date of such notice to the Lenders and the L/C Issuer, a written notice from the Required Lenders stating that the Required Lenders object to such amendment or from the L/C Issuer that the L/C Issuer objects to any such Letter of Credit-related amendment.

(d) Notwithstanding any provision herein to the contrary, this Agreement may be amended (or amended and restated) without the consent of any Lender if, upon giving effect to such amendment (or amendment and restatement), such Lender shall no longer be a party to this Agreement (as so amended (or amended and restated)), the Commitment of such Lender shall have terminated, such Lender shall have no other commitment or other obligation hereunder and such Lender shall have been paid in full all principal, interest and other amounts owing to it or accrued for its account under this Agreement.

Section 10.02 Notices; Effectiveness; Electronic Communication.

(a) Notices Generally. Except in the case of notices and other communications expressly permitted to be given by telephone (and except as provided in subsection (b) below), all notices and other communications provided for herein shall be in writing and shall be delivered by hand or overnight courier service, mailed by certified or registered mail or sent by facsimile or electronic mail as follows, and all notices and other communications expressly permitted hereunder to be given by telephone shall be made to the applicable telephone number, as follows:

(i) if to the Borrower, the Administrative Agent, the L/C Issuer or the Swing Line Lender, to the address, facsimile number, electronic mail address or telephone number specified for such Person on Schedule 10.02; and

(ii) if to any other Lender, to the address, facsimile number, electronic mail address or telephone number specified in its Administrative Questionnaire (including, as appropriate, notices delivered solely to the Person designated by a Lender on its Administrative Questionnaire then in effect for the delivery of notices that may contain material non-public information relating to the Borrower).

Notices and other communications sent by hand or overnight courier service, or mailed by certified or registered mail, shall be deemed to have been given when received; notices and other communications sent by facsimile shall be deemed to have been given when sent (except that, if not given during normal business hours for the recipient, shall be deemed to have been given at the opening of business on the next Business Day for the recipient). Notices and other communications delivered through electronic communications to the extent provided in subsection (b) below, shall be effective as provided in such subsection (b).

(b) Electronic Communications. Notices and other communications to the Lenders and the L/C Issuer hereunder may be delivered or furnished by electronic communication (including e mail, FpML messaging, and Internet or intranet websites) pursuant to procedures approved by the Administrative Agent; provided, that, the foregoing shall not apply to notices to any Lender or the L/C Issuer pursuant to Article II if such Lender or the L/C Issuer, as applicable, has notified the Administrative Agent that it is incapable of receiving notices under such Article by electronic communication. The Administrative Agent, the Swing Line Lender, the L/C Issuer or the Borrower may each, in its discretion, agree to accept notices and other communications to it hereunder by electronic communications pursuant to procedures approved by it; provided, that, approval of such procedures may be limited to particular notices or communications.

Unless the Administrative Agent otherwise prescribes, (i) notices and other communications sent to an e-mail address shall be deemed received upon the sender's receipt of an acknowledgement from the intended recipient (such as by the "return receipt requested" function, as available, return e-mail or other

written acknowledgement), and (ii) notices or communications posted to an Internet or intranet website shall be deemed received upon the deemed receipt by the intended recipient at its e-mail address as described in the foregoing subsection (i) of notification that such notice or communication is available and identifying the website address therefor; provided, that, for both of the foregoing subsections (i) and (ii), if such notice, email or other communication is not sent during the normal business hours of the recipient, such notice, email or communication shall be deemed to have been sent at the opening of business on the next business day for the recipient.

(c) The Platform. THE PLATFORM IS PROVIDED "AS IS" AND "AS AVAILABLE." THE AGENT PARTIES (AS DEFINED BELOW) DO NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE BORROWER MATERIALS OR THE ADEQUACY OF THE PLATFORM, AND EXPRESSLY DISCLAIM LIABILITY FOR ERRORS IN OR OMISSIONS FROM THE BORROWER MATERIALS. NO WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY RIGHTS OR FREEDOM FROM VIRUSES OR OTHER CODE DEFECTS, IS MADE BY ANY AGENT PARTY IN CONNECTION WITH THE BORROWER MATERIALS OR THE PLATFORM. In no event shall the Administrative Agent or any of its Related Parties (collectively, the "Agent Parties") have any liability to the Borrower, any Lender, the L/C Issuer or any other Person for losses, claims, damages, liabilities or expenses of any kind (whether in tort, contract or otherwise) arising out of the Borrower's or the Administrative Agent's transmission of Borrower Materials or notices through the Platform, any other electronic platform or electronic messaging services, or through the Internet, except to the extent that such losses, claims, damages, liabilities or expenses are determined by a court of competent jurisdiction by a final and nonappealable judgment to have resulted from the gross negligence or willful misconduct of such Agent Party; provided, that, in no event shall any Agent Party have any liability to the Borrower, any Lender, the L/C Issuer or any other Person for indirect, special, incidental, consequential or punitive damages (as opposed to direct or actual damages).

(d) Change of Address, Etc. Each of the Borrower, the Administrative Agent, the L/C Issuer and the Swing Line Lender may change its address, facsimile or telephone number for notices and other communications hereunder by notice to the other parties hereto. Each other Lender may change its address, facsimile or telephone number for notices and other communications hereunder by notice to the Borrower, the Administrative Agent, the L/C Issuer and the Swing Line Lender. In addition, each Lender agrees to notify the Administrative Agent from time to time to ensure that the Administrative Agent has on record (i) an effective address, contact name, telephone number, facsimile number and electronic mail address to which notices and other communications may be sent and (ii) accurate wire instructions for such Lender. Furthermore, each Public Lender agrees to cause at least one individual at or on behalf of such Public Lender to at all times have selected the "Private Side Information" or similar designation on the content declaration screen of the Platform in order to enable such Public Lender or its delegate, in accordance with such Public Lender's compliance procedures and applicable Law, including United States Federal and state securities Laws, to make reference to Borrower Materials that are not made available through the "Public Side Information" portion of the Platform and that may contain material non-public information with respect to the Borrower or its securities for purposes of United States Federal or state securities laws.

(e) Reliance by Administrative Agent, L/C Issuer and Lenders. The Administrative Agent, the L/C Issuer and the Lenders shall be entitled to rely and act upon any notices (including telephonic notices, Committed Loan Notices, Letter of Credit Applications and Swing Line Loan Notices) purportedly given by or on behalf of the Borrower even if (i) such notices were not made in a manner specified herein, were incomplete or were not preceded or followed by any other form of notice specified herein, or (ii) the terms thereof, as understood by the recipient, varied from any confirmation thereof. The Borrower shall indemnify the Administrative Agent, the L/C Issuer, each Lender and the Related Parties of each of them

from all losses, costs, expenses and liabilities resulting from the reliance by such Person on each notice purportedly given by or on behalf of the Borrower. All telephonic notices to and other telephonic communications with the Administrative Agent may be recorded by the Administrative Agent, and each of the parties hereto hereby consents to such recording.

Section 10.03 No Waiver; Cumulative Remedies; Enforcement. No failure by any Lender, the L/C Issuer or the Administrative Agent to exercise, and no delay by any such Person in exercising, any right, remedy, power or privilege hereunder or under any other Loan Document shall operate as a waiver thereof; nor shall any single or partial exercise of any right, remedy, power or privilege hereunder or under any other Loan Document (including the imposition of the Default Rate) preclude any other or further exercise thereof or the exercise of any other right, remedy, power or privilege. The rights, remedies, powers and privileges herein provided and provided under each other Loan Document are cumulative and not exclusive of any rights, remedies, powers and privileges provided by law.

Notwithstanding anything to the contrary contained herein or in any other Loan Document, the authority to enforce rights and remedies hereunder and under the other Loan Documents against the Borrower shall be vested exclusively in, and all actions and proceedings at law in connection with such enforcement shall be instituted and maintained exclusively by, the Administrative Agent in accordance with Section 9.01 for the benefit of all the Lenders and the L/C Issuer; provided, that, the foregoing shall not prohibit (a) the Administrative Agent from exercising on its own behalf the rights and remedies that inure to its benefit (solely in its capacity as Administrative Agent) hereunder and under the other Loan Documents, (b) the L/C Issuer or the Swing Line Lender from exercising the rights and remedies that inure to its benefit (solely in its capacity as L/C Issuer or Swing Line Lender, as the case may be) hereunder and under the other Loan Documents, (c) any Lender from exercising setoff rights in accordance with Section 10.08 (subject to the terms of Section 2.13), or (d) any Lender from filing proofs of claim or appearing and filing pleadings on its own behalf during the pendency of a proceeding relative to the Borrower under any Debtor Relief Law; provided, further, that, if at any time there is no Person acting as Administrative Agent hereunder and under the other Loan Documents, then (i) the Required Lenders shall have the rights otherwise ascribed to the Administrative Agent pursuant to Section 9.01 and (ii) in addition to the matters set forth in clauses (b), (c) and (d) of the preceding proviso and subject to Section 2.13, any Lender may, with the consent of the Required Lenders, enforce any rights and remedies available to it and as authorized by the Required Lenders.

Section 10.04 Expenses; Indemnity; Damage Waiver.

(a) Costs and Expenses. The Borrower shall pay (i) all reasonable out of pocket expenses incurred by BofA Securities, the Administrative Agent, and their respective Affiliates (including the reasonable fees, charges and disbursements of counsel for the Administrative Agent), in connection with the syndication of the credit facilities provided for herein, the preparation, negotiation, execution, delivery and administration of this Agreement and the other Loan Documents or any amendments, modifications or waivers of the provisions hereof or thereof (whether or not the transactions contemplated hereby or thereby shall be consummated), (ii) all reasonable out of pocket expenses incurred by the L/C Issuer in connection with the issuance, amendment, renewal or extension of any Letter of Credit or any demand for payment thereunder and (iii) all reasonable out of pocket expenses incurred by the Administrative Agent, any Lender or the L/C Issuer (including the reasonable fees, charges and disbursements of any counsel for the Administrative Agent and one additional counsel for all Lenders other than the Administrative Agent), in connection with the enforcement or protection of its rights (A) in connection with this Agreement and the other Loan Documents, including its rights under this Section 10.04, or (B) in connection with the Loans made or Letters of Credit issued hereunder, including all such out of pocket expenses incurred during any workout, restructuring or negotiations in respect of such Loans or Letters of Credit.

(b) Indemnification by the Borrower. The Borrower shall indemnify the Arranger, the Administrative Agent (and any sub-agent thereof), each Lender and the L/C Issuer, and each Related Party of any of the foregoing Persons (each such Person being called an "Indemnitee") against, and hold each Indemnitee harmless from, any and all losses, claims, damages, liabilities and related reasonable expenses (including the reasonable fees, charges and disbursements of any counsel for any Indemnitee), incurred by any Indemnitee or asserted against any Indemnitee by any Person (including the Borrower) arising out of, in connection with, or as a result of (i) the execution or delivery of this Agreement, any other Loan Document or any agreement or instrument contemplated hereby or thereby (including any Indemnitee's reliance on any Communication executed using an Electronic Signature, or in the form of an Electronic Record, that such Indemnitee reasonably believes is made by any Responsible Officer), the performance by the parties hereto of their respective obligations hereunder or thereunder, the consummation of the transactions contemplated hereby or thereby, or, in the case of the Administrative Agent (and any sub-agent thereof) and its Related Parties only, the administration of this Agreement and the other Loan Documents,
(ii) any Loan or Letter of Credit or the use or proposed use of the proceeds therefrom (including any refusal by the L/C Issuer to honor a demand for payment under a Letter of Credit if the documents presented in connection with such demand do not strictly comply with the terms of such Letter of Credit), (iii) any actual or alleged presence or release of Hazardous Materials on or from any property owned or operated by the Borrower or any of its Subsidiaries, or any Environmental Liability related in any way to the Borrower or any of its Subsidiaries, or (iv) any actual or prospective claim, litigation, investigation or proceeding relating to any of the foregoing, whether based on contract, tort or any other theory, whether brought by a third party or by the Borrower, and regardless of whether any Indemnitee is a party thereto, in all cases, whether or not caused by or arising, in whole or in part, out of the comparative, contributory or sole negligence of the Indemnitee; provided, that, such indemnity shall not, as to any Indemnitee, be available to the extent that such losses, claims, damages, liabilities or related expenses (x) are determined by a court of competent jurisdiction by final and nonappealable judgment to have resulted from the bad faith, gross negligence or willful misconduct of such Indemnitee or its Related Indemnified Parties in performing services in connection with this Agreement or (y) result from a claim brought by the Borrower against an Indemnitee for material breach of such Indemnitee's obligations hereunder or under any other Loan Document, if the Borrower has obtained a final and nonappealable judgment in its favor on such claim as determined by a court of competent jurisdiction. Without limiting the provisions of Section 3.01(c), this Section 10.04(b) shall not apply with respect to Taxes other than any Taxes that represent losses, claims, damages, etc. arising from any non-Tax claim.

(c) Reimbursement by Lenders. To the extent that the Borrower for any reason fails to indefeasibly pay any amount required under subsection (a) or (b) of this Section 10.04 to be paid by it to the Administrative Agent (or any sub-agent thereof), the L/C Issuer, the Swing Line Lender or any Related Party of any of the foregoing, each Lender severally agrees to pay to the Administrative Agent (or any such sub-agent), the L/C Issuer, the Swing Line Lender or such Related Party, as the case may be, such Lender's pro rata share (determined as of the time that the applicable unreimbursed expense or indemnity payment is sought based on each Lender's Applicable Percentage of the Aggregate Commitments) of such unpaid amount (including any such unpaid amount in respect of a claim asserted by such Lender), such payment to be made severally among them based on such Lender's Applicable Percentages (determined as of the time that the applicable unreimbursed expense or indemnity payment is sought); provided, that, the unreimbursed expense or indemnified loss, claim, damage, liability or related expense, as the case may be, was incurred by or asserted against the Administrative Agent (or against any such sub-agent of the L/C Issuer or the Swing Line Lender in its capacity as such, or against any Related Party of any of the foregoing acting for the Administrative Agent (or any such sub-agent), the L/C Issuer or the Swing Line Lender in connection with such capacity. The obligations of the Lenders under this subsection (c) are subject to the provisions of Section 2.12(d).

(d) Waiver of Consequential Damages, Etc. To the fullest extent permitted by applicable law, the Borrower shall not assert, hereby waives, and acknowledges that no other Person shall have, any claim against any Indemnitee, on any theory of liability, for special, indirect, consequential or punitive damages (as opposed to direct or actual damages) arising out of, in connection with, or as a result of, this Agreement, any other Loan Document or any agreement or instrument contemplated hereby, the transactions contemplated hereby or thereby, any Loan or Letter of Credit or the use of the proceeds thereof. No Indemnitee referred to in subsection (b) above shall be liable for any damages arising from the use by unintended recipients of any information or other materials distributed to such unintended recipients by such Indemnitee through telecommunications, electronic or other information transmission systems in connection with this Agreement or the other Loan Documents or the transactions contemplated hereby or thereby other than for direct or actual damages resulting from the gross negligence or willful misconduct of such Indemnitee as determined by a final and nonappealable judgment of a court of competent jurisdiction.

(e) Payments. All amounts due under this Section 10.04 shall be payable not later than ten (10) Business Days after demand therefor.

(f) Survival. The agreements in this Section 10.04 and the indemnity provisions of Section 10.02(e) shall survive the resignation of the Administrative Agent, the L/C Issuer and the Swing Line Lender, the replacement of any Lender, the termination of the Aggregate Commitments and the repayment, satisfaction or discharge of all the other Obligations.

Section 10.05 Payments Set Aside. To the extent that any payment by or on behalf of the Borrower is made to the Administrative Agent, the L/C Issuer or any Lender, or the Administrative Agent, the L/C Issuer or any Lender exercises its right of setoff, and such payment or the proceeds of such setoff or any part thereof is subsequently invalidated, declared to be fraudulent or preferential, set aside or required (including pursuant to any settlement entered into by the Administrative Agent, the L/C Issuer or such Lender in its discretion) to be repaid to a trustee, receiver or any other party, in connection with any proceeding under any Debtor Relief Law or otherwise, then (a) to the extent of such recovery, the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such setoff had not occurred, and (b) each Lender and the L/C Issuer severally agrees to pay to the Administrative Agent upon demand its applicable share (without duplication) of any amount so recovered from or repaid by the Administrative Agent, plus interest thereon from the date of such demand to the date such payment is made at a rate per annum equal to the applicable Overnight Rate from time to time in effect, in the applicable currency of such recovery or payment. The obligations of the Lenders and the L/C Issuer under clause (b) of the preceding sentence shall survive the payment in full of the Obligations and the termination of this Agreement.

Section 10.06 Successors and Assigns.

(a) Successors and Assigns Generally. The provisions of this Agreement and the other Loan Documents shall be binding upon and inure to the benefit of the parties hereto and thereto and their respective successors and assigns permitted hereby, except that the Borrower may not assign or otherwise transfer any of its rights or obligations hereunder or thereunder without the prior written consent of the Administrative Agent and each Lender and no Lender may assign or otherwise transfer any of its rights or obligations hereunder except (i) to an assignee in accordance with the provisions of subsection (b) of this Section 10.06, (ii) by way of participation in accordance with the provisions of subsection (d) of this Section 10.06, or (iii) by way of pledge or assignment of a security interest subject to the restrictions of subsection (b) of this Section 10.06 (and any other attempted assignment or transfer by any party hereto shall be null and void). Nothing in this Agreement, expressed or implied, shall be construed to confer upon any Person (other than the parties hereto, their respective successors and assigns permitted hereby, Participants to the

extent provided in subsection (d) of this Section 10.06 and, to the extent expressly contemplated hereby, the Related Parties of each of the Administrative Agent, the L/C Issuer and the Lenders) any legal or equitable right, remedy or claim under or by reason of this Agreement.

(c) Assignments by Lenders. Any Lender may at any time assign to one or more assignees all or a portion of its rights and obligations under this Agreement and the other Loan Documents (including all or a portion of its Commitment and the Loans (including for purposes of this subsection (b), participations in L/C Obligations and in Swing Line Loans) at the time owing to it); provided, that, any such assignment shall be subject to the following conditions:

(i) Minimum Amounts.

(A) In the case of an assignment of the entire remaining amount of the assigning Lender's Commitment and the related Loans at the time owing to it or contemporaneous assignments to related Approved Funds (determined after giving effect to such assignments) that equal at least the amount specified in subsection (b)(i)(B) of this Section 10.06 in the aggregate or in the case of an assignment to a Lender, an Affiliate of a Lender or an Approved Fund, no minimum amount need be assigned.

(B) In any case not described in subsection (b)(i)(A) of this Section 10.06, the aggregate amount of the Commitment (which for this purpose includes Loans outstanding thereunder) or, if the Commitment is not then in effect, the principal outstanding balance of the Loans of the assigning Lender subject to each such assignment, determined as of the date the Assignment and Assumption with respect to such assignment is delivered to the Administrative Agent or, if "Trade Date" is specified in the Assignment and Assumption, as of the Trade Date, shall not be less than $5,000,000 unless each of the Administrative Agent and, so long as no Event of Default has occurred and is continuing, the Borrower otherwise consents (each such consent not to be unreasonably withheld or delayed).

(ii) Proportionate Amounts. Each partial assignment shall be made as an assignment of a proportionate part of all the assigning Lender's Loans and Commitment, and rights and obligations with respect thereto, except that this subsection (ii) shall not apply to the Swing Line Lender's rights and obligations in respect of Swing Line Loans.

(iii) Required Consents. No consent shall be required for any assignment except to the extent required by subsection (b)(i)(B) of this Section 10.06 and, in addition:

(A) the consent of the Borrower (such consent not to be unreasonably withheld or delayed) shall be required unless (1) an Event of Default under Section 8.01(a), 8.01(f) or 8.01(g) has occurred and is continuing at the time of such assignment or (2) such assignment is to a Lender, an Affiliate of a Lender or an Approved Fund; provided, that, the Borrower shall be deemed to have consented to any such assignment unless it shall object thereto by written notice to the Administrative Agent within ten (10) Business Days after having received notice thereof;

(B) the consent of the Administrative Agent (such consent not to be unreasonably withheld or delayed) shall be required if such assignment is to a Person that is not a Lender, an Affiliate of a Lender or an Approved Fund with respect to such Lender; and

(C) the consent of the L/C Issuer (such consent not to be unreasonably withheld or delayed) and the Swing Line Lender (such consent not to be unreasonably withheld or delayed) shall be required for any assignment.

(iv) Assignment and Assumption. The parties to each assignment shall execute and deliver to the Administrative Agent an Assignment and Assumption, together with a processing and recordation fee in the amount of $3,500; provided, that, the Administrative Agent may, in its sole discretion, elect to waive such processing and recordation fee in the case of any assignment. The assignee, if it is not a Lender, shall deliver to the Administrative Agent an Administrative Questionnaire.

(v) No Assignment to Certain Persons. No such assignment shall be made to (A) the Borrower or any of the Borrower's Affiliates or Subsidiaries, (B) to any Defaulting Lender or any of its Subsidiaries, or any Person who, upon becoming a Lender hereunder, would constitute any of the foregoing Persons described in this subsection (B) or (C) to a natural Person (or a holding company, investment vehicle or trust for, or owned and operated for, the primary benefit of a natural Person).

(vi) Certain Additional Payments. In connection with any assignment of rights and obligations of any Defaulting Lender hereunder, no such assignment shall be effective unless and until, in addition to the other conditions thereto set forth herein, the parties to the assignment shall make such additional payments to the Administrative Agent in an aggregate amount sufficient, upon distribution thereof as appropriate (which may be outright payment, purchases by the assignee of participations or subparticipations, or other compensating actions, including funding, with the consent of the Borrower and the Administrative Agent, the applicable pro rata share of Loans previously requested but not funded by the Defaulting Lender, to each of which the applicable assignee and assignor hereby irrevocably consent), to (x) pay and satisfy in full all payment liabilities then owed by such Defaulting Lender to the Administrative Agent, the L/C Issuer or any Lender hereunder (and interest accrued thereon) and (y) acquire (and fund as appropriate) its full pro rata share of all Loans and participations in Letters of Credit and Swing Line Loans in accordance with its Applicable Percentage. Notwithstanding the foregoing, in the event that any assignment of rights and obligations of any Defaulting Lender hereunder shall become effective under applicable Law without compliance with the provisions of this subsection (vi), then the assignee of such interest shall be deemed to be a Defaulting Lender for all purposes of this Agreement until such compliance occurs.

Subject to acceptance and recording thereof by the Administrative Agent pursuant to subsection (c) of this Section 10.06, from and after the effective date specified in each Assignment and Assumption, the assignee thereunder shall be a party to this Agreement and, to the extent of the interest assigned by such Assignment and Assumption, have the rights and obligations of a Lender under this Agreement, and the assigning Lender thereunder shall, to the extent of the interest assigned by such Assignment and Assumption, be released from its obligations under this Agreement (and, in the case of an Assignment and Assumption covering all of the assigning Lender's rights and obligations under this Agreement, such Lender shall cease to be a party hereto) but shall continue to be entitled to the benefits of Sections 3.01, 3.04, 3.05, and 10.04 with respect to facts and circumstances occurring prior to the effective date of such assignment; provided, that, except to the extent otherwise expressly agreed by the affected parties, no assignment by a Defaulting Lender will constitute a waiver or release of any claim of any party hereunder arising from the Lender's having been a Defaulting Lender. Upon request, the Borrower (at its expense) shall execute and deliver a Note to the assignee Lender. Any assignment or transfer by a Lender of rights or obligations under this Agreement that does not comply with this subsection (b) shall be treated for

purposes of this Agreement as a sale by such Lender of a participation in such rights and obligations in accordance with subsection (d) of this Section 10.06.

(d) Register. The Administrative Agent, acting solely for this purpose as a non-fiduciary agent of the Borrower (and such agency being solely for tax purposes), shall maintain at the Administrative Agent's Office a copy of each Assignment and Assumption delivered to it (or the equivalent thereof in electronic form) and a register for the recordation of the names and addresses of the Lenders, and the Commitments of, and principal amounts (and stated interest) of the Loans and L/C Obligations owing to, each Lender pursuant to the terms hereof from time to time (the "Register"). The entries in the Register shall be conclusive absent manifest error, and the Borrower, the Administrative Agent and the Lenders shall treat each Person whose name is recorded in the Register pursuant to the terms hereof as a Lender and the owner of the amounts owing to it under the Loan Documents as reflected in the Register for all purposes of the Loan Documents. The Register shall be available for inspection by the Borrower and any Lender, at any reasonable time and from time to time upon reasonable prior notice.

(e) Participations. Any Lender may at any time, without the consent of, or notice to, the Borrower, the Administrative Agent, the L/C Issuer or the Swing Line Lender, sell participations to any Person (other than a natural Person (or a holding company, investment vehicle or trust for, or owned and operated for, the primary benefit of a natural Person), a Defaulting Lender or the Borrower or any of the Borrower's Affiliates or Subsidiaries) (each, a "Participant") in all or a portion of such Lender's rights and/or obligations under this Agreement (including all or a portion of its Commitment and/or the Loans (including such Lender's participations in L/C Obligations and/or Swing Line Loans) owing to it); provided, that, (i) such Lender's obligations under this Agreement shall remain unchanged, (ii) such Lender shall remain solely responsible to the other parties hereto for the performance of such obligations and (iii) the Borrower, the Administrative Agent, the other Lenders and the L/C Issuer shall continue to deal solely and directly with such Lender in connection with such Lender's rights and obligations under this Agreement. For the avoidance of doubt, each Lender shall be responsible for the indemnity under Section 10.04(c) without regard to the existence of any participation.

Any agreement or instrument pursuant to which a Lender sells such a participation shall provide that such Lender shall retain the sole right to enforce this Agreement and to approve any amendment, modification or waiver of any provision of this Agreement; provided, that, such agreement or instrument may provide that such Lender will not, without the consent of the Participant, agree to any amendment, waiver or other modification described in Section 10.01(a) that affects such Participant. The Borrower agrees that each Participant shall be entitled to the benefits of Sections 3.01, 3.04 and 3.05 to the same extent as if it were a Lender and had acquired its interest by assignment pursuant to subsection (b) of this Section 10.06 (it being understood that the documentation required under Section 3.01(e) shall be delivered to the Lender who sells the participation) to the same extent as if it were a Lender and had acquired its interest by assignment pursuant to subsection (b) of this Section 10.06; provided, that, such Participant (A) agrees to be subject to the provisions of Sections 3.06 and 10.13 as if it were an assignee under subsection
(b) of this Section 10.06 and (B) shall not be entitled to receive any greater payment under Sections 3.01 or 3.04, with respect to any participation, than the Lender from whom it acquired the applicable participation would have been entitled to receive, except to the extent such entitlement to receive a greater payment under Section 3.01 or 3.04 results from a Change in Law that occurs after the Participant acquired the applicable participation. Each Lender that sells a participation agrees, at the Borrower's request and expense, to use reasonable efforts to cooperate with the Borrower to effectuate the provisions of Section
3.06 with respect to any Participant. To the extent permitted by law, each Participant also shall be entitled to the benefits of Section 10.08 as though it were a Lender; provided, that, such Participant agrees to be subject to Section 2.13 as though it were a Lender. Each Lender that sells a participation shall, acting solely for this purpose as a nonfiduciary agent of the Borrower, maintain a register on which it enters the name and address of each Participant and the principal amounts (and stated interest) of each Participant's interest

in the Loans or other obligations under the Loan Documents (the "Participant Register"); provided, that, no Lender shall have any obligation to disclose all or any portion of the Participant Register (including the identity of any Participant or any information relating to a Participant's interest in any commitments, loans, letters of credit or its other obligations under any Loan Document) to any Person except to the extent that such disclosure is necessary to establish that such commitment, loan, letter of credit or other obligation is in registered form under Section 5f.103-1(c) of the United States Treasury Regulations. The entries in the Participant Register shall be conclusive absent manifest error, and such Lender shall treat each Person whose name is recorded in the Participant Register as the owner of such participation for all purposes of this Agreement notwithstanding any notice to the contrary. For the avoidance of doubt, the Administrative Agent (in its capacity as Administrative Agent) shall have no responsibility for maintaining a Participant Register.

(f) Certain Pledges. Any Lender may at any time pledge or assign a security interest in all or any portion of its rights under this Agreement (including under its Note, if any) to secure obligations of such Lender, including any pledge or assignment to secure obligations to a Federal Reserve Bank; provided, that, no such pledge or assignment shall release such Lender from any of its obligations hereunder or substitute any such pledgee or assignee for such Lender as a party hereto.

(g) Resignation as L/C Issuer or Swing Line Lender after Assignment.

(i) Notwithstanding anything to the contrary contained herein, if at any time Bank of America assigns all of its Commitment and Loans pursuant to subsection (b) above, Bank of America may, upon thirty (30) days' notice to the Borrower and the Lenders, resign as the L/C Issuer. In the event of any such resignation as the L/C Issuer, the Borrower shall be entitled to appoint from among the Lenders a successor L/C Issuer hereunder; provided, that, no failure by the Borrower to appoint any such successor shall affect the resignation of the L/C Issuer. If Bank of America resigns as the L/C Issuer, it shall retain all the rights, powers, privileges and duties of the L/C Issuer hereunder with respect to all Letters of Credit outstanding as of the effective date of its resignation as the L/C Issuer and all L/C Obligations with respect thereto (including the right to require the Lenders to make Base Rate Committed Loans or fund risk participations in Unreimbursed Amounts pursuant to Section 2.03(c)). Upon the appointment of a successor L/C Issuer and acceptance of the appointment by such successor L/C Issuer, (a) such successor shall succeed to and become vested with all of the rights, powers, privileges and duties of the retiring L/C Issuer, and (b) the successor L/C Issuer shall issue letters of credit in substitution for the Letters of Credit, if any, outstanding at the time of such succession or make other arrangements satisfactory to the retiring L/C Issuer to effectively assume the obligations of the retiring L/C Issuer with respect to such Letters of Credit.

(ii) Notwithstanding anything to the contrary contained herein, if at any time Bank of America assigns all of its Commitment and Loans pursuant to subsection (b) above, Bank of America may, upon thirty (30) days' notice to the Borrower, resign as Swing Line Lender. In the event of any such resignation as Swing Line Lender, the Borrower shall be entitled to appoint from among the Lenders a successor Swing Line Lender hereunder; provided, that, no failure by the Borrower to appoint any such successor shall affect the resignation of Bank of America as Swing Line Lender. If Bank of America resigns as Swing Line Lender, it shall retain all the rights of the Swing Line Lender provided for hereunder with respect to Swing Line Loans made by it and outstanding as of the effective date of such resignation, including the right to require the Lenders to make Base Rate Committed Loans or fund risk participations in outstanding Swing Line Loans pursuant to Section 2.04(c). Upon the appointment of a successor Swing Line Lender and

acceptance of the appointment by such successor Swing Line Lender, such successor shall succeed to and become vested with all of the rights, powers, privileges and duties of the retiring Swing Line Lender, as the case may be.

Section 10.07 Treatment of Certain Information; Confidentiality. Each of the Arranger, the Administrative Agent, each of the Lenders and the L/C Issuer agrees to maintain the confidentiality of the Information (as defined below), except that Information may be disclosed (a) to its Affiliates, its auditors and to its and its Affiliates' Related Parties (it being understood that the Persons to whom such disclosure is made will be informed of the confidential nature of such Information and instructed to keep such Information confidential), (b) to the extent required or requested by any regulatory authority purporting to have jurisdiction over such Person or its Related Parties (including any self-regulatory authority, such as the National Association of Insurance Commissioners), (c) to the extent required by applicable laws or regulations or by any subpoena or similar legal process, (d) to any other party hereto, (e) in connection with the exercise of any remedies hereunder or under any other Loan Document or any action or proceeding relating to this Agreement or any other Loan Document or the enforcement of rights hereunder or thereunder, (f) subject to an agreement containing provisions substantially the same as those of this Section 10.07, to (i) any assignee of or Participant in, or any prospective assignee of or Participant in, any of its rights and obligations under this Agreement or (ii) any actual or prospective party (or its Related Parties) to any swap, derivative or other transaction under which payments are to be made by reference to the Borrower and its obligations, this Agreement or payments hereunder, (g) on a confidential basis to (i) any rating agency in connection with rating the Borrower or its Subsidiaries or the credit facilities provided hereunder or (ii) the CUSIP Service Bureau or any similar agency in connection with the issuance and monitoring of CUSIP numbers or other market identifiers with respect to the credit facilities provided hereunder, (h) with the consent of the Borrower or (i) to the extent such Information (x) becomes publicly available other than as a result of a breach of this Section 10.07, (y) becomes available to the Arranger, the Administrative Agent, any Lender, the L/C Issuer or any of their respective Affiliates on a nonconfidential basis from a source other than the Borrower, or (z) is independently discovered or developed by a party hereto without utilizing any Information received from the Borrower or violating the terms of this Section 10.07. In addition, the Administrative Agent and the Lenders may disclose the existence of this Agreement and information about this Agreement to market data collectors, similar service providers to the lending industry and service providers to the Administrative Agent and the Lenders in connection with the administration of this Agreement, the other Loan Documents, and the Commitments.

For purposes of this Section 10.07, "Information" means all information received from the Borrower or any Subsidiary relating to the Borrower or any Subsidiary or any of their respective businesses, other than any such information that is available to the Administrative Agent, any Lender or the L/C Issuer on a nonconfidential basis prior to disclosure by the Borrower or any Subsidiary. Any Person required to maintain the confidentiality of Information as provided in this Section 10.07 shall be considered to have complied with its obligation to do so if such Person has exercised the same degree of care to maintain the confidentiality of such Information as such Person would accord to its own confidential information.

Each of the Administrative Agent, each of the Lenders and the L/C Issuer acknowledges that (a) the Information may include material non-public information concerning the Borrower or a Subsidiary, as the case may be, (b) it has developed compliance procedures regarding the use of material non-public information and (c) it will handle such material non-public information in accordance with applicable Law, including United States Federal and state securities Laws.

Section 10.08 Right of Setoff. If an Event of Default shall have occurred and be continuing, each Lender, the L/C Issuer and each of their respective Affiliates is hereby authorized at any time and from time to time, to the fullest extent permitted by applicable law, to set off and apply any and all deposits (general or special, time or demand, provisional or final, in whatever currency) at any time held and other

obligations (in whatever currency) at any time owing by such Lender, the L/C Issuer or any such Affiliate to or for the credit or the account of the Borrower against any and all of the obligations of the Borrower now or hereafter existing under this Agreement or any other Loan Document to such Lender or the L/C Issuer or their respective Affiliates, irrespective of whether or not such Lender, the L/C Issuer or Affiliate shall have made any demand under this Agreement or any other Loan Document and although such obligations of the Borrower may be contingent or unmatured or are owed to a branch office or Affiliate of such Lender or the L/C Issuer different from the branch office or Affiliate holding such deposit or obligated on such indebtedness; provided, that, in the event that any Defaulting Lender shall exercise any such right of setoff, (x) all amounts so set off shall be paid over immediately to the Administrative Agent for further application in accordance with the provisions of Section 2.15 and, pending such payment, shall be segregated by such Defaulting Lender from its other funds and deemed held in trust for the benefit of the Administrative Agent, the L/C Issuer and the Lenders and (y) the Defaulting Lender shall provide promptly to the Administrative Agent a statement describing in reasonable detail the Obligations owing to such Defaulting Lender as to which it exercised such right of setoff. The rights of each Lender, the L/C Issuer and their respective Affiliates under this Section 10.08 are in addition to other rights and remedies (including other rights of setoff) that such Lender, the L/C Issuer or their respective Affiliates may have. Each Lender and the L/C Issuer agrees to notify the Borrower and the Administrative Agent promptly after any such setoff and application, provided, that, the failure to give such notice shall not affect the validity of such setoff and application.

Section 10.09 Interest Rate Limitation. Notwithstanding anything to the contrary contained in any Loan Document, the interest paid or agreed to be paid under the Loan Documents shall not exceed the maximum rate of non-usurious interest permitted by applicable Law (the "Maximum Rate"). If the Administrative Agent or any Lender shall receive interest in an amount that exceeds the Maximum Rate, the excess interest shall be applied to the principal of the Loans or, if it exceeds such unpaid principal, refunded to the Borrower. In determining whether the interest contracted for, charged, or received by the Administrative Agent or a Lender exceeds the Maximum Rate, such Person may, to the extent permitted by applicable Law, (a) characterize any payment that is not principal as an expense, fee, or premium rather than interest, (b) exclude voluntary prepayments and the effects thereof, and (c) amortize, prorate, allocate, and spread in equal or unequal parts the total amount of interest throughout the contemplated term of the Obligations hereunder.

Section 10.10 Integration; Effectiveness. This Agreement, the other Loan Documents and any separate letter agreements with respect to fees payable to the Administrative Agent or the L/C Issuer constitute the entire contract among the parties relating to the subject matter hereof and supersede any and all previous agreements and understandings, oral or written, relating to the subject matter hereof. Except as provided in Section 4.01, this Agreement shall become effective when it shall have been executed by the Administrative Agent and when the Administrative Agent shall have received counterparts hereof that, when taken together, bear the signatures of each of the other parties hereto, and thereafter shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

Section 10.11 Survival of Representations and Warranties. All representations and warranties made hereunder and in any other Loan Document or other document delivered pursuant hereto or thereto or in connection herewith or therewith shall survive the execution and delivery hereof and thereof. Such representations and warranties have been or will be relied upon by the Administrative Agent and each Lender, regardless of any investigation made by the Administrative Agent or any Lender or on their behalf and notwithstanding that the Administrative Agent or any Lender may have had notice or knowledge of any Default at the time of any Credit Extension, and shall continue in full force and effect as long as any Loan or any other Obligation hereunder shall remain unpaid or unsatisfied or any Letter of Credit shall remain outstanding.

Section 10.12 Severability. If any provision of this Agreement or the other Loan Documents is held to be illegal, invalid or unenforceable, (a) the legality, validity and enforceability of the remaining provisions of this Agreement and the other Loan Documents shall not be affected or impaired thereby and (b) the parties shall endeavor in good faith negotiations to replace the illegal, invalid or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the illegal, invalid or unenforceable provisions. The invalidity of a provision in a particular jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction. Without limiting the foregoing provisions of this Section 10.12, if and to the extent that the enforceability of any provisions in this Agreement relating to Defaulting Lenders shall be limited by Debtor Relief Laws, as determined in good faith by the Administrative Agent, the L/C Issuer or the Swing Line Lender, as applicable, then such provisions shall be deemed to be in effect only to the extent not so limited.

Section 10.13 Replacement of Lenders. If the Borrower is entitled to replace a Lender pursuant to the provisions of Section 3.06, or if any Lender is a Defaulting Lender or a Non-Consenting Lender, then the Borrower may, at its sole expense and effort, upon notice to such Lender and the Administrative Agent, require such Lender to assign and delegate, without recourse (in accordance with and subject to the restrictions contained in, and consents required by, Section 10.06), all of its interests, rights (other than its existing rights to payments pursuant to Sections 3.01 and 3.04) and obligations under this Agreement and the related Loan Documents to an Eligible Assignee that shall assume such obligations (which assignee may be another Lender, if a Lender accepts such assignment); provided, that:

(a) the Borrower shall have paid to the Administrative Agent the assignment fee (if any) specified in Section 10.06(b);

(b) such Lender shall have received payment of an amount equal to one hundred percent (100%) of the outstanding principal of its Loans and L/C Advances, accrued interest thereon, accrued fees and all other amounts payable to it hereunder and under the other Loan Documents (including any amounts under Section 3.05) from the assignee (to the extent of such outstanding principal and accrued interest and fees) or the Borrower (in the case of all other amounts);

(c) in the case of any such assignment resulting from a claim for compensation under Section 3.04 or payments required to be made pursuant to Section 3.01, such assignment will result in a reduction in such compensation or payments thereafter;

(d) such assignment does not conflict with applicable Laws; and

(e) in the case of any such assignment resulting from a Non-Consenting Lender's failure to consent to a proposed change, waiver, discharge or termination with respect to any Loan Document, the applicable replacement bank, financial institution or Fund consents to the proposed change, waiver, discharge or termination.

A Lender shall not be required to make any such assignment or delegation if, prior thereto, as a result of a waiver by such Lender or otherwise, the circumstances entitling the Borrower to require such assignment and delegation cease to apply. Each party hereto agrees that (i) an assignment required pursuant to this Section 10.13 may be effected pursuant to an Assignment and Assumption executed by the Borrower, the Administrative Agent and the assignee and (ii) the Lender required to make such assignment need not be a party thereto in order for such assignment to be effective and shall be deemed to have consented to an be bound by the terms thereof; provided, that, following the effectiveness of any such assignment, the other parties to such assignment agree to execute and deliver such documents necessary to evidence such assignment as reasonably requested by the applicable Lender; provided, further, that, any such documents

shall be without recourse to or warranty by the parties thereto. Notwithstanding anything in this Section 10.13 to the contrary, (A) the Lender that acts as the L/C Issuer may not be replaced hereunder at any time it has any Letter of Credit outstanding hereunder unless arrangements satisfactory to such Lender (including the furnishing of a backstop letter of credit in form and substance, and issued by an issuer, reasonably satisfactory to the L/C Issuer or the depositing of Cash Collateral pursuant to arrangements reasonably satisfactory to the L/C Issuer) have been made with respect to such outstanding Letter of Credit and (B) the Lender that acts as the Administrative Agent may not be replaced hereunder except in accordance with the terms of Section 9.06.

Section 10.14 Governing Law; Jurisdiction; Etc.

(a) GOVERNING LAW. THIS AGREEMENT AND THE OTHER LOAN DOCUMENTS AND ANY CLAIMS, CONTROVERSY, DISPUTE OR CAUSE OF ACTION BASED UPON, ARISING OUT OF OR RELATING TO THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT (EXCEPT, AS TO ANY OTHER LOAN DOCUMENT, AS EXPRESSLY SET FORTH THEREIN) AND THE TRANSACTIONS CONTEMPLATED HEREBY AND THEREBY SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

(b) SUBMISSION TO JURISDICTION. THE BORROWER IRREVOCABLY AND UNCONDITIONALLY AGREES THAT IT WILL NOT COMMENCE ANY ACTION, LITIGATION OR PROCEEDING OF ANY KIND OR DESCRIPTION, WHETHER IN LAW OR EQUITY, WHETHER IN CONTRACT OR IN TORT OR OTHERWISE, AGAINST THE ADMINISTRATIVE AGENT, ANY LENDER, THE L/C ISSUER, OR ANY RELATED PARTY OF THE FOREGOING IN ANY WAY RELATING TO THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT OR THE TRANSACTIONS RELATING HERETO OR THERETO, IN ANY FORUM OTHER THAN THE COURTS OF THE STATE OF NEW YORK SITTING IN NEW YORK COUNTY AND OF THE UNITED STATES DISTRICT COURT OF THE SOUTHERN DISTRICT OF NEW YORK, SITTING IN THE COUNTY OF NEW YORK, AND ANY APPELLATE COURT FROM ANY THEREOF, AND EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY SUBMITS TO THE JURISDICTION OF SUCH COURTS AND AGREES THAT ALL CLAIMS IN RESPECT OF ANY SUCH ACTION, LITIGATION OR PROCEEDING MAY BE HEARD AND DETERMINED IN SUCH NEW YORK STATE COURT OR, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, IN SUCH FEDERAL COURT. EACH OF THE PARTIES HERETO AGREES THAT A FINAL JUDGMENT IN ANY SUCH ACTION, LITIGATION OR PROCEEDING SHALL BE CONCLUSIVE AND MAY BE ENFORCED IN OTHER JURISDICTIONS BY SUIT ON THE JUDGMENT OR IN ANY OTHER MANNER PROVIDED BY LAW. NOTHING IN THIS AGREEMENT OR IN ANY OTHER LOAN DOCUMENT SHALL AFFECT ANY RIGHT THAT THE ADMINISTRATIVE AGENT, ANY LENDER OR THE L/C ISSUER MAY OTHERWISE HAVE TO BRING ANY ACTION OR PROCEEDING RELATING TO THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT AGAINST THE BORROWER OR ITS PROPERTIES IN THE COURTS OF ANY JURISDICTION.

(c) WAIVER OF VENUE. THE BORROWER IRREVOCABLY AND UNCONDITIONALLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY OBJECTION THAT IT MAY NOW OR HEREAFTER HAVE TO THE LAYING OF VENUE OF ANY ACTION OR PROCEEDING ARISING OUT OF OR RELATING TO THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT IN ANY COURT REFERRED TO IN SUBSECTION (B) OF THIS SECTION 10.14. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE DEFENSE OF AN INCONVENIENT FORUM TO THE MAINTENANCE OF SUCH ACTION OR PROCEEDING IN ANY SUCH COURT.

(d) SERVICE OF PROCESS. EACH PARTY HERETO IRREVOCABLY CONSENTS TO SERVICE OF PROCESS IN THE MANNER PROVIDED FOR NOTICES IN SECTION 10.02. NOTHING IN THIS AGREEMENT WILL AFFECT THE RIGHT OF ANY PARTY HERETO TO SERVE PROCESS IN ANY OTHER MANNER PERMITTED BY APPLICABLE LAW.

Section 10.15 Waiver of Jury Trial. EACH PARTY HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY). EACH PARTY HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PERSON HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PERSON WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTIES HERETO HAVE BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE OTHER LOAN DOCUMENTS BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION 10.15.

Section 10.16 No Advisory or Fiduciary Responsibility. In connection with all aspects of each transaction contemplated hereby (including in connection with any amendment, waiver or other modification hereof or of any other Loan Document), the Borrower acknowledges and agrees, and acknowledges its Affiliates' understanding, that: (a)(i) the arranging and other services regarding this Agreement provided by the Administrative Agent, the Arranger, and the Lenders are arm's-length commercial transactions between the Borrower and its Affiliates, on the one hand, and the Administrative Agent, the Arranger and the Lenders on the other hand, (ii) the Borrower has consulted its own legal, accounting, regulatory and tax advisors to the extent it has deemed appropriate, and (iii) the Borrower is capable of evaluating, and understands and accepts, the terms, risks and conditions of the transactions contemplated hereby and by the other Loan Documents; (b)(i) the Administrative Agent, the Arranger and each Lender is and has been acting solely as a principal and, except as expressly agreed in writing by the relevant parties, has not been, is not and will not be acting as an advisor, agent or fiduciary for the Borrower or any of Affiliates or any other Person and (ii) neither the Administrative Agent, the Arranger nor any Lender has any obligation to the Borrower or any of its Affiliates with respect to the transactions contemplated hereby except those obligations expressly set forth herein and in the other Loan Documents; and (c) the Administrative Agent, the Arranger and the Lenders and their respective Affiliates may be engaged in a broad range of transactions that involve interests that differ from those of the Borrower and its Affiliates, and neither the Administrative Agent, the Arranger nor any Lender has any obligation to disclose any of such interests to the Borrower or its Affiliates. To the fullest extent permitted by law, the Borrower hereby waives and releases any claims that it may have against the Administrative Agent, the Arranger or any Lender with respect to any breach or alleged breach of agency or fiduciary duty in connection with any aspect of any transaction contemplated hereby.

Section 10.17 USA PATRIOT Act Notice. Each Lender that is subject to the USA PATRIOT Act (Title III of Pub. L. 107-56 (signed into law October 26, 2001)) (the "PATRIOT Act"), and the Administrative Agent (for itself and not on behalf of any Lender) hereby notifies the Borrower that pursuant to the requirements of the PATRIOT Act, it is required to obtain, verify and record information that identifies the Borrower, which information includes the name and address of the Borrower and other information that will allow such Lender or the Administrative Agent, as applicable, to identify the Borrower in accordance with the PATRIOT Act. The Borrower shall, promptly following a request by the Administrative Agent or any Lender, provide all documentation and other information that the Administrative Agent or such Lender requests in order to comply with its ongoing obligations under

applicable "know your customer" and anti-money laundering rules and regulations, including the PATRIOT Act.

Section 10.18 Judgment Currency. If, for the purposes of obtaining judgment in any court, it is necessary to convert a sum due hereunder or any other Loan Document in one currency into another currency, the rate of exchange used shall be that at which in accordance with normal banking procedures the Administrative Agent could purchase the first currency with such other currency on the Business Day preceding that on which final judgment is given. The obligation of the Borrower in respect of any such sum due from it to the Administrative Agent or the Lenders hereunder or under the other Loan Documents shall, notwithstanding any judgment in a currency (the "Judgment Currency") other than that in which such sum is denominated in accordance with the applicable provisions of this Agreement (the "Agreement Currency"), be discharged only to the extent that on the Business Day following receipt by the Administrative Agent or such Lender, as the case may be, of any sum adjudged to be so due in the Judgment Currency, the Administrative Agent or such Lender, as the case may be, may in accordance with normal banking procedures purchase the Agreement Currency with the Judgment Currency. If the amount of the Agreement Currency so purchased is less than the sum originally due to the Administrative Agent or any Lender from the Borrower in the Agreement Currency, the Borrower agrees, as a separate obligation and notwithstanding any such judgment, to indemnify the Administrative Agent or such Lender, as the case may be, against such loss. If the amount of the Agreement Currency so purchased is greater than the sum originally due to the Administrative Agent or any Lender in such currency, the Administrative Agent or such Lender, as the case may be, agrees to return the amount of any excess to the Borrower (or to any other Person who may be entitled thereto under applicable law).

Section 10.19 Electronic Execution; Electronic Records; Counterparts. This Agreement, any other Loan Document and any other Communication, including Communications required to be in writing, may be in the form of an Electronic Record and may be executed using Electronic Signatures. The Borrower, the Administrative Agent and each Lender Party agrees that any Electronic Signature on or associated with any Communication shall be valid and binding on such Person to the same extent as a manual, original signature, and that any Communication entered into by Electronic Signature will constitute the legal, valid and binding obligation of such Person enforceable against such Person in accordance with the terms thereof to the same extent as if a manually executed original signature was delivered. Any Communication may be executed in as many counterparts as necessary or convenient, including both paper and electronic counterparts, but all such counterparts are one and the same Communication. For the avoidance of doubt, the authorization under this paragraph may include use or acceptance of a manually signed paper Communication which has been converted into electronic form (such as scanned into .pdf), or an electronically signed Communication converted into another format, for transmission, delivery and/or retention. The Administrative Agent and each of the Lender Parties may, at its option, create one or more copies of any Communication in the form of an imaged Electronic Record (each, an "Electronic Copy"), which shall be deemed created in the ordinary course of such Person's business, and destroy the original paper document. All Communications in the form of an Electronic Record, including an Electronic Copy, shall be considered an original for all purposes, and shall have the same legal effect, validity and enforceability as a paper record. Notwithstanding anything contained herein to the contrary, none of the Administrative Agent, the L/C Issuer or the Swing Line Lender is under any obligation to accept an Electronic Signature in any form or in any format unless expressly agreed to by such Person pursuant to procedures approved by it; provided, that, without limiting the foregoing, (a) to the extent the Administrative Agent, the L/C Issuer and/or the Swing Line Lender has agreed to accept such Electronic Signature, the Administrative Agent and each of the Lender Parties shall be entitled to rely on any such Electronic Signature purportedly given by or on behalf of the Borrower and/or any Lender Party without further verification, and (b) upon the request of the Administrative Agent or any Lender Party, any Electronic Signature shall be promptly followed by such manually executed counterpart.

None of the Administrative Agent, the L/C Issuer or the Swing Line Lender shall be responsible for or have any duty to ascertain or inquire into the sufficiency, validity, enforceability, effectiveness or genuineness of any Loan Document or any other agreement, instrument or document (including, for the avoidance of doubt, in connection with the Administrative Agent's, the L/C Issuer's or the Swing Line Lender's reliance on any Electronic Signature transmitted by telecopy, emailed .pdf or any other electronic means). The Administrative Agent, the L/C Issuer and the Swing Line Lender shall be entitled to rely on, and shall incur no liability under or in respect of this Agreement or any other Loan Document by acting upon, any Communication (which writing may be a fax, any electronic message, Internet or intranet website posting or other distribution or signed using an Electronic Signature) or any statement made to it orally or by telephone and believed by it to be genuine and signed or sent or otherwise authenticated (whether or not such Person in fact meets the requirements set forth in the Loan Documents for being the maker thereof).

The Borrower and each Lender Party hereby waives (a) any argument, defense or right to contest the legal effect, validity or enforceability of this Agreement or any other Loan Document based solely on the lack of paper original copies of this Agreement or such other Loan Document, and (b) waives any claim against the Administrative Agent and each Lender Party for any liabilities arising solely from the Administrative Agent's and/or any Lender Party's reliance on or use of Electronic Signatures, including any liabilities arising as a result of the failure of the Borrower to use any available security measures in connection with the execution, delivery or transmission of any Electronic Signature.

Section 10.20 Acknowledgement and Consent to Bail-In of Affected Financial Institutions. Notwithstanding anything to the contrary in any Loan Document or in any other agreement, arrangement or understanding among any such parties, each party hereto acknowledges that any liability of any Lender or the L/C Issuer that is an Affected Financial Institution arising under any Loan Document, to the extent such liability is unsecured, may be subject to the Write-Down and Conversion Powers of the applicable Resolution Authority and agrees and consents to, and acknowledges and agrees to be bound by: (a) the application of any Write-Down and Conversion Powers by the applicable Resolution Authority to any such liabilities arising hereunder which may be payable to it by any Lender or the L/C Issuer that is an Affected Financial Institution; and (b) the effects of any Bail-In Action on any such liability, including, if applicable,
(i) a reduction in full or in part or cancellation of any such liability, (ii) a conversion of all, or a portion of, such liability into shares or other instruments of ownership in such Affected Financial Institution, its parent undertaking, or a bridge institution that may be issued to it or otherwise conferred on it, and that such shares or other instruments of ownership will be accepted by it in lieu of any rights with respect to any such liability under this Agreement or any other Loan Document, or (iii) the variation of the terms of such liability in connection with the exercise of the Write-Down and Conversion Powers of the applicable Resolution Authority.

Section 10.21 Acknowledgement Regarding any Supported QFCs. To the extent that the Loan Documents provide support, through a guarantee or otherwise, for any Swap Contract or any other agreement or instrument that is a QFC (such support, "QFC Credit Support", and each such QFC, a "Supported QFC"), the parties acknowledge and agree that, with respect to the resolution power of the Federal Deposit Insurance Corporation under the Federal Deposit Insurance Act and Title II of the Dodd- Frank Wall Street Reform and Consumer Protection Act (together with the regulations promulgated thereunder, the "U.S. Special Resolution Regimes") in respect of such Supported QFC and QFC Credit Support (with the provisions below applicable notwithstanding that the Loan Documents and any Supported QFC may in fact be stated to be governed by the laws of the State of New York and/or of the United States or any other state of the United States), in the event a Covered Entity that is party to a Supported QFC (each, a "Covered Party") becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer of such Supported QFC and the benefit of such QFC Credit Support (and any interest and obligation in or under such Supported QFC and such QFC Credit Support, and any rights in property securing such Supported QFC or such QFC Credit Support) from such Covered Party will be effective to the same extent

as the transfer would be effective under the U.S. Special Resolution Regime if the Supported QFC and such QFC Credit Support (and any such interest, obligation and rights in property) were governed by the laws of the United States or a state of the United States. In the event a Covered Party or a BHC Act Affiliate of a Covered Party becomes subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under the Loan Documents that might otherwise apply to such Supported QFC or any QFC Credit Support that may be exercised against such Covered Party are permitted to be exercised to no greater extent than such Default Rights could be exercised under the U.S. Special Resolution Regime if the Supported QFC and the Loan Documents were governed by the laws of the United States or a state of the United States. Without limitation of the foregoing, it is understood and agreed that rights and remedies of the parties with respect to a Defaulting Lender shall in no event affect the rights of any Covered Party with respect to a Supported QFC or any QFC Credit Support.

[**Signature Pages Intentionally Omitted**]

EXHIBIT A

FORM OF COMMITTED LOAN NOTICE

Date: __, __

To: Bank of America, N.A., as Administrative Agent Ladies and Gentlemen:

Reference is made to that certain Credit Agreement, dated as of January 28, 2020 (as amended, restated, extended, supplemented or otherwise modified in writing from time to time, the "Agreement"; the terms defined therein being used herein as therein defined), among Biogen Inc., a Delaware corporation (the "Borrower"), each Lender from time to time party thereto, and Bank of America, N.A., as Administrative Agent, Swing Line Lender and L/C Issuer.

The undersigned hereby requests (select one):

☐ A Committed Borrowing

☐ A conversion of [Base Rate Loans][Term SOFR Loans] to [Term SOFR Loans][Base Rate Loans]

☐ A continuation of [Term SOFR Loans][Alternative Currency Term Rate Loans]

1. On __ (a Business Day).

2. In the amount of [$]__.

3. Comprised of __.
[Type of Committed Loans requested][1]

4. For Term SOFR Loans or Alternative Currency Term Rate Loans: with an Interest Period of [1][3][6] month(s).

[5. Currency:__.]

The Committed Borrowing, if any, requested herein complies with the proviso to the first sentence of Section 2.01 of the Agreement.

BIOGEN INC.,
a Delaware corporation

By:__ Name:
Title:

[1] E.g. Base Rate Loans, Term SOFR Loans, Alternative Currency Daily Rate Loans, or Alternative Currency Term Rate Loans.

NONQUALIFIED STOCK OPTION AWARD AGREEMENT

GRANTED UNDER

BIOGEN INC. 2017 OMNIBUS EQUITY PLAN

1. Grant of Options

Pursuant to the Biogen Inc. 2017 Omnibus Equity Plan (as it may be amended, modified, or supplemented from time to time, the "Plan"), Biogen Inc. (the "Company") hereby grants an employee of the Company or its Affiliates (the "Participant"), on ____ (the "Grant Date"), a nonqualified stock option (this "Stock Option"). Under this Stock Option, the Participant may purchase, in whole or in part, on the terms herein provided, a total of [●] shares of Stock (the "Shares") at an exercise price equal to $[●] per Share, which is equal to the Fair Market Value (as defined in the Plan) of a Share on the Grant Date of this Stock Option. The latest date on which this Stock Option, or any part thereof, may be exercised shall be the 10th anniversary of the Grant Date (the "Expiration Date"). The Stock Option evidenced by this Agreement is intended to be, and is hereby designated, a nonqualified option, that is, an option that does not qualify as an incentive stock option as defined in Section 422 of the Internal Revenue Code of 1986, as amended from time to time. All initially capitalized terms used in this Agreement shall have the meaning specified in the Plan, unless another meaning is specified herein.

2. Vesting and Exercisability of Stock Option

A. The Participant shall have a nonforfeitable right to exercise a portion of this Stock Option (such portion, the vested portion) from and after the vesting dates described in this Section 2, except as otherwise provided herein or determined by the Committee in its sole discretion. If the Participant ceases to be employed by the Company and its Affiliates for any reason, any then outstanding and unvested portion of the Stock Option shall be automatically and immediately forfeited and terminated, except as otherwise provided in this Agreement and the Plan.

B. Except as otherwise provided herein or the Plan, this Stock Option shall vest and become exercisable [vesting schedule] ,

C. Except as otherwise provided herein or the Plan, upon termination of the Participant's employment with the Company and its Affiliates for any reason, any portion of this Stock Option that is not then vested shall promptly terminate and the vested remainder of this Stock Option shall remain exercisable until the earlier of: (i) six (6) months following the Participant's Termination Date (as defined in the Employment Agreement) and (ii) the Expiration Date, except as follows:

(1) any unvested portion of this Stock Option held by the Participant immediately prior to the Participant's Termination Date by reason of death or as result of Disability shall become fully vested upon the Termination Date and shall remain exercisable by the Participant or the Participant's executor or administrator or the person or persons to whom the Stock Option is transferred by will or the applicable laws of descent and distribution, until the earlier of (a) one (1) year following the date of the Participant's death or Disability and (b) the Expiration Date;

(2) should the Participant's employment be terminated due to an Involuntary Employment Action (as defined in the Employment Agreement) that

occurs outside of a Change in Control Period (as defined in the Employment Agreement), any unvested portion of this Stock Option held by the Participant shall vest on a pro rata basis upon the Termination Date, with such proration calculated as follows: (i) if the Termination Date occurs within the first ___ months following the Grant Date, the Stock Options scheduled to vest on _____ shall vest and (ii) if the Termination Date occurs after the first ___ months following the Grant Date, the number of Stock Options that vest shall equal the product of [INSERT 1/3 OF GRANTED OPTIONS] multiplied by a fraction, the numerator of which is number of days elapsed from the most recent Vesting Date through the Termination Date, and the denominator of which is 366 days (or 365 days, if applicable). The vested portion of the Stock Option shall remain exercisable by the Participant until the earlier of (a) _____ following the Participant's Termination Date by reason of an Involuntary Employment Action and (b) the Expiration Date;

(3) any unvested portion of this Stock Options held by the Participant immediately prior to the Participant's Termination Date by reason of an Involuntary Employment Action during a Change in Control Period shall become fully vested upon the Termination Date and shall remain exercisable by the Participant until the earlier of (a) ___ year following the Participant's Termination Date by reason of an Involuntary Employment Action during a Change in Control Period and (b) the Expiration Date; and

(4) any unvested portion of this Stock Option held by the Participant immediately prior to the Participant's Retirement shall become fully vested for fifty percent (50%) of the number of Shares covered by such unvested portion and for an additional ten percent (10%) of the number of Shares covered by such unvested portion for every full year of employment by the Company and its Affiliates beyond ten (10) years, on the date of the Participant's Retirement. Any portion of this Stock Option held by the Participant immediately prior to the Participant's Retirement that is exercisable immediately following the Participant's Retirement (after giving effect to this Section 2.C(4)) shall remain exercisable until the earlier of (i) the third anniversary of the Participant's Retirement and (ii) the Expiration Date. For the avoidance of doubt, Retirement shall not include any termination for Cause (as defined in the Employment Agreement) or any termination for insufficient performance, as determined by the Company and its Affiliates.

D. Notwithstanding anything herein to the contrary, any portion of this Stock Option held by the Participant or the Participant's permitted transferee immediately prior to the cessation of the Participant's employment for Cause shall terminate at the commencement of business on the date of such termination.

3. Exercise of Stock Option

A. Each election to exercise this Stock Option shall be made, in accordance with such rules and procedures as the broker or other third-party administrator retained in connection with the administration of the Plan shall prescribe or in accordance with such other procedures as the Committee may determine. This election shall be made by the Participant or the Participant's executor, administrator, or legally appointed representative (in the event of the Participant's incapacity) or the person or persons to whom this Stock Option is transferred by will or the applicable laws of descent and distribution (collectively, the "Option Holder"), accompanied by payment in full as provided in the Plan. Subject to the further terms and conditions provided in the Plan, the

purchase price may be paid in whole or in part in cash or, if approved by the Board or the Committee, by means of a cashless exercise by withholding that number of Shares of common stock of the Company, $0.0005 par value ("Common Stock") whose Fair Market Value is equal to the aggregate exercise price of the Stock Options being exercised. In the event that this Stock Option is exercised by an Option Holder other than the Participant, the Company shall be under no obligation to deliver Shares hereunder unless and until it is satisfied as to the authority of the Option Holder to exercise this Stock Option.

B. the Expiration Date on which a vested Stock Option is scheduled to terminate in accordance with the terms of the Stock Option, if the Stock Option is unexercised and the per Share exercise price is less than the closing price of Stock on that date, the vested Stock Option shall be deemed to have been exercised at the close of business on that date. As promptly as practicable thereafter, the Company shall deliver to the Participant that number of Shares subject to the vested Stock Option less the number of Shares with a value that is equal to the aggregate Fair Market Value of (1) the aggregate exercise price of the vested Stock Option and (2) the amount necessary to satisfy any required withholding of taxes or social insurance contributions.

4. Cancellation and Rescission of Awards

The Committee may cancel, rescind, withhold or otherwise limit or restrict this Stock Option at any time prior to exercise if the Participant is not in compliance with all applicable provisions of this Agreement and the Plan, or if the Participant engages in any Detrimental Activity.

5. No Voting Rights/Dividends

This Stock Option shall not be interpreted to bestow upon the Participant any equity interest or ownership in the Company or any Affiliate prior to the date on which the Company delivers to the Participant the Shares. The Participant is not entitled to vote any Shares by reason of the granting or vesting of this Stock Option or to receive or be credited with any dividends declared and payable on any Share underlying this Stock Option prior to its exercise with respect to such share.

6. Withholding

The Participant shall pay to the Company or make provision satisfactory to the Company for payment of any taxes and/or social insurance contributions required by law to be withheld with respect to the Stock Option prior to the date of exercise. If no such provision is made, the Company and its Affiliates shall deduct any such tax and/or social insurance obligations from any payment of any kind due to the Participant hereunder or otherwise. To satisfy the withholding obligations hereunder, the Participant may request, if approved by the Board or the Committee, the Company to withhold the minimum number of Shares otherwise deliverable in respect of the exercised portion of the Stock Option that are needed to pay the tax and/or social insurance obligations required by law to be withheld with respect to the Stock Option.

7. Provisions of the Plan

This Stock Option is subject to the terms and provisions of the Plan, which are incorporated herein by reference, and in the event of any inconsistency or conflict between the provisions of this Stock Option and the Plan, the provisions of the Plan shall

control. A copy of the Plan as in effect on the Grant Date has been made available to the Participant.

8. No Right to Employment

The grant of this Stock Option shall not constitute a contract of employment or confer upon the Participant any right with respect to the continuance of his/her employment by or other service with the Company or any Affiliate, nor shall it or they be construed as affecting the rights of the Company (or Affiliate) to terminate the service of the Participant at any time or otherwise change the terms of such service, including, without limitation, the right to promote, demote or otherwise re-assign the Participant from one position to another within the Company or any Affiliate.

9. No Rights as a Stockholder

The Participant shall not have any rights as a stockholder with respect to any Shares (including dividend or voting rights) to be issued under this Stock Option until he or she becomes the holder of such Shares.

10. Governing Law

The provisions of this Stock Option shall be governed by and interpreted in accordance with the laws of the State of Delaware.

[Signature Page Follows]

IN WITNESS WHEREOF, the Company has caused this instrument to be executed by its duly authorized officer.

Biogen Inc.

By: __
Name: [●]
Title: [●]

[Signature Page to Nonqualified Stock Option Award Agreement]

EXHIBIT 10.45

CERTAIN INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH NOT MATERIAL AND IS THE TYPE THAT BIOGEN INC. TREATS AS PRIVATE OR CONFIDENTIAL.

Execution Version

AMENDED AND RESTATED COLLABORATION AGREEMENT

dated as of October 22, 2017 between

BIOGEN MA INC.

and

EISAI CO., LTD.

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TABLE OF CONTENTS

Page

EXHIBITS

Exhibit 1(A) - Molecule E2609
Exhibit 1(B) - Molecule BAN2401
Exhibit 1(C) - Molecule Anti-Tau
Exhibit 1(D) - Eisai Patents
Exhibit 1(E) - Company Patents
Exhibit 1(F) - Commercial Territories

AMENDED AND RESTATED COLLABORATION AGREEMENT

This **AMENDED AND RESTATED COLLABORATION AGREEMENT** (the "**Agreement**") is entered into as of October 22, 2017 (the "**Effective Date**") by and between **EISAI CO., LTD.**, a Japanese corporation having its principal place of business at 4-6-10, Koishikwa, Bunkyo-ku Tokyo 112-8088, Japan ("**Eisai**"), and **BIOGEN MA INC.**, a Massachusetts corporation having its principal place of business at 225 Binney Street, Cambridge, MA 02142 ("**Company**"). Company and Eisai are sometimes referred to herein individually as a "**Party**" and collectively as the "**Parties**".

BACKGROUND

WHEREAS, the Parties are global pharmaceutical companies with expertise in the development, manufacture and commercialization of human therapeutic products;

WHEREAS, the Parties entered into a Collaboration Agreement, dated as of March 4, 2014 ("**Original Agreement Effective Date**") with regard to the development and commercialization of certain pharmaceutical products (together with such First Amendment to the Collaboration Agreement, effective January 27, 2017, entered into by the Parties, the "**Original Agreement**");

WHEREAS, commensurate with entering into this Agreement, the Parties are entering into the Other Transaction Documents, including the BIIB037 Collaboration Agreement, dated October 22, 2017, with regard to the development and commercialization of Molecule BIIB037 (the "**BIIB037 Collaboration Agreement**); and

WHEREAS, the Parties desire to amend and restate the Original Agreement in its entirety in accordance with this Agreement.

NOW THEREFORE, in consideration of the foregoing premises and the mutual promises, covenants and conditions contained in this Agreement, the Parties agree as follows:

ARTICLE 1 DEFINITIONS

As used in this Agreement, the following initially capitalized terms, whether used in the singular or plural form, shall have the meanings set forth in this ARTICLE 1. Unless the context of this Agreement otherwise requires: (a) words of any gender include each other gender; (b) words using the singular or plural number also include the plural or singular number, respectively; (c) the terms "hereunder," "hereof," "herein," "hereby," and derivative or similar words refer to this entire Agreement; (d) the terms "Article," "Section" or "Exhibit" refer to the specified Article, Section or Exhibit of this Agreement; (e) the terms "include," "includes" and "including" shall be deemed to be followed by the phrase "without limitation"; (f) "days" refers to calendar days; (g) all references to "U.S." or "United States" refer to the United States of America; (h) the word "will" shall be construed to have the same meaning and effect as the word "shall"; (i) any reference herein to any Person shall be construed to include the Person's successors and assigns; and (j) any definition of or reference to any agreement, instrument or other document herein shall be construed

as referring to such agreement, instrument or other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein). All accounting terms used but not otherwise defined herein shall have the meanings ascribed to such terms under the applicable Accounting Standards as applied to a Party. All references to "$" amounts hereunder shall be deemed to be U.S. Dollars.

1.1 "**AB JDC**" means the JDC that oversees the Development Program for Eisai Collaboration Products containing Molecule BAN2401.

1.2 "**Accounting Standards**" means, with respect to Company, U.S. GAAP, and means, with respect to Eisai, IFRS or JP GAAP (with respect to Japan only), in each case, as generally and consistently applied throughout the applicable Party's organization.

1.3 "**Acquired Party**" has the meaning set forth in Section 14.2(a).

1.4 "**Acquired Party Election Date**" has the meaning set forth in Section 14.2(c)(ii).

1.5 "**Acquiring Party**" has the meaning set forth in Section 14.1(d).

1.6 "**AD related Disease**" means dementia which relates to neurodegeneration other than Alzheimer's disease, including dementia with Lewy bodies and dementia with Parkinson's disease.

1.7 "**AD related Indications**" means indications for AD related Disease with respect to Molecule BAN2401.

1.8 "**Affiliate**" means, with respect to a Person, any other Person that controls, is controlled by, or is under common control with such Person. For the purpose of this definition, "control" shall mean, direct or indirect, ownership of more than fifty percent (50%) of the shares of stock entitled to vote for the election of directors in the case of a corporation, or more than fifty percent (50%) of the equity interest in the case of any other type of legal entity, status as a general partner in any partnership, or any other arrangement whereby the entity or person controls or has the right to control the board of directors or equivalent governing body of a corporation or other entity, or the ability to cause the direction of the management or policies of a corporation or other entity. In the case of entities organized under the laws of certain countries, the maximum percentage ownership permitted by law for a foreign investor may be less than fifty percent (50%), and in such case such lower percentage shall be substituted in the preceding sentence, provided that, in such case, such foreign investor has the power to direct the management and policies of such entity.

1.9 "**Agreement**" has the meaning set forth in the preamble hereto.

1.10 "**Alliance Manager**" has the meaning set forth in Section 2.7(a).

1.11 "**Annual Development Plan Budget**" has the meaning set forth in Section 3.1(b). The initial Annual Development Plan Budget for the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product are set forth on **Exhibit 3.1(b)(i)** or **3.1(b)(ii)**, as applicable.

1.12 "**Anti-Tau Option**" has the meaning set forth in Section 3.6(b).

1.13 "**Anti-Tau Option Period**" has the meaning set forth in Section 3.6(b).

1.14 "**Anti-Tau Option Product**" has the meaning set forth in Section 3.6(b).

1.15 "**Anti-Tau Updated Schedules**" has the meaning set forth in Section 3.6(b).

1.16 "**Anti-Tau Updated Schedules Date**" has the meaning set forth in Section 3.6(b).

1.17 "**Applicable Law**" means all applicable laws, statutes, rules, regulations, guidelines, orders, judgments and/or ordinances of any Governmental Authority.

1.18 "**Arbitral Tribunal**" has the meaning set forth in Section 15.2(a).

1.19 "**Arbitration Rules"** has the meaning set forth in Section 15.2(a).

1.20 "**Asia Territory**" means Hong Kong, Bahrain, Bangladesh, Bhutan, Brunei, Cambodia, India, Indonesia, Laos, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, the State of Mongolia, Timor-Leste, Taiwan, Macau and Vietnam

1.21 "**Auditor**" has the meaning set forth in Section 8.6(b)(i).

1.22 "**Backup Candidate**" means a Small Molecule pharmaceutical product candidate having a primary mechanism of action through inhibition of beta-secretase that, at any time during the Backup Term (a) is Controlled by Eisai and/or its Affiliates and (b) has initiated or has been evaluated in IND-enabling toxicology studies, but for which Eisai has not, as of the Backup Trigger Date, commenced evaluation in a Phase II Clinical Study or evaluated in a Phase II Clinical Study.

1.23 "**Backup Candidate Package**" has the meaning set forth in Section 3.7(c).

1.24 "**Backup Product**" means

(a) each Small Molecule pharmaceutical product having a primary mechanism of action through inhibition of beta-secretase that, on the Backup Trigger Date (1) is Controlled by Eisai and/or its Affiliates, (2) has been evaluated in a Phase I Clinical Study and (3) Eisai is evaluating in a Phase II Clinical Study or has evaluated in a Phase II Clinical Study; and

(b) any Backup Candidate that has been deemed a Backup Product pursuant to Section 3.7(c).

1.25 "**Backup Product Package**" has the meaning set forth in Section 3.7(a).

1.26 "**Backup Term**" means the period beginning on the Effective Date and ending on March 4, 2018.

1.27 "**Backup Trigger Date**" has the meaning set forth in Section 3.7(a).

1.28 "**BAN2401-201**" means the Phase II Clinical Study being conducted by Eisai as of the Effective Date with an Eisai Collaboration Product containing Molecule BAN2401.

1.29 "**BAN2401 Eisai Collaboration Product**" means the Eisai Collaboration Product containing Molecule BAN2401 that Eisai is testing in the BAN2401-201 Phase II Clinical Study as of the Effective Date.

1.30 "**BIIB037 Collaboration Agreement**" has the meaning set forth in the preamble hereto.

1.31 [***]

1.32 [***]

1.33 "**Biological Product**" means a virus, therapeutic serum, toxin, antitoxin, vaccine, blood, blood component or derivative, allergenic product (including any antibody), protein (except any chemically synthesized polypeptide), or analogous product, or arsphenamine or derivative of arsphenamine (or any other trivalent organic arsenic compound), applicable to the prevention, treatment, or cure of a disease or condition.

1.34 "**Breaching Party**" has the meaning set forth in Section 13.2(a).

1.35 "**Business Day**" means a day other than (a) a Saturday or a Sunday, (b) a bank or other public holiday in Tokyo, Japan, (c) a bank or other public holiday in Boston, Massachusetts, or (d) the nine (9) consecutive calendar days beginning on December 24th and continuing through January 1st. Any measurement of a number of Business Days or calendar days, as applicable, shall be determined with respect to Eastern Standard Time or Eastern Daylight Time, as applicable.

1.36 "**Calendar Quarter**" means the respective periods of three (3) consecutive calendar months ending on March 31, June 30, September 30 and December 31.

1.37 "**Calendar Year**" means a period of twelve (12) consecutive calendar months ending on December 31.

1.38 "**Cease(s) Commercializing**" means, with respect to any product, that a Party terminates all of such Party's Commercialization activities with respect to such product, which may be achieved by (a) all Commercialization activities with respect to such product ceasing or (b) such Party divesting substantially all of its rights to such product, whether by sale or exclusive license pursuant to which such Party has terminated or divested all rights to control or exercise influence (other than as may be customary for a licensor solely to the extent necessary to ensure compliance by the licensee under any applicable agreement) of the course of Development or Commercialization of such product. "**Cease(s) Commercialization**" shall have a correlative meaning.

1.39 "**Change of Control**" means, with respect to a Party, any of the following events:

(a) any Third Party (or group of Third Parties acting in concert) becomes the beneficial owner, directly or indirectly, of more than fifty percent (50%) of the total voting power

of the capital stock then outstanding of such Party normally entitled to vote in elections of directors other than pursuant to a consolidation or merger;

(b) such Party consolidates with or merges into another corporation or entity, or any corporation or entity consolidates with or merges into such Party, in either event pursuant to a transaction or series of related transactions following which more than fifty percent (50%) of the total voting power of the capital stock outstanding of the surviving entity, or its ultimate parent entity, normally entitled to vote in elections of directors is not held by Persons who held the outstanding shares of such Party immediately preceding such consolidation or merger; provided, however, that notwithstanding the foregoing, the occurrence of an event described in this clause (b) of this Section 1.39 with respect to a Party shall not be a Change of Control if either (X) a majority of the board of directors or other governing body of such Party or the surviving entity, or its ultimate parent entity, as applicable, after three (3) months following such event is comprised of members who were members of the board of directors or other governing body of such Party immediately prior to such event or (Y) a majority of the Executive Officers of such Party or the surviving entity, or its ultimate parent entity, as applicable, after three (3) months following such event are individuals who were Executive Officers of such Party immediately prior to such event; or

(c) such Party conveys, transfers or leases all or substantially all of its assets related to this Agreement to any Third Party, whether resulting from merger, acquisition, consolidation or otherwise.

1.40 "**Change of Control Notice**" has the meaning set forth in Section 14.2(a).

1.41 "**Claims**" has the meaning set forth in Section 11.1.

1.42 "**Clinical Study**" means a clinical study conducted on human subjects that is designed to (a) establish that a pharmaceutical product is reasonably safe for continued testing, (b) investigate the safety and efficacy of the pharmaceutical product for its intended use, and to define warnings, precautions and adverse reactions that may be associated with the pharmaceutical product in the dosage range to be prescribed or (c) support Regulatory Approval, Pricing Approval or label expansion of such pharmaceutical product. Without limiting the foregoing, Clinical Study includes any Phase I Clinical Study, Phase II Clinical Study, Phase II Clinical Study, Phase III Clinical Study and any Phase IV Clinical Study.

1.43 "**Co-Administration**" means the administration of two or more drugs or therapies together, but not necessarily initiated at the same time. "**Co-Administration**" includes therapies or drugs for Alzheimer's disease, AD related Disease or any other indication (whether of not for Alzheimer's disease or AD related Disease) being administered as concomitant, add-on or sequenced drugs or therapies, as applicable. "**Co-Administered**" shall have a correlative meaning.

1.44 "**COC Competing Product**" means either of (a) a Competing Product, as defined in Section 1.75 or as defined in the corresponding provision of any Option Product Agreement entered into prior to the date of the applicable Change of Control, or (b) any product which has received Regulatory Approval in one or more countries of the Territory for the treatment, prevention, or amelioration of cognitive decline in Alzheimer's Disease or AD related Disease.

1.45 "**COC Competing Product Termination Notice**" has the meaning set forth in Section 14.2(c)(i).

1.46 "**Code**" has the meaning set forth in Section 13.8(a).

1.47 "**Collaboration**" has the meaning set forth in Section 2.1.

1.48 "**Collaboration Product Value**" has the meaning set forth in Section 14.2(d).

1.49 "**Collaboration Gross Margin**" means, with respect to an Eisai Collaboration Product in a Commercial Territory, Net Sales of such Eisai Collaboration Product in such Commercial Territory less Cost of Sales with respect to such Eisai Collaboration Product in such Commercial Territory.

1.50 "**Collaboration Operating Profit/Loss**" means, with respect to an Eisai Collaboration Product in a Commercial Territory, Collaboration Gross Margin with respect to such Eisai Collaboration Product in such Commercial Territory less Commercialization Costs with respect to such Eisai Collaboration Product in such Commercial Territory.

1.51 "**Combination Product**" means a product containing both the Eisai Collaboration Product and one or more other active ingredients in addition to such Eisai Collaboration Product where the Eisai Collaboration Product and such other active ingredients are together in a physical mixture or packaged and priced together as a single product. For the avoidance of doubt, "**Combination Product**" shall not include the Co-Administration of one or more drugs or therapies.

1.52 "**Combination Product Amount**" shall mean the following: in the event an Eisai Collaboration Product is sold in the form of a Combination Product, Gross Sales for such Eisai Collaboration Product will be determined for each Calendar Quarter that such Combination Product is sold by [***], in each case in the same country and in the same dosage as in the Combination Product. If, on a country-by-country basis, the other active ingredients in the Combination Product are not sold separately in such country, Gross Sales for such Calendar Quarter shall be calculated [***], in each case in the same country and in the same dosage as in the Combination Product. If, on a country-by-country basis, the Eisai Collaboration Product component of the Combination Product is not sold separately in such country, but the other active ingredients are sold separately, Gross Sales for such Calendar Quarter shall be calculated by [***], in each case in the same country and in the same dosage as in the Combination Product. If, on a country-by-country basis, neither the Eisai Collaboration Product nor the other active ingredients of the Combination Product are sold separately in such country, Gross Sales for such Calendar Quarter for such Combination Product shall be determined by the Parties in good faith. If there are no prior year's invoices, the Parties may use an estimate of future invoice prices.

1.53 "**Combination Therapy**" or "**Combination Therapies**" has the meaning set forth in Section 3.2(a)(vi).

1.54 "**Commercial Territory**" means each of the United States and its territories, Japan, the Asia Territory, the European Territory and the Rest of World Territory.

1.55 "**Commercialization Affiliate**" has the meaning set forth in Section 8.1(a).

1.56 "**Commercialization Agreement**" has the meaning set forth in Section 8.1(a).

1.57 "**Commercialization Costs**" means Marketing Costs, Sales Costs, Medical Costs, Distribution Costs, General and Administrative Costs, Third Party Milestones and Royalties and Other Commercialization Out-of-Pocket Costs, whether incurred before or after the launch of the relevant Eisai Collaboration Product, but in each case excluding any Development Costs and any costs or expenses specified in this Agreement as being solely the responsibility of a Party or otherwise not included in Commercialization Costs.

1.58 "**Commercialization Plan**" has the meaning set forth in Section 5.3(a).

1.59 "**Commercialization Plan Budget**" has the meaning set forth in Section 5.3(a).

1.60 "**Commercialize**" means all activities constituting importing, marketing, distributing, preparing to offer for sale, offering for sale or selling an Eisai Collaboration Product in the Field in the Territory and shall include Medical Activities, Marketing Activities, Promotion activities, pre-launch activities to prepare a market for potential sales, pricing and reimbursement activities and activities required to fulfill ongoing regulatory obligations, including adverse event reporting. When used as a verb, "**Commercialize**" shall mean to engage in Commercialization.

1.61 "**Commercially Reasonable Efforts**" means, with respect to any objective, those reasonable, diligent and good faith efforts to accomplish such objective as a Party would customarily use to accomplish a similar objective under similar circumstances, which are no less than those efforts used by such Party in its Development, Manufacture or Commercialization projects as the case may be with such Party's own compounds and products having comparable commercial potential, stage of development, medical/scientific, technical and regulatory profile, and intellectual property protection, taking into account all Commercially Relevant Factors at the time such efforts are to be expended. To the extent that each Party's performance of its obligations hereunder is adversely affected by the other Party's failure to perform its obligations under this Agreement or any supply agreement (including the supply agreement referenced in Section 6.3) or any Commercialization Agreement, then the impact of such performance failure will be taken into account in determining whether a Party has used its Commercially Reasonable Efforts to perform any such affected obligations, but only to the extent such other Party's performance failure is the cause of such Party's failure to meet such obligations.

1.62 "**Commercially Relevant Factors**" means, with respect to an Eisai Collaboration Product or an Option Product, as the case may be, including as applicable to such product, all relevant factors that may affect the Development, Regulatory Approval or Commercialization of such Eisai Collaboration Product or such Option Product, including (as applicable): safety, efficacy, quality or stability; product profile (including product modality, category and mechanism of action); stage of Development or life cycle status; Development, Regulatory Approval, Manufacturing, and Commercialization costs and risk; feasibility of Manufacture; the likelihood of obtaining Regulatory Approvals (including satisfactory price approvals) and the timing of such approvals; the current guidance and requirements for Regulatory Approval and the current and projected regulatory status; labeling or anticipated labeling; the then-current competitive

environment external to the Parties and the likely competitive environment external to the Parties at the time of projected entry into the market (*i.e.*, not taking into consideration any other Eisai Collaboration Products, Option Products or other products in which a Party has an economic interest); past performance; present and future market potential; existing or projected pricing, sales, reimbursement and profitability; pricing or reimbursement changes in relevant countries; proprietary position, strength and duration of patent protection and anticipated exclusivity; and other scientific, technical, regulatory, and commercial factors that the decision-making Party reasonably believes to be relevant to such Eisai Collaboration Product or Option Product, as applicable.

1.63 "**Company**" has the meaning set forth in the preamble to this Agreement.

1.64 "**Company Disclosure Schedule**" means the disclosure schedule prepared by Company and delivered by Company to Eisai on the Effective Date.

1.65 "**Company Indemnitees**" has the meaning set forth in Section 11.1.

1.66 "**Company Know-How**" means any Know-How (including Results) owned or Controlled by Company or any of its Affiliates as of the Effective Date or thereafter during the Term that is reasonably necessary or useful, or that is actually used for the Development, Manufacture, use or Commercialization of Eisai Collaboration Molecules and/or Eisai Collaboration Products. For the avoidance of doubt, "**Company Know-How**" excludes Joint Inventions, Joint Know-How and Eisai Know-How.

1.67 "**Company Manufacturing Patents**" means the Patent Rights relating to inventions or discoveries (a) conceived, discovered, or otherwise made by or on behalf of Company, other than jointly with Eisai, and arising out of the Manufacturing activities to be conducted by Company under this Agreement or otherwise Controlled by Company relating, but not necessarily limited, to Eisai Collaboration Products containing Molecule BAN2401 and (b) having claims Covering the Manufacture of Eisai Collaboration Products containing Molecule BAN2401 or having claims that are reasonably necessary or useful, or that are actually used by Company for the Manufacture of Eisai Collaboration Products containing Molecule BAN2401.

1.68 "**Company Option Product Know-How**" means any Know-How owned or Controlled by Company or any of its Affiliates as of the Effective Date or thereafter during the Term that is reasonably necessary or useful, or that is actually used for the Development, Manufacture or use of the Option Molecules and/or Option Products.

1.69 "Company Option Product Patents" means any Patent Rights owned or Controlled by Company or any of its Affiliates as of the Effective Date or thereafter during the Term having claims Covering any of the Option Molecules and/or Option Products, or their use, composition or Manufacture or having claims that are reasonably necessary or useful, or that are actually used for the Development, Manufacture or use of the Option Molecules and/or Option Products.

1.70 "Company Option Product Technology" means the Company Option Product Know-How and the Company Option Product Patents.

1.71 "**Company Patents**" means the Patent Rights identified in **Exhibit 1(E)** attached hereto, and any other Patent Rights owned or Controlled by Company or any of its Affiliates as of the Effective Date or thereafter during the Term, (a) claiming Company Know-How, (b) otherwise arising out of activities conducted pursuant to the Collaboration which Cover Eisai Collaboration Molecules and/or Eisai Collaboration Products and/or Backup Candidates and/or Backup Products or (c) having claims that are reasonably necessary or useful, or that are actually used for the Development, Manufacture, use or Commercialization of Eisai Collaboration Molecules and/or Eisai Collaboration Products, and/or Backup Candidates and/or Backup Products. For the avoidance of doubt, "**Company Patents**" shall include Company Manufacturing Patents and Company Substantially Related Patents, but exclude Joint Patents and Eisai Patents.

1.72 "**Company Prosecution Patents**" has the meaning set forth in Section 9.3(a)(i).

1.73 "**Company Substantially Related Patents**" has the meaning set forth in Section 9.3(a)(i).

1.74 "**Company Technology**" means the Company Patents, Company Know-How, and Company's interest in Joint Know-How, Joint Patents and Joint Inventions.

1.75 "**Competing Product**" means (a) with respect to an Eisai Collaboration Product containing Molecule BAN2401, an antibody pharmaceutical product having a primary mechanism of action (or in the case of a Combination Product or Co-Administration of an Eisai Collaboration Product containing Molecule BAN2401, any active ingredient contained in such Combination Product or such Co-Administration of an Eisai Collaboration Product containing Molecule BAN2401 having as its primary mechanism of action) through inhibition of amyloid beta, and (b) with respect to Eisai Collaboration Product containing Molecule E2609 or a Backup Product or Backup Candidate being Developed under the Collaboration pursuant to Section 3.7(c), a Small Molecule pharmaceutical product having a primary mechanism of action (or in the case of a Combination Product or Co-Administration containing Molecule E2609 or a Backup Product or Backup Candidate being Developed under the Collaboration pursuant to Section 3.7(c), any component of such product having as its primary mechanism of action) through inhibition of beta-secretase; provided that the definition of Competing Product shall not include (i) any antibody pharmaceutical product containing Molecule BIIB037 or (ii) anti-tau product being Developed or Commercialized by one of the Parties at the time an Option Product Agreement is executed.

1.76 "**Competitive Change of Control**" means an acquisition of either Party by a Third Party resulting in a Change of Control of such Party where:

(a) such Change of Control occurs during the applicable Non-Compete Term (for either Eisai Collaboration Products containing Molecule BAN2401 or Eisai Collaboration Products containing Molecule E2609 (or a Backup Product)) or, if an Option Product Agreement has been entered into during the applicable non-compete term for either of the Option Products under either such Option Product Agreement; and

(b) the Third Party acquirer in such Change of Control or any of its Affiliates is, at the time of such Change of Control, promoting, distributing, marketing or selling a COC Competing Product.

1.77 "**Confidential Information**" means, with respect to a disclosing Party or any of its Affiliates, all Know-How and other proprietary information and data of a financial, commercial or technical nature which such disclosing Party or any of its Affiliates has supplied or otherwise made available to the other Party or its Affiliates, whether made available orally, in writing or in electronic form. Notwithstanding anything to contrary in this Section 1.77, any Results that either Party or its Affiliates (and permitted subcontractors and distributors) generates under this Agreement that, in each case, Substantially Relate to Eisai Collaboration Molecules, Eisai Collaboration Products, Backup Candidates and/or Backup Products shall be deemed Confidential Information of Eisai.

1.78 "**Control**" or "**Controlled**" means, with respect to any Know-How, Patent Rights, other intellectual property rights, or any other proprietary or trade secret information, the legal authority or right (whether by ownership, license or otherwise other than pursuant to this Agreement) of a Party or any of its Affiliates (or, as described below, a Future Acquirer) to grant a license or a sublicense of or under such Know-How, Patent Rights, other intellectual property rights, or any other proprietary or trade secret information to another Person, or to otherwise disclose such proprietary or trade secret information to another Person to the extent set forth in this Agreement, without breaching the terms of any agreement with a Third Party, or misappropriating the proprietary or trade secret information of a Third Party. Notwithstanding the foregoing, any intellectual property right Controlled by a Future Acquirer of a Party shall not be treated as "Controlled" by a Party or its Affiliates for purposes of this Agreement to the extent, but only to the extent, that such intellectual property (a) is Controlled by such Future Acquirer of such Party immediately prior to the time such Future Acquirer qualifies as such, other than pursuant to a license or other grant of rights by such Party, or (b) is Controlled by such Future Acquirer subsequent to the time that such Future Acquirer qualifies as such but was not Controlled by such Party or its Affiliates immediately prior to the time such Future Acquirer qualifies as such and did not come under the Control of such Future Acquirer due to any reference or access to Eisai Technology or Company Technology, as applicable, by such Future Acquirer.

1.79 "**Cost of Goods Sold**" or "**COGS**" means [***] of the following: a Party's costs to produce or acquire commercial supplies of an Eisai Collaboration Product to the extent that such costs would ordinarily be included as a cost of goods sold under the applicable Accounting Standards for a similar product or are Inventory Build Costs, including direct and indirect labor costs, material costs, allocable depreciation and amortization, allocable facilities costs, allocable product quality assurance/control costs, external CMO manufacturing/fill and pack costs, label and packaging costs, transportation, custom and duty clearance, warehousing and storage costs, corporate overhead and any other costs borne by a Person such as state property taxes, FDA manufacturing fees and Third Party distribution costs, manufacturing scrap, inventory write-off due to quality rejects or excess and obsolete inventory, stability costs, training kit costs, technology transfer costs related to new processes or facilities, costs to rectify contamination, costs to qualify a new supplier or process and idle capacity costs if such idle capacity has been originally reserved for the Manufacture of such Eisai Collaboration Product within the next [***]. COGS shall exclude idle manufacturing costs of a Party's manufacturing plant that is underutilized, other than such idle capacity reserved for the manufacture of such Eisai Collaboration Product within the next [***].

1.80 "**Cost of Sales**" means, with respect to an Eisai Collaboration Product and a Commercial Territory, Cost of Goods Sold with respect to such Eisai Collaboration Product and such Commercial Territory.

1.81 "**Cover**", "**Covering**" or "**Covered**" means, with respect to a given Molecule or product in a given country in the Territory, that, in the absence of ownership of or a license granted under a Valid Claim, the manufacture, use, offer for sale, sale or importation of such Molecule or product in such country would infringe such Valid Claim (or, in the case of a claim that has not yet issued, would infringe such claim if it were to issue without modification).

1.82 "**Customer-Facing Activities**" means, with respect to each Eisai Collaboration Product, any contact of a Representative within a country of the Territory with a medical professional with prescribing authority or other individuals or entities that have a significant impact or influence on prescribing decisions, in an effort to inform such persons about such Eisai Collaboration Product for its approved uses within such country of the Territory.

1.83 "**Decision Period**" has the meaning set forth in Section 14.1(d).

1.84 **"Definitive Anti-Tau Agreement"** has the meaning set forth in Section 3.6(b)(ii).

1.85 "**Develop**" or "**Development**" means drug research and development activities, including test method development and stability testing, assay development and audit development, toxicology, formulation, quality assurance/quality control development, statistical analysis, Nonclinical Studies, Clinical Studies, health technology assessments, packaging development, regulatory affairs, and the preparation, filing, prosecution and maintenance of any Regulatory Filings or Regulatory Approvals, including post-approval commitments.

1.86 "**Developing Party**" has the meaning set forth in Section 3.6(b)(ii).

1.87 "**Development Costs**" means the costs and expenses incurred by or on behalf of a Party or its Affiliates, including FTE costs and Out-of-Pocket Costs, attributable or reasonably allocable to the Development of the Eisai Collaboration Molecule or an Eisai Collaboration Product. "**Development Costs**" shall include (a) the costs of internal personnel engaged in such efforts, which costs shall be determined based on the FTE Rate and represented in the FTE costs,
(b) toxicological, pharmacokinetical and metabolical studies, other Nonclinical Studies or Clinical Studies, data analysis, safety management, medical writing support and regulatory publishing and submissions from such studies, which include expenses for data management, statistical designs and studies, document preparation, TMF records management, various complaint reporting requirements (*e.g.*, clinical adverse events reporting) and other administrative expenses associated with the clinical testing program or Post-Approval Clinical Trial Commitments, (c) Regulatory Expenses, (d) costs of Development subcontractors, (e) the costs of Manufacturing process development, process improvement, scale-up and validation costs, including costs associated with the transfer and implementation of manufacturing technology necessary to qualify a Manufacturing facility, (f) costs for the Development related to biomarkers and companion diagnostics and (g) the cost of contract research organizations (CROs) and clinical supply, including: (i) costs of manufacturing Eisai Collaboration Products, packaging of Eisai Collaboration Products and distribution of Eisai Collaboration Products, in each case, to the extent used in Clinical Studies, (ii) expenses incurred to purchase and/or package comparator and

combination drugs, and (iii) costs and expenses of disposal of clinical samples. "**Development Costs**" shall not include (i) Inventory Build Costs, or (iii) any costs or expenses specified in this Agreement as being solely the responsibility of a Party. For the avoidance of doubt, FTE costs to be included as Development Costs shall include only the cost of time spent by FTEs directly performing work pursuant to the Development Plan and shall be calculated at the FTE Rate.

1.88 "**Development Costs Calculation Report**" has the meaning set forth in Section 3.2(b).

1.89 "**Development Costs Report**" has the meaning set forth in Section 3.2(b).

1.90 "**Development Plan"** has the meaning set forth in Section 3.1(a). The initial Development Plan for the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product are set forth on **Exhibit 3.1(a)(i)** or **3.1(a)(ii)**, as applicable.

1.91 "**Development Program**" means with respect to each Eisai Collaboration Product, the Development activities with respect to such Eisai Collaboration Product under the applicable Development Plan, in each case in accordance with the terms of this Agreement.

1.92 **"Disclosed Inventions"** has the meaning set forth in Section 9.1.

1.93 "**Discretionary Development**" means any Development activities that are not Original Development, Required Development or New Development.

1.94 "**Discretionary Development Overage**" has the meaning set forth in Section 3.2(a)(v)(B).

1.95 "**Discretionary Development Overall Cap**" has the meaning set forth in Section 3.2(a)(v)(A).

1.96 "**Distribution Costs**" means, with respect to an Eisai Collaboration Product, the FTE costs and other direct costs identifiable or allocable to the distribution of such Eisai Collaboration Product, including warehousing, transportation, order entry, customs, duties, insurance, billing, shipping, credit and collection and other such activities.

1.97 "**E2609 Eisai Collaboration Product**" means the Eisai Collaboration Product containing Molecule E2609 that Eisai is testing in a Clinical Study as of the Effective Date.

1.98 "**Effective Date**" has the meaning set forth in the preamble of this Agreement.

1.99 "**Eisai**" has the meaning set forth in the preamble to this Agreement.

1.100 "**Eisai Buy/Sell Product(s)**" means, with respect to the applicable COC Competing Product:

(a) If such COC Competing Product is an antibody pharmaceutical product having a primary mechanism of action (or in the case of a combination product, any component of such combination product having as its primary mechanism of action) through inhibition of amyloid beta, any Eisai Collaboration Product being Developed and/or Commercialized under the Collaboration that is an antibody pharmaceutical product having a primary mechanism of action

(or in the case of a combination product, any component of such combination product having as its primary mechanism of action) through inhibition of amyloid beta;

(b) If such COC Competing Product is a Small Molecule pharmaceutical product having a primary mechanism of action (or in the case of a combination product, any component of such combination product having its primary mechanism of action) through inhibition of beta-secretase, any Eisai Collaboration Product or Backup Candidate being Developed and/or Commercialized under the Collaboration that is Small Molecule pharmaceutical product having a primary mechanism of action (or in the case of a combination product, any component of such combination product having its primary mechanism of action) through inhibition of beta-secretase; or

(c) If such COC Competing Product is a product which has received Regulatory Approval in one or more countries of the Territory for the treatment, prevention, or amelioration of cognitive decline in Alzheimer's Disease or AD related Disease, any Eisai Collaboration Product or Backup Candidate that is being Developed and/or Commercialized under the Collaboration for the treatment, prevention, or amelioration of cognitive decline in Alzheimer's Disease or AD related Disease.

1.101 "**Eisai Collaboration Molecule**" means Molecule E2609, Molecule BAN2401, and any active molecule in any Backup Product deemed to be an Eisai Collaboration Product pursuant to Section 3.7.

1.102 "**Eisai Collaboration Product**" means

(a) any pharmaceutical product or composition containing an Eisai Collaboration

Molecule, Section 3.7,

(b) any Backup Product deemed to be an Eisai Collaboration Product pursuant to

(c) any Generic or Proprietary Molecule Combination Product that is permitted to be Developed under Section 7.5,

(d) any Third Party Molecule Combination Product to the extent the Parties agree to Commercialize such Third Party Molecule Combination Product under the Collaboration pursuant to Section 7.6(b), and

(e) any Restricted Product deemed to be an Eisai Collaboration Product pursuant to Section 14.1(d).

1.103 "**Eisai Disclosure Schedule**" means the disclosure schedule prepared by Eisai and delivered by Eisai to Company on the Effective Date.

1.104 "**Eisai Indemnitees**" has the meaning set forth in Section 11.2.

1.105 "**Eisai Know-How**" means any Know-How (including Results) owned or Controlled by Eisai or any of its Affiliates as of the Effective Date or thereafter during the Term

that is reasonably necessary or useful, or that is actually used for the Development, Manufacture, use or Commercialization of Eisai Collaboration Molecules and/or Eisai Collaboration Products, and Backup Candidates and/or Backup Products. For the avoidance of doubt, "**Eisai Know-How**" excludes Joint Inventions, Joint Know-How and Company Know-How.

1.106 "**Eisai Patents**" means the Patent Rights identified in **Exhibit 1(D)** attached hereto, and any other Patent Rights owned or Controlled by Eisai or any of its Affiliates as of the Effective Date or thereafter during the Term having claims Covering any of the Eisai Collaboration Molecules and/or Eisai Collaboration Products and/or Backup Candidates and/or Backup Products, or having claims that are reasonably necessary or useful, or that are actually used for the Development, Manufacture, use or Commercialization of the Eisai Collaboration Molecules and/or Eisai Collaboration Products and/or Backup Candidates and/or Backup Products. For the avoidance of doubt, "**Eisai Patents**" exclude Joint Patents and Company Patents.

1.107 "**Eisai Prosecution Patents**" has the meaning set forth in Section 9.3(a)(i).

1.108 "**Eisai Reversion Period**" has the meaning set forth in Section 2.5(c)(i)(B)(3).

1.109 "**Eisai Technology**" means the Eisai Patents, Eisai Know-How, and Eisai's interest in Joint Know-How, Joint Patents and Joint Inventions.

1.110 "**EMA**" means the European Medicines Agency or any successor entity thereto.

1.111 "**Encumbrance**" means any claim, charge, equitable interest, hypothecation, lien, mortgage, pledge, option, license, assignment, power of sale, retention of title, right of preemption, right of first refusal or security interest of any kind.

1.112 "**Established Overall Budget**" has the meaning set forth in Section 3.1(a). The initial Established Overall Budget for the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product are set forth on **Exhibit 3.1(b)(i)** or **3.1(b)(ii)**, as applicable.

1.113 "**EU**" means all of the European Union member states as of the applicable time during the Term.

1.114 "**European Territory**" means Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Albania, Armenia, Belarus, Gibraltar, Iceland, Kosovo, Liechtenstein, Macedonia, Norway, Switzerland, Turkey, Ukraine, Vatican City State and the United Kingdom.

1.115 "**Exchange Act**" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

1.116 "**Executive Officer**" means (a) with respect to Company, any "officer" of Company as such term is defined in Rule 16a-1 under the Exchange Act, and (b) with respect to Eisai, a "Corporate Officer" of Eisai under the Japanese Corporation Act.

1.117 "**Existing Third Party License**" means an agreement entered into by Eisai with a Third Party prior to the Effective Date, including any amendments thereto as of the Effective Date,

pursuant to which such Third Party granted Eisai a license to Patent Rights or Know-How that are Controlled by Eisai or its Affiliates as of the Effective Date and that are necessary or useful to research, Develop, Manufacture, Commercialize, market, import, export, sell or offer for sale or otherwise use an Eisai Collaboration Molecule or Eisai Collaboration Product for any purpose in the Field. All Existing Third Party Licenses as of the Effective Date are listed on **Exhibit 1(H)**.

1.118 "FCPA" has the meaning set forth in Section 5.5(b).

1.119 "FD&C Act" means the United States Federal Food, Drug and Cosmetic Act, as amended.

1.120 "**FDA**" means the United States Food and Drug Administration or any successor entity thereto.

1.121 "**Field**" means all human and veterinary therapeutic, diagnostic and prophylactic

uses.

1.122 "**Final Clinical Study Report**" has the meaning set forth in Section 13.5(a).

1.123 "**First Commercial Sale**" means the first sale to a Third Party of an applicable pharmaceutical product in a certain country after all Regulatory Approvals have been obtained in such country; provided that any sales of such applicable pharmaceutical product arising from named patient, compassionate use, or other similar programs in the applicable country will not be considered a First Commercial Sale.

1.124"**First Subsequent 12 Month Commercialization Period**" has the meaning set forth in Section 2.5(c)(i)(B)(1).

1.125"**First Subsequent Follow-On Period**" has the meaning set forth in Section 2.5(c)(i)(B)(2).

1.126"**First Subsequent Reversion Period**" has the meaning set forth in Section 2.5(c)(i)(B)(3).

1.127"**Follow-On 2 Year Commercialization Period**" has the meaning set forth in Section 2.5(c)(i)(B)(2).

1.128 "**Force Majeure**" has the meaning set forth in Section 16.2.

1.129"**FTE**" means a full-time dedicated, non-executive, non-administrative person year, or in the case of less than a full-time dedicated non-administrative person, a full-time equivalent non-administrative person year, based upon a total of [***] weeks (*i.e.*, [***]) hours) per year of Development, Manufacturing or Commercialization work undertaken by non- administrative personnel of Eisai or Company or their respective Affiliates, as applicable.

1.130"**FTE Rate**" means the rate per FTE (which may be prorated on a daily basis as necessary) of [***] per annum with respect to activities conducted pursuant to this Agreement, subject to annual adjustment on each anniversary of the Effective Date by the change in the rate of the Employment Cost Index for total compensation for the "management, professional and

related" occupational group, as published by the United States Department of Labor, Bureau of Labor Statistics (or any similar index agreed upon by the Parties if such index ceases to be compiled and published). For the avoidance of doubt, the FTE Rate shall be used only with respect to Development Costs and not any other costs, including Commercialization Costs, which shall have different FTE rates as determined by the JCC pursuant to Section 2.3(b)(ii).

1.131 "**Future Acquirer**" means a Third Party to any Change in Control transaction involving a Party.

1.132 "**General and Administrative Costs**" means costs chargeable to Eisai Collaboration Products relating to the Commercialization of Eisai Collaboration Products in a Commercial Territory equal to a portion of Net Sales of Eisai Collaboration Products in such Commercial Territory as set by the JCC. The JCC shall determine such portion by calculating each Party's general and administrative cost budget relating to the Territory as a percentage of projected Eisai Collaboration Product sales in each Commercial Territory (which projection is to be set by the JCC prior to the time an Eisai Collaboration Product is expected to be first sold in each Commercial Territory).

1.133 "**Generic Collaboration Product**" means a Generic Product approved by reference to an approved Eisai Collaboration Product.

1.134 "**Generic or Proprietary Molecule Combination Product**" has the meaning set forth in Section 7.5(a).

1.135 "**Generic Product**" means:

(a) with respect to a pharmaceutical product containing a Biological Product, any pharmaceutical product which (i) has been approved as a biosimilar or interchangeable product by reference to a previously approved Biological Product, including as applicable an Eisai Collaboration Product, by FDA pursuant to Section 351(k) of the Public Health Service Act (42 U.S.C. 262(k)), as may be amended, or any subsequent or superseding law, statute or regulation,
(ii) has been approved as a similar biological medicinal product to a previously approved Biological Product, including as applicable an Eisai Collaboration Product, by EMA pursuant to Directive 2001/83/EC, as may be amended, or any subsequent or superseding law, statute or regulation, or (iii) has otherwise achieved analogous regulatory approval from another applicable Regulatory Authority,

(b) with respect to a pharmaceutical product containing a Small Molecule, any pharmaceutical product that is approved by reference to a previously approved pharmaceutical product (i) for purposes of the United States, (1) under Section 505(j) or 505(b)(2) of the FD&C Act, and (2) if approved under such Section 505(b)(2), has received an "AB" rating pursuant to the FDA's therapeutic equivalence coding system, or (ii) for purposes of the EU, under ARTICLE 10 of Directive 2001/83EC, as amended or (iii) for purpose of a country outside the US and EU, and for specific countries in the EU, in reliance on an analogous regulatory pathway to those described in clause (1) and (2), as determined by the applicable Regulatory Authority in such country; and

1.136 "**Global Branding Strategy**" has the meaning set forth in Section 5.2.

1.137"**Governmental Authority**" means any court, agency, department, authority or other instrumentality of any multi-national, national, state, county, city, province or other political subdivision.

1.138"**Gross Sales**" means, with respect to any Eisai Collaboration Product and any Commercial Territory, the gross amount invoiced by a Party or its Affiliates or sublicensees for sales of such Eisai Collaboration Product in such Commercial Territory to unrelated Third Parties in *bona fide* arm's length transactions, including sales to distributors. For clarity, "**Gross Sales**" will include a Party's revenue received from distributors, and not revenue of the distributors themselves. A sale or transfer of an Eisai Collaboration Product by a Party to one of its Affiliates shall not be considered a sale to a Third Party for the purpose of this provision but the resale of such Product by such Affiliate to a Third Party shall be a sale for such purposes. In the event the Eisai Collaboration Product is sold in the form of a Combination Product, Gross Sales in respect of such Eisai Collaboration Product will be the Combination Product Amount.

1.139 "**ICC**" has the meaning set forth in Section 15.2(a).

1.140 "**IFRS**" means International Financial Reporting Standards, consistently applied.

1.141"**IND**" means an Investigational New Drug application in the U.S. filed with the FDA or the corresponding application for the investigation of an Eisai Collaboration Product in any other country or group of countries, as defined in the Applicable Laws and filed with the Regulatory Authority of a given country or group of countries.

1.142 "**Indemnitee**" has the meaning set forth in Section 11.3.

1.143 "**Indemnitor**" has the meaning set forth in Section 11.3.

1.144"Initial 3 Year Commercialization Period" has the meaning set forth in Section 2.5(c)(i)(B)(1).

1.145"**Initial Launch Plan**" means the first Commercialization Plan for each of the Major Commercialization Countries submitted to the JSC under Section 5.3(a) that describes the initial launch of the Eisai Collaboration Product in such Major Commercialization Country.

1.146 "**Initial Launch Plan Budget**" has the meaning set forth in Section 5.3(a).

1.147"**Insolvency Event**" means, in relation to either Party, any one of the following: (a) that Party becomes insolvent; (b) that Party is the subject of voluntary or involuntary bankruptcy proceedings, civil rehabilitation proceedings (*Minji-saisei-tetsuzuki*) or corporate reorganization proceedings (*Kaisha-kousei-tetsuzuki*) instituted on behalf of or against such Party (except for involuntary bankruptcy proceedings, civil rehabilitation proceedings (*Minji-saisei-tetsuzuki*) or corporate reorganization proceedings (*Kaisha-kousei-tetsuzuki*) which are dismissed within sixty
(60) days); (c) an administrative receiver, receiver and manager, interim receiver, custodian, sequestrator or similar officer is appointed in respect of that Party; (d) a notice shall have been issued to convene a meeting for the purpose of passing a resolution to wind up that Party, or such a resolution shall have been passed other than a resolution for the solvent reconstruction or reorganization of that Party; (e) a resolution shall have been passed by that Party or that Party's directors to make an application for an administration order or to appoint an administrator; or (f)

that Party proposes or makes any general assignment, composition or arrangement with or for the benefit of all or some of that Party's creditors or makes or suspends or threatens to suspend making payments to all or some of that Party's creditors or that Party submits to any type of voluntary arrangement relating to any of the events described in this clause (f).

1.148 "**Interim Period**" has the meaning set forth in Section 13.7.

1.149"**Inventory Build Costs**" means a Party's costs to produce or acquire supplies of an Eisai Collaboration Product prior to the First Commercial Sale of such Eisai Collaboration Product to the extent that such costs are not incurred in connection with a clinical trial and would ordinarily be included as a cost of research and development under the applicable Accounting Standards.

1.150"**Joint Commercialization Committee**" or "**JCC**" has the meaning set forth in Section 2.3(b)(i).

1.151"**Joint Development Committee**" or "**JDC**" has the meaning set forth in Section 2.3(a)(i).

1.152 "**Joint Inventions**" has the meaning set forth in Section 9.2.

1.153 "**Joint Know-How**" has the meaning set forth in Section 9.2.

1.154"**Joint Manufacturing Committee**" or "**JMC**" has the meaning set forth in Section 2.3(c)(i).

1.155"**Joint Manufacturing Patents**" means Joint Patents relating to inventions or discoveries (a) arising out of the Manufacturing activities to be conducted under this Agreement relating, but not necessarily limited, to Eisai Collaboration Products containing Molecule BAN2401 and (b) having claims Covering the Manufacture of Eisai Collaboration Products containing Molecule BAN2401 or having claims that are reasonably necessary or useful, or that are actually used for the Manufacture of Eisai Collaboration Products containing Molecule BAN2401.

1.156"**Joint Other Patents**" means Joint Patents that are not Joint Manufacturing Patents or Joint Substantially Related Patents.

1.157 "**Joint Patents**" has the meaning set forth in Section 9.2.

1.158 "**Joint Steering Committee**" or "**JSC**" has the meaning set forth in Section 2.2(a).

1.159"**Joint Substantially Related Patents**" means Joint Patents claiming inventions made in the course of conducting Development, Manufacturing and/or Commercialization activities for any Eisai Collaboration Product under or relating to this Agreement that Substantially Relate to an Eisai Collaboration Product or Eisai Collaboration Molecule, excluding any Joint Manufacturing Patents.

1.160"JP GAAP" means Japanese generally accepted accounting principles, consistently applied.

1.161 "**Know-How**" means all technical information, know-how and data, including inventions (whether patentable or not), discoveries, trade secrets, specifications, instructions, processes, formulae, materials, expertise and other technology applicable to compounds, formulations, compositions, products or to their manufacture, development, registration, use or commercialization or methods of assaying or testing them or processes for their manufacture, formulations containing them, compositions incorporating or comprising them and including all biological, chemical, pharmacological, biochemical, toxicological, pharmaceutical, physical and analytical, safety, quality control, manufacturing, preclinical and clinical data, instructions, processes, formulae, expertise and information, regulatory filings and copies thereof, relevant to the development, manufacture, use or commercialization of and/or which may be useful in studying, testing, development, production or formulation of products, or intermediates for the synthesis thereof.

1.162 "**LOE**" means, on an Eisai Collaboration Product-by-Eisai Collaboration Product and country-by-country basis, the earlier of (a) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Eisai Collaboration Product in such country and (b) the First Commercial Sale of a Generic Collaboration Product with respect to such Eisai Collaboration Product in such country.

1.163 "**LOE Term**" has the meaning set forth in Section 7.6(b).

1.164 "**[***]**

1.165 [***]

1.166 "**Losses**" has the meaning set forth in Section 11.1.

1.167 "**Major Commercialization Country**" means each of the United States, Japan, Germany, China and the United Kingdom.

1.168 "**Major European Country**" means each of the United Kingdom, France, Germany, Italy and Spain.

1.169 "**Major Market**" means each of the US and each Major European Country.

1.170 "**Manufacture**" means, with respect to a molecule or product, to synthesize, express, manufacture, process, formulate, package, label, hold, store, quality control test and release such molecule or product, and "Manufacturing" means those activities that relate to the synthesis, expression, manufacture, processing, formulation, packaging, labeling, holding, storing, quality control testing and release of such molecule or product, including manufacturing process development and scale-up, validation, qualification and audit of clinical and commercial manufacturing facilities, bulk product and fill/finish work and related quality assurance technical support activities.

1.171 "**Marketing Activities**" means, with respect to an Eisai Collaboration Product, any activity that incurs a Marketing Cost.

1.172 "**Marketing Authorization Application**" or "**MAA**" means an application for the authorization to market an Eisai Collaboration Product in any country or group of countries outside

the United States, as defined in Applicable Law and filed with the Regulatory Authority of a given country or group of countries.

1.173"**Marketing Costs**" means, with respect to an Eisai Collaboration Product, the FTE costs (based on FTE rates as determined by the JCC) and other direct costs actually incurred by a Party in connection with the marketing, Promotion and advertising of such Eisai Collaboration Product, including providing samples of such Eisai Collaboration Product, costs for preparing and reproducing detailing aids, Eisai Collaboration Product promotional materials and other promotional materials, costs for product related public relations, costs to build or otherwise maintain relationships with opinion leaders and professional societies, costs for market research and market studies (before and after product approval), and healthcare economics studies, including cost of care valuations, and costs for other similar activities directly related to the Eisai Collaboration Products. "**Marketing Costs**" shall also include, to the extent directly related to an Eisai Collaboration Product and actually incurred by a Party, (a) actual Out-of-Pocket costs for outside services and expenses (*e.g*., consultants, agency fees, meeting costs, etc.) and (b) costs for activities related to obtaining reimbursement from payers, pricing (other than costs for obtaining Pricing Approvals), advocacy, policy, patient services and marketing data. Marketing Costs will specifically exclude the costs of activities which promote either Party's business as a whole without being specific to an Eisai Collaboration Product (such as corporate image advertising).

1.174 "**Marks**" has the meaning set forth in Section 9.10(b).

1.175"**Medical Activities**" means, with respect to an Eisai Collaboration Product, any activity that incurs a Medical Cost.

1.176"**Medical Costs**" means, with respect to an Eisai Collaboration Product, the FTE costs and other direct costs designed to ensure or improve appropriate medical use of, conduct medical education for, or further research regarding, such Eisai Collaboration Product, including:
(a) activities of medical science liaisons and supporting medical staff; (b) grants to support continuing medical education, symposia, or Third Party research related to an Eisai Collaboration Product in the Territory; (c) development, publication and dissemination of publications relating to such Eisai Collaboration Product, as well as medical information services provided in response to inquiries communicated via internal staff or received by letter, phone call or email; (d) conducting advisory board meetings or other consultant programs, the purpose of which is to obtain advice and feedback related to the commercialization of such Eisai Collaboration Product;
(e) Post-Approval Clinical Trials; (f) activities related to patient registries and (g) clinical, patient, marketplace or technical data generation.

1.177 "**Milestone"** has the meaning set forth in Section 8.2.

1.178 "**Milestone Payment**" has the meaning set forth in Section 8.2.

1.179 "**Molecule**" means any Eisai Collaboration Molecule or any Option Molecule.

1.180 "**Molecule Anti-Tau**" means the antibody described on **Exhibit 1(C)** attached

hereto.

hereto.

1.181 "**Molecule BAN2401**" means the antibody described on **Exhibit 1(B)** attached

hereto.

1.182 "**Molecule E2609**" means the Small Molecule described on **Exhibit 1(A)** attached

1.183 **"Mutual Consent Matter"** means those matters defined as a Mutual Consent

Matter in Section 2.5(c) and any other matter that the Parties expressly mutually agree to designate as a "Mutual Consent Matter" under this Agreement. With respect to each Mutual Consent Matter, each Party must expressly provide their consent (including any such consent delivered by electronic transmission). Unless otherwise specified herein, consent shall mean, with respect to Eisai, the written consent of a duly authorized Representative of Eisai or Eisai's CEO (or their designee) and, with respect to Company, the written consent of a duly authorized Representative of Company or Company's CEO (or their designee).

1.184 "**NDA**" means, with respect to an Eisai Collaboration Product, a New Drug Application or Biologic License Application, as applicable, in the United States for authorization to market such Eisai Collaboration Product, as defined in Applicable Law and filed with the FDA.

1.185 "**Net Sales**" means, with respect to an Eisai Collaboration Product in a Commercial Territory, Gross Sales less the following deductions actually incurred, allowed, paid, accrued or specifically allocated by the applicable Selling Party to such Eisai Collaboration Product in such Commercial Territory:

(a) [***]

(b) [***]

(c) [***]

(d) [***]

(e) [***]

(f) other future similar deductions, taken in the ordinary course of business and in accordance with the Accounting Standards and the Party's standard practices.

Upon any commercial sale or other disposal of an Eisai Collaboration Product by or on behalf of Selling Parties hereunder other than in a *bona fide* arm's length transaction exclusively for money, Net Sales for such sale or other disposal shall be determined [***]

1.186 "**New Development**" means any Development activities (including with respect to a Combination Product or the Co-Administration of an Eisai Collaboration Product) not set forth in the Development Plan then in effect that are (a) required to support a new form or new indication, or (b) designed to be "adequate and well-controlled studies" as defined in Section 314.126 of Chapter 1, Subchapter D in the FDA Title 21, to obtain a Regulatory Approval of a change to the Clinical Studies, Warnings and Precautions, or Adverse Reactions sections of the then-existing prescribing information for such Eisai Collaboration Product to the extent such change expands the FDA-approved patient population in Alzheimer's disease specified in such then-existing prescribing information.

1.187 "**New Development Overage**" has the meaning set forth in Section 3.2(a)(iv)(B).

1.188 "**New Development Overall Cap**" has the meaning set forth in Section 3.2(a)(iv)(A).

1.189 "**New Development Success Payment**" has the meaning set forth in Section 3.2(a)(iv)(C).

1.190 "**Non-Acquired Party**" has the meaning set forth in Section 14.2(a).

1.191 "**Non-Breaching Party**" has the meaning set forth in Section 13.2(a).

1.192 "**Nonclinical Studies**" means all non-human studies, including preclinical studies and toxicology studies, of Eisai Collaboration Molecules and Eisai Collaboration Products.

1.193 "**Non-Compete Term**" means, on an Eisai Collaboration Product-by-Eisai Collaboration Product and country-by-country basis, the period beginning on the Effective Date and ending on the earlier of (a) the termination of this Agreement with respect to such Eisai Collaboration Product in such country and (b) seven (7) years following the First Commercial Sale in such country of such Eisai Collaboration Product; provided that if such country is not the U.S., a Major European Country or Japan and the First Commercial Sale of such Eisai Collaboration Product in such country does not occur prior to the First Commercial Sale of a Generic Collaboration Product with respect to such Eisai Collaboration Product in a Major European Country, the US or Japan, then the Non-Compete Term for such Eisai Collaboration Product in such country shall end upon such First Commercial Sale of a Generic Collaboration Product with respect to such Eisai Collaboration Product in the earlier of a Major European Country, the US or Japan; further provided that, notwithstanding the foregoing, if this Agreement is terminated pursuant to Section 13.2(a), (i) the Non-Compete Term for the Non-Breaching Party shall end upon such termination pursuant to clause (a) of this Section 1.193 and (ii) the Non-Compete Term for the Breaching Party shall continue until the end of the seven (7)-year period described in clause (b) of this Section 1.193, in each case ((i) and (ii)) for the Eisai Collaboration Product(s) with respect to which this Agreement is terminated.

1.194 "**Operational Separation Notice**" has the meaning set forth in Section 14.2(b)(i).

1.195 "**Option Molecule**" means Molecule Anti-Tau.

1.196 "**Option Product**" means any pharmaceutical product or composition containing an Option Molecule.

1.197 **"Option Products Agreements**" means the Definitive Anti-Tau Agreement.

1.198 "**Original Agreement**" has the meaning set forth in the preamble hereto.

1.199 "**Original Agreement Effective Date**" has the meaning set forth in the preamble hereto.

1.200 "**Original Development**" means, with respect to each Eisai Collaboration Product, the Development activities described in the applicable Development Plan attached hereto as of the Effective Date.

1.201 "**Original Development Overage**" has the meaning set forth in Section 3.2(a)(iii)(B).

1.202 "**Original Development Overall Cap**" has the meaning set forth in Section 3.2(a)(iii)(A).

1.203 "Original Development Success Payment" has the meaning set forth in Section 3.2(a)(iii)(C).

1.204 "**Other Indications**" means indications for diseases other than Alzheimer's disease and AD related Disease with respect to Molecule BAN2401.

1.205 "**Other Commercialization Out-of-Pocket Costs**" means, with respect to an Eisai Collaboration Product, other Out-of-Pocket Costs paid by the Parties or their Affiliates to Third Parties which are not part of Development Costs and are not otherwise allocated pursuant to ARTICLE 9, but are expenses with respect to the Manufacture or Commercialization of such Eisai Collaboration Product, including the following:

(a) to the extent not accounted for pursuant to Section 9.10(b), Trademark Costs that are directly related to the Commercialization of an Eisai Collaboration Product;

(b) product liability insurance to the extent the Parties obtain a joint policy; and

(c) legal settlements (unless otherwise allocated under ARTICLE 9 or included as a Regulatory Expense).

1.206 "**Other Transaction Agreements**" means (i) the Amended and Restated Confidentiality Agreement, dated October 24, 2013, between an Affiliate of Company and Eisai and (ii) the BIIB037 Collaboration Agreement.

1.207 "**Out-of-Pocket Costs**" means, with respect to activities pursuant to this Agreement, expenses paid or payable by either Party or its Affiliates to Third Parties (other than employees of such Party or its Affiliates) to the extent specifically identifiable and attributable or reasonably allocable and incurred to conduct such activities for Eisai Collaboration Molecules and/or Eisai Collaboration Products, have been recorded in accordance with applicable Accounting Standards, and for the avoidance of doubt, do not include pre-paid amounts or capital expenditures.

1.208 "**Overall Development Spending Cap**" has the meaning set forth in Section 3.2(a)(ii).

1.209 "**Party**" or "**Parties**" has the meaning set forth in the preamble to this Agreement.

1.210 "**Patent Action**" has the meaning set forth in Section 9.9.

1.211 "**Patent Rights**" means the rights and interests in and to issued patents and pending patent applications in any country, jurisdiction or region (including inventor's certificates and utility models), including all provisionals, non-provisionals, substitutions, continuations, continuations-in-part, divisionals, renewals and all patents granted thereon, and all reissues, reexaminations, extensions, confirmations, revalidations, registrations and patents of addition

thereof, including supplementary protection certificates, PCTs, pediatric exclusivity periods and any foreign equivalents to any of the foregoing.

1.212 "**Patent Term Extension**" has the meaning set forth in Section 9.3(e).

1.213"**Person**" means any individual, partnership, limited liability company, firm, corporation, association, trust, unincorporated organization or other entity.

1.214"**Phase I Clinical Study**" means a Clinical Study that generally provides for the introduction into humans of a pharmaceutical product with the primary purpose of determining safety, metabolism and pharmacokinetic properties and clinical pharmacology of such product, in a manner that is generally consistent with 21 CFR § 312.21(a), as amended (or its successor regulation) and/or any analogous Applicable Law outside of the United States, as applicable, provided, however, a Phase I Clinical Study does not include any study generally characterized by the FDA as an "exploratory IND study" in CDER's Guidance for Industry, Investigators, and Reviewers Exploratory IND Studies, January 2006, irrespective of whether or not such study is actually performed in the United States or under an IND.

1.215"**Phase II Clinical Study**" means a Clinical Study, the principal purpose of which is to make a preliminary determination as to whether a pharmaceutical product is safe for its intended use and to obtain sufficient information about such product's efficacy, in a manner that is generally consistent with 21 CFR § 312.21(b), as amended (or its successor regulation) and/or any analogous Applicable Law outside of the United States, as applicable, to permit the design of further Clinical Studies.

1.216 "**Phase II/III Criteria**" means the criteria set forth on **Exhibit 13.4**.

1.217"**Phase II/III Criteria Expert"** means a disinterested, conflict-of-interest-free individual not affiliated or consulting with either Party with acknowledged expertise in biostatistics as such relates to the analysis and interpretation of the results of clinical trials of pharmaceutical products sufficient to determine whether an Eisai Collaboration Product satisfies the Phase II/III Criteria described in paragraph 1) ("Primary endpoint efficacy") or 2) ("Safety") of **Exhibit 13.4**. The selected individual shall not be or have been at any time an Affiliate, employee, consultant, officer or director of either Party or any of its respective Affiliates

1.218 "Phase II/III Criteria Expert List" has the meaning set forth in Section 2.6.

1.219"**Phase II/III Criteria Panel**" means a panel of three (3) Phase II/III Criteria Experts constituted in accordance with Section 2.6.

1.220"**Phase III Clinical Study**" means a phase III Clinical Study carried out prior to initiation of pivotal Phase III Clinical Studies, that is intended to be the definitive dose range finding study in patients with efficacy as primary endpoint, as well as safety, initiated after completion of a Phase I Clinical Study (or phase III Clinical Study, if performed), that will evaluate the dose-dependent effectiveness of a pharmaceutical product for a particular indication or indications in patients with the disease or condition under study, as well as to collect further adverse effects and safety data to assess the risks associated with the pharmaceutical product, and further pharmacokinetic data.

1.221"**Phase III Clinical Study**" means a Pivotal Clinical Study with a defined dose or a set of defined doses of a pharmaceutical product designed to ascertain efficacy and safety of such product, in a manner that is generally consistent with 21 CFR § 312.21(c), as amended (or its successor regulation) and/or any analogous Applicable Law outside of the United States, as applicable, for the purpose of enabling the preparation and submission of an NDA or MAA.

1.222 "**Phase III Package**" has the meaning set forth in Section 3.6(b)(ii).

1.223"**Phase IV Clinical Study**" means any Clinical Study in an indication for an Eisai Collaboration Product to be conducted after a Regulatory Approval in such indication which was mandated by the applicable Regulatory Authority as a condition of such Regulatory Approval or was otherwise conducted for any other purpose, including for medical observation or commercial purposes.

1.224 "**Phase 3 Option**" has the meaning set forth in Section 3.6(b)(ii).

1.225"**PhRMA Code**" means the PhRMA Code on Interactions with Health Care Professionals.

1.226"**Pivotal Clinical Study**" means a Phase III Clinical Study of an Eisai Collaboration Product or any other Clinical Study of such Eisai Collaboration Product which is intended to be sufficient to support Regulatory Approval of such Eisai Collaboration Product in a particular country, which may be either a Clinical Study conducted to support Regulatory Approval in one or more countries including such country or that is conducted specifically to support Regulatory Approval in such country.

1.227"**Post-Approval Clinical Trial**" means any Clinical Study in an indication for an Eisai Collaboration Product, other than a Phase IV Clinical Trial, to be conducted after a Regulatory Approval for such indication.

1.228"**Post-Approval Clinical Trial Commitment**" shall mean any studies or Clinical Trials for an Eisai Collaboration Product that are required by a Regulatory Authority as part of the registration, license or authorization, or in the post-approval setting and which is necessary to market and sell such Eisai Collaboration Product, as applicable, in such country or jurisdiction.

1.229 "**Post-Phase 3 Option Period**" has the meaning set forth in Section 3.6(b)(ii).

1.230 "**President Arbitrator"** has the meaning set forth in Section 15.2(b).

1.231"**Pricing Approval**" means, with respect to any country where a Governmental Authority authorizes reimbursement, or approves or determines pricing, for pharmaceutical products, receipt (or, if required to make such authorization, approval or determination effective, publication) of such reimbursement authorization or pricing approval or determination (as the case may be).

1.232"**Primary Indication**" means, with respect to an Eisai Collaboration Product, a target indication for Alzheimer's disease being sought by the Parties for Regulatory Approval in one or more countries in the Territory as identified and being carried out in the Development Plan in effect as of the Effective Date for such Eisai Collaboration Product.

1.233"**Product Liability Claim**" means any Claim of product liability or damage to person or property or death resulting from the use or consumption of any Eisai Collaboration Product in the Territory.

1.234 "**Profit Sharing Calculation Report**" has the meaning set forth in Exhibit 8.1(a).

1.235"**Promotion**" means those activities, including, without limitation, normally undertaken by a pharmaceutical company's sales force to implement marketing plans and strategies aimed at encouraging the appropriate use of a particular Licensed Product in a specific indication. When used as a verb, "**Promote**" shall mean to engage in such activities.

1.236"**Proprietary Product**" means, with respect to each Party, a compound or product which (a) is Controlled by such Party or its Affiliates or to which such Party or its Affiliates otherwise has obtained rights and (b) is Covered by a Valid Claim of an issued and unexpired patent or a patent application Controlled by such Party or its Affiliates or is subject to data exclusivity as conferred by a competent Regulatory Authority.

1.237 "**Publications**" has the meaning set forth in Section 12.5(c).

1.238 "**Purchase Price**" has the meaning set forth in Section 14.2(d).

1.239 "**Qualifications"** has the meaning set forth in Section 15.2(b).

1.240"**Quarterly Forecast**" means, in respect of any Calendar Quarter, a forecast in the form of **Exhibit 1(I)** setting forth on a Commercial Territory-by-Commercial Territory basis the information specified therein to be included in such forecast for such Calendar Quarter.

1.241"**Quarterly Report**" means, in respect of any Calendar Quarter, a report in the form of **Exhibit 1(I)** setting forth on a Commercial Territory-by-Commercial Territory basis the information specified therein to be included in such report in respect of such Calendar Quarter.

1.242"**Regulatory Approval**" means, with respect to an Eisai Collaboration Product, in any country or jurisdiction, any approval (including where required, Pricing Approvals and reimbursement approvals (including health technology assessments)), registration, license or authorization from a Regulatory Authority or other Governmental Authority in a country or other jurisdiction that is necessary to Manufacture, market and sell such Eisai Collaboration Product, as applicable, in such country or jurisdiction and, in the case of New Development, includes any approval from a Regulatory Authority or other Governmental Authority necessary to change the Clinical Studies, Warnings and Precautions, or Adverse Reactions sections of the then-existing prescribing information for such Eisai Collaboration Product to the extent such Regulatory Approval (i) is based on "adequate and well-controlled studies" (as defined in Section 314.126 of Chapter 1, Subchapter D in the FDA Title 21), and (ii) expands the FDA-approved patient population in Alzheimer's disease specified in such then- existing prescribing information.

1.243"**Regulatory Authority**" means, any Governmental Authority responsible for granting Regulatory Approvals for Eisai Collaboration Products, including the FDA, EMA and any corresponding national or regional regulatory authorities.

1.244"**Regulatory Expenses**" means, with respect to an Eisai Collaboration Molecule or Eisai Collaboration Product, all Out-of-Pocket Costs and FTE costs, which shall be determined based on the FTE Rate, incurred by or on behalf of a Party or its Affiliates in connection with the preparation, filing, prosecution and maintenance of Regulatory Filings, interfacing, corresponding and meeting with any Regulatory Authority and obtaining, maintaining or expanding Regulatory Approvals for any Eisai Collaboration Molecule or such Eisai Collaboration Product.

1.245 "**Regulatory Filing"** means, with respect to the Eisai Collaboration

Molecules or Eisai Collaboration Products, any submission to a Regulatory Authority of any appropriate regulatory application, and shall include any submission to a regulatory advisory board, marketing authorization application, and any supplement or amendment thereto. For the avoidance of doubt, Regulatory Filings shall include any IND, NDA or the corresponding application in any other country or group of countries.

1.246"**Representatives**" means, with respect to a Person, such Person's officers, directors, managers, employees, general partners, outside counsel, financial advisors, consultants and agents.

1.247"**Required Development**" means, with respect to an Eisai Collaboration Product and a particular country or territory of multiple countries, such Development activities (including Clinical Studies, Post-Approval Clinical Trial Commitments and Nonclinical Studies that are not described in the Development Plan for such Eisai Collaboration Product) that are reasonably necessary to obtain or support filings for, or maintain, Regulatory Approval for a Primary Indication for such Eisai Collaboration Product in such country(ies), including such studies which are required by Regulatory Authorities in such country(ies). As used in this Section 1.247, "reasonably necessary" means (a) required by Applicable Law; (b) that a Regulatory Authority has proposed such Development activity, including any Clinical Study or Nonclinical Study; or
(c) such Development activity, including such Clinical Study or Nonclinical Study, has been proposed by Company in response to a specific concern raised by a Regulatory Authority, in each case as a condition to receiving or maintaining Regulatory Approval in such country(ies).

1.248"**Residual Knowledge**" means knowledge, techniques, experience and Know-How that are (a) reflected in any Confidential Information owned or Controlled by the disclosing Party and (b) retained in the unaided memory of any authorized Representative of the receiving Party after having access to such Confidential Information. A person's memory will be considered to be unaided only if the person has not intentionally memorized the Confidential Information for the purpose of retaining and subsequently using or disclosing it. In no event, however, will Residual Knowledge include any knowledge, techniques, experience and Know-How to the extent (at any time, for such time) within the scope of any valid patent claim owned or Controlled by the disclosing Party.

1.249"**Rest of World Territory**" means the group of countries consisting of all countries in the world excluding all of (a) the United States and its territories, (b) the countries in the European Territory, (c) Japan, and (d) the Asia Territory.

1.250 "**Restricted Period**" has the meaning set forth in Section 14.1(d).

1.251 "**Restricted Product(s)**" has the meaning set forth in Section 14.1(d)(i).

1.252 "**Results**" means, with respect to a product, all analysis, results and raw data from all Development activities undertaken with respect to such product, including as provided for under this Agreement, and any related correspondence or information received from or sent to any Regulatory Authority relating to such product.

1.253 "**Sale Price**" has the meaning set forth in Section 14.2(d).

1.254 "**Sales Costs**" means, with respect to an Eisai Collaboration Product, FTE costs (based on the FTE rates determined by the JCC) and other direct costs specifically identifiable to sales of such Eisai Collaboration Products, which shall include costs associated with sales Representatives (such as recruiting, relocation, compensation, benefits and travel) and training of the sales Representatives, sales meetings, sales call reporting, work on managed care accounts, costs related to customer service, customer engagement and other sales and customer service- related expenses.

1.255 "**SEC**" means the U.S. Securities and Exchange Commission.

1.256 "**Selling Party**" means a Party and its Affiliates, licensees, sublicensees or other transferees and their respective distributors, in each case, engaging in Eisai Collaboration Product sales activities.

1.257 "**Senior Officers**" means the CEO of Eisai (or one of his direct reports) and the CEO of Company (or one of his direct reports).

1.258 "**Separation Date**" has the meaning set forth in Section 14.2(b)(ii)(B).

1.259 "**SM JDC**" has the meaning set forth in Section 3.7(b)(v).

1.260 "**Small Molecule**" means a chemical entity that has a molecular weight that is less than 1,000 Daltons.

1.261 "**Subcommittee**" has the meaning set forth in Section 2.3.

1.262 "**Subsequent 12 Month Commercialization Period**" has the meaning set forth in Section 2.5(c)(i)(B)(1).

1.263 "**Substantially Relate(s)**" means, with respect to an invention or discovery, that such invention or discovery relies upon or requires an Eisai Collaboration Molecule, Eisai Collaboration Product, a Backup Candidate or a Backup Product. "**Substantially Related**" shall have a correlative meaning.

1.264 **"Sunshine Act"** has the meaning set forth in Section 5.5(b).

1.265 "**Target Party**" has the meaning set forth in Section 14.3(a).

1.266 "**Target Party's Entities**" means, with respect to Eisai, Eisai and/or [***] and with respect to Company, Company and/or [***].

1.267 "**Term**" has the meaning set forth in Section 13.1.

1.268 "**Termination Date**" has the meaning set forth in Section 14.2(c)(iv)(A).

1.269 "**Territory**" means all countries of the world.

1.270"**Territory Development**" means Required Development, New Development, Original Development and Discretionary Development, in each case relating to one or more countries in the Territory.

1.271 "**Third Party**" means any Person other than a Party or an Affiliate of a Party.

1.272 **"Third Party Combination Package"** has the meaning set forth in Section 7.6(b).

1.273 "**Third Party Infringement"** has the meaning set forth in Section 9.4(a).

1.274"**Third Party Licenses"** means the Existing Third Party Licenses and any Third Party agreement that is deemed to be a Third Party License pursuant to Section 8.3(b).

1.275"**Third Party Milestones and Royalties**" means milestone amounts and royalties payable after the date of this Agreement to a Third Party pursuant to an agreement between a Party and such Third Party under which intellectual property rights are licensed by the Party from such Third Party that are based upon or result from sales or Development, as applicable, of the Eisai Collaboration Molecule or any Eisai Collaboration Product, in each case after the date of this Agreement, and any amounts deemed to be Third Party Milestones and Royalties pursuant to Section 8.2(b), but shall exclude (a) the value of any shares of a Party provided to such Third Party as consideration for such license, (b) amounts payable by a Party to such Third Party in connection with any financing, credit facility, or securitization arrangement for such intellectual property rights or (c) amounts payable to such Third Party for the reduction or restructuring of payment obligations due to such Third Party under such agreement with such Third Party; provided that,
(x) the foregoing clauses (a), (b) and (c) shall not apply in cases where the Party that is not making the relevant payment or providing the relevant value to such Third Party receives, as a result of such Third Party agreement, economic value in an amount that is at least equal to its applicable percentage share of Collaboration Operating Profit/Loss (as described in the relevant Commercialization Agreement) in the applicable Commercial Territory, (y) any such milestone amount contemplated by this Section 1.275 shall be recognized as a Commercialization Cost based on the gross amount and timing of the payment to such Third Party, irrespective of its treatment under the applicable Accounting Standards, and (z) for any one-time payments made to Third Parties that are treated as a Commercialization Cost in full at the time of such payment for the purpose of Profit Sharing Calculation Report (as defined in the applicable Commercialization Agreement) used in connection with the applicable Commercialization Agreement, the Party making such one-time payment shall not include the amortization expense for such one-time payment as Commercialization Cost for the purpose of Profit Sharing Calculation Report to avoid double counting.

1.276"**Third Party Molecule Combination Product**" has the meaning set forth in Section 7.6(a).

1.277"**Total Development Spending Cap**" means (a[***]for the E2609 Eisai Collaboration Product, and (b) [***] for the BAN2401 Eisai Collaboration Product, in each case, incurred since the Original Agreement Effective Date.

1.278 "**Trademark Costs**" mean the FTE costs and Out-of-Pocket Costs including filing and maintenance expenses, in each case incurred in connection with the establishment and maintenance of rights under trademarks applicable to Eisai Collaboration Products in the Territory, including costs of Territory trademark filing and registration fees, actions to enforce or maintain a Territory trademark and other Territory trademark proceedings.

1.279 "**Transition Date**" has the meaning set forth in Section 14.2(c)(ii).

1.280 "**Undiscounted List Price**" means, for any Calendar Quarter, the weighted average cost to obtain such product in a specific country on the first day of such Calendar Quarter.

1.281 "**UK Bribery Act**" has the meaning set forth in Section 5.5(b).

1.282 "**U.S.**" or "**US**" or "**United States**" means the United States of America and its territories and possessions.

1.283 "**U.S. GAAP**" means U.S. generally accepted accounting principles, consistently applied.

1.284 "**Valid Claim**" means, with respect to a particular country in the Territory, (a) a claim of an issued and unexpired patent in such country Covering the applicable product in each case that has not been revoked or held unenforceable, un-patentable or invalid by a decision of a court or other governmental agency of competent jurisdiction that is not appealable or has not been appealed within the time allowed for appeal, and that has not been abandoned, disclaimed, denied or admitted to be invalid or unenforceable through reissue, re-examination or disclaimer or otherwise and (b) a claim of a patent application in such country Covering the applicable product, in each case that has been pending less than [***] from the earliest date on which such patent application claims priority and which claim was filed and is being prosecuted in good faith and has not been cancelled, withdrawn or abandoned or finally rejected by an administrative agency action from which no appeal can be taken. Where the product referred to in this definition is an Eisai Collaboration Product, the term "patent" in clause (a) of this definition shall mean an Eisai Patent, Company Patent or Joint Patent and the phrase "a claim of a patent application" in clause (b) of this definition shall mean a claim of a patent application included in an Eisai Patent, Company Patent or Joint Patent.

1.285 "**Wind-down Period**" has the meaning set forth in Section 14.2(d).

1.286 "**VAT**" has the meaning set forth in Section 8.3(b).

ARTICLE 2 COLLABORATION; GOVERNANCE

2.1. Collaboration Overview. The Parties desire and intend to collaborate with respect to the Development, Manufacturing and Commercialization of Eisai Collaboration Products in the Field in the Territory, as and to the extent set forth in this Agreement (the "Collaboration").

2.2. Joint Steering Committee.

(a) Establishment; Reporting.

(i) The Parties shall establish a joint steering committee ("**Joint Steering Committee**" or "**JSC**") within thirty (30) days after the Effective Date that will have the responsibility for the overall coordination and oversight of the Parties' activities under the Collaboration and this Agreement. Each Party shall be entitled to appoint three (3) Representatives on the JSC. As soon as practicable following the Effective Date (but in no event more than ten (10) days following the Effective Date), each Party shall either confirm its existing Representative on the JSC or designate a new Representative to serve on the JSC. Each Party shall be free to change its JSC Representatives on notice to the other Party or to send a substitute Representative to any JSC meeting; provided, however, that each Party shall ensure that at all times during the existence of the JSC, its Representatives on the JSC are appropriate in terms of expertise and seniority (including at least one member of senior management) for the then- current stage of Development and Commercialization of the Eisai Collaboration Products and have sufficient authority to act on behalf of such Party with respect to matters within the purview of the JSC. Each Party's JSC Representatives and any substitute for a JSC Representative shall be bound by the obligations of confidentiality set forth in ARTICLE 12.

(ii) Reporting. At a minimum, Eisai shall provide the Development information described in Exhibit 2.2(a)(ii) for review by the JSC and JDC at each scheduled JSC and JDC meeting.

(b) Specific Responsibilities of the JSC. In addition to its overall responsibility for monitoring and providing general oversight with respect to the Parties' activities under the Collaboration, the JSC shall in particular have the following responsibilities:

(i) overseeing each Subcommittee (including the JDC, JCC and JMC), including, as appropriate in an oversight role, the items discussed and deliberated within each such Subcommittee;

(ii) reviewing periodically, but at least once annually, the overall goals, strategy and progress of each Development Program and adjusting such goals and strategy of each Development Program as needed;

(iii) with respect to the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product, reviewing and approving the initial Development Plan and any revisions, updates or amendments to the Development Plan, the Annual Development Plan Budget and the Established Overall Budget for such product;

(iv) reviewing periodically, but at least annually, the overall goals, strategy and progress of the Commercialization of the Eisai Collaboration Products and adjusting such goals and strategy as needed;

(v) reviewing and approving the Commercialization Plans and Commercialization Plan Budgets prepared by the JCC, including any amendments or updates thereto;

(vi) coordinating the reporting of actual financial results for the Eisai Collaboration Products;

(vii) subject to Sections 7.5 and 7.6(b), as applicable, reviewing and approving any decision to Develop and Commercialize a Generic or Proprietary Molecule Combination Product or Third Party Molecule Combination Product under the Collaboration;

(viii) periodic, but at least once annually, review of the Field for Eisai Collaboration Products containing Molecule BAN2401, including any determination as to whether Eisai should actively engage in discussions with [***] in order to expand such Field in accordance with the procedures set forth in Section 5.9;

(ix) with respect to each BAN2401 Eisai Collaboration Product, meeting within thirty (30) days after Eisai's submission of the final Phase II Clinical Study report for such BAN2401 Eisai Collaboration Product pursuant to Section 14.2(c)(ii), as applicable, to review and discuss such final Phase II Clinical Study report, attempt to reach consensus at such meeting on whether the Phase II/III Criteria for such BAN2401 Eisai Collaboration Product have been met;

(x) resolution of matters presented to it by, and disputes raised to it by the Joint Development Committee, the Joint Commercialization Committee, the Joint Manufacturing Committee or any other Subcommittee, in each case, that is within the scope of responsibilities delegated to the respective Subcommittee by the JSC under this Agreement; and

(xi) performing such other functions as appropriate, and directing each Subcommittee to perform such other functions as appropriate, to further the purposes of this Agreement and the Collaboration, in each case as mutually agreed in writing by the Parties.

2.3. Subcommittees. The JSC may establish and disband such subcommittees as deemed necessary by the JSC to perform activities and functions delegated to the JSC hereunder (each a "Subcommittee"). Each such Subcommittee shall consist of the same number of Representatives designated by each Party, which number, if not provided for in this Agreement, shall be mutually agreed by the Parties. Each Party shall be free to change its Subcommittee Representatives on notice to the other Party or to send a substitute Representative to any Subcommittee meeting; provided, however, that each Party shall ensure that at all times during the existence of any Subcommittee, its Representatives on such Subcommittee are appropriate in terms of expertise and seniority for the then-current stage of Development and Commercialization of the applicable Eisai Collaboration Product(s) and have sufficient authority to act on behalf of such Party with respect to matters within the purview of the relevant Subcommittee. Each Party's Subcommittee Representatives and any substitute for such Representatives shall be bound by the obligations of confidentiality set forth in ARTICLE 12. The initial Subcommittees of the JSC will be the Joint Manufacturing Committee, the Joint Development Committee and the Joint Commercialization Committee.

(a) Joint Development Committee.

(i) Establishment. Within thirty (30) days after the establishment of the JSC, the JSC shall establish a joint development committee for each Development Program (each a "**Joint Development Committee**" or "**JDC**") that shall be responsible for the overall

coordination and oversight of such Development Program. Each Party shall be entitled to appoint three (3) Representatives on each JDC. As soon as practicable following the Effective Date (but in no event more than thirty (30) days following the Effective Date), each Party shall designate its initial Representative to the JDC.

(ii) Specific Responsibilities of each JDC. With respect to the applicable Eisai Collaboration Product, the respective JDC shall have the following responsibilities subject to oversight of the JSC and in accordance with Section 3.1:

(A) reviewing the progress of all Development activities (whether under this Agreement or otherwise) of the Eisai Collaboration Molecule, including Commercial Plan progress and Initial Launch Plan progress, no less than quarterly;

(B) discussing, preparing and recommending to the JSC for review and approval any revisions, updates or amendments to the Development Plan (including for all Discretionary Development, New Development, Original Development and Required Development), the Annual Development Plan Budget and the Established Overall Budget for the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product;

(C) discussing, preparing and recommending to the JSC for review and approval any new Territory Development;

(D) overseeing, coordinating and implementing the Development Program for E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product consistent with the applicable Development Plan;

(E) providing a forum for the Parties to discuss the Development of such Eisai Collaboration Product;

(F) providing a forum for the Parties to discuss the appropriate allocation of costs and expenses under, and in a manner consistent with the terms of, this Agreement for Development of such Eisai Collaboration Product;

(G) with respect to the AB JDC only, prior to Eisai's exercise of the Anti-Tau Option pursuant to Section 3.6(b), providing a forum for the Parties to discuss Company's Development activities for the Anti-Tau Option Product, including receiving updates on Company's Development activities for the Anti-Tau Option Product;

(H) reporting to the JSC on financial matters;

(I) monitoring the spending of the Parties under the Development Plan for such Eisai Collaboration Product; and

(J) performing such other functions as may be appropriate to further the purposes of the Collaboration and this Agreement, in each case with respect to the Development of such Eisai Collaboration Product, as mutually agreed in writing by the Parties and directed by the JSC.

(b) Joint Commercialization Committee.

(i) Establishment. Within thirty (30) days after the establishment of the JSC, the JSC shall establish a joint commercialization committee (the "**Joint Commercialization Committee**" or "**JCC**") that shall be responsible for overseeing, reviewing and coordinating the Commercialization of the Eisai Collaboration Products. Each Party shall be entitled to appoint three (3) Representatives on the JCC. As soon as practicable following the formation of the JCC (but in no event more than thirty (30) days after the formation of the JCC), each Party shall either confirm its existing Representative on the JCC or designate a new Representative to serve on the JCC.

(ii) Specific Responsibilities of the JCC. The Joint Commercializa- tion Committee shall have the following responsibilities subject to oversight of the JSC and in accordance with Section 3.1:

(A) reviewing the progress of Commercial activities (whether under this Agreement or otherwise) of the Eisai Collaboration Molecule, including Commercial Plan progress and Initial Launch Plan progress, no less than quarterly;

(B) preparing and recommending to the JSC for review and approval, overall strategic objectives, plans and progress related to Commercialization of the Eisai Collaboration Products;

(C) discussing, preparing and submitting to the JSC for review and approval the Global Branding Strategy for the Eisai Collaboration Products and any updates or amendments thereto;

(D) discussing, preparing and submitting to the JSC for review and approval each Commercialization Plan and Commercialization Plan Budget (including each Initial Launch Plan and Initial Launch Plan Budget) and any updates or amendments thereto; provided that Company shall prepare any such Commercialization Plan and Commercialization Plan Budget (including any amendments or updates thereto) for both the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product;

(E) overseeing, coordinating and implementing the Commercialization Plans for the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product;

(F) providing a forum for the Parties to discuss the Commercialization of the Eisai Collaboration Products;

(G) preparing and recommending to the JSC a procedure for monitoring the rate of spending for Commercialization compared to the applicable Commercialization Plan Budget (including budget overspends or underspends);

(H) providing a forum for the Parties to discuss, but not determine, the appropriate allocation of costs and expenses under this Agreement for Commercialization of Eisai Collaboration Products;

(I) reporting to the JSC on financial matters;

(J) overseeing the Commercialization Plan Budget;

(K) overseeing the Parties in the development and implementation of co-Promotion terms with respect to the promotion of each Eisai Collaboration Product in the Territory;

(L) setting the FTE rates for Commercialization activities and Commercialization Costs; and

(M) performing such other functions as may be appropriate to further the purposes of the Collaboration and this Agreement with respect to Commercialization of the Eisai Collaboration Products.

(c) Joint Manufacturing Committee

(i) Establishment. Within thirty (30) days after the establishment of the JSC, the JSC shall establish a joint manufacturing committee (the "**Joint Manufacturing Committee**" or "**JMC**") that shall be responsible for overseeing, reviewing and coordinating the Manufacture of Eisai Collaboration Products. Each Party shall be entitled to appoint three (3) Representatives on the JMC. As soon as practicable following the establishment of the JMC (but in no event more than thirty (30) days following the establishment of the JMC), each Party shall either confirm its existing Representative on the JMC or designate its initial Representatives on the JMC.

(ii) Specific Responsibilities of the JMC. With respect to each Eisai Collaboration Product, the JMC shall have the following responsibilities subject to oversight of the JSC and in accordance with Section 3.1:

(A) managing the supply chain for such Eisai Collaboration Product;

(B) monitoring logistical strategies, capacity planning and inventory levels for (1) Clinical Studies and (2) Commercialization in the Field in the Territory for such Eisai Collaboration Product; and

(C) providing a forum for the Parties to discuss any material quality-related issues concerning such Eisai Collaboration Product.

2.4. Administration of Committees.

(a) Chairperson.

(i) Each of the JSC and the Subcommittees shall have one chairperson (the "**Chairperson**"), with Eisai and Company alternating the right to appoint such Chairperson to the JSC and with respect to Chairpersons on Subcommittees Eisai and Company shall have the

alternating right to appoint such Chairperson to such Subcommittee on an annual basis with Eisai having the initial right to such Chairperson appointment.

(ii) The Chairperson shall not have any greater authority than any other Representative on the JSC or such Subcommittee, as applicable. The Chairperson shall have the right to call a meeting of the JSC or respective Subcommittee, as applicable, and shall have the following responsibilities: (A) preparing and issuing minutes of each such meeting within thirty (30) days thereafter; (B) ensuring that any decision-making delegated to the JSC or such Subcommittee, as applicable, is carried out in accordance with Section 3.1; and (C) preparing and circulating an agenda for any upcoming meeting of the JSC or respective Subcommittee, as applicable.

(b) Meetings. The JSC and each Subcommittee shall each hold at least one (1) meeting per Calendar Quarter at such times during such Calendar Quarter as the JSC or applicable Subcommittee Chairperson elects to do so. Meetings of the JSC and the Subcommittees, respectively, shall be effective only if at least two (2) Representatives of each Party are present. The JSC and its Subcommittees may meet either (i) in person at such varied locations as the JSC or applicable Subcommittee mutually agrees or (ii) by audio or video teleconference; provided that no less than two (2) meetings of the JSC during each Calendar Year shall be conducted in person. Other Representatives of each Party involved with the Eisai Collaboration Products may attend JSC and Subcommittee meetings as non-voting participants, provided that such Representatives are subject to the confidentiality provisions set forth in ARTICLE 12. Additional meetings of the JSC and its Subcommittees may also be held with the consent of each Party, or as required under this Agreement. Each Party may reasonably request additional meetings of the JSC or any Subcommittee upon fifteen (15) days' prior notice to the other Party. Each Party shall be responsible for all of its own expenses incurred in connection with participating in all such meetings.

2.5. Decision-Making.

(a) Decision Making. Decisions of the JSC and each of the Subcommittees shall be made following a vote, with the Representatives of each Party collectively having one (1) vote; provided, that if any Subcommittee fails to reach unanimous agreement on a matter before it for a period in excess of thirty (30) days, then the matter shall be referred to the JSC for resolution; and if the JSC cannot resolve a matter specifically delegated to it or a dispute referred to it by a Subcommittee on a matter specifically delegated to such Subcommittee within thirty (30) days after it begins discussing any such delegated matter or the applicable Subcommittee's referral of such dispute, as applicable, then, subject to the limitations set forth in this Section 3.1, Eisai or Company, as applicable under Sections 3.1(b) and 3.2(a)(iii)(C), shall have final decision-making authority on such matter or decision.

(b) Referral to Senior Officers. If the JSC cannot resolve a matter specifically delegated to it or a dispute referred to it by a Subcommittee on a matter specifically delegated to such Subcommittee within fifteen (15) days after it begins discussing any such delegated matter or the applicable Subcommittee's referral of such dispute, as applicable, then the JSC shall escalate such matter or dispute to the Senior Officers for resolution. Such Senior Officers shall use good faith efforts to resolve promptly such matter or dispute, which good faith efforts shall include at

least one in-person meeting between such Senior Officers if such matter or dispute has not been resolved within fifteen (15) days after the JSC's submission of such matter or dispute to such Senior Officers and such in-person meeting is requested by the Party disagreeing with the Party that has final decision making authority over such matter or dispute. If a Party requests such an in-person meeting, then such meeting shall be held at the other Party's headquarters within the timeframes described herein; provided that if the other Party is not available to meet during such fifteen (15) day period, then such fifteen (15) day period shall be extended by consecutive fifteen (15) day periods until such in-person meeting occurs. If the Senior Officers are unable to mutually agree on the resolution of such matter or dispute within the applicable fifteen (15) days after the JSC's submission of such matter or dispute to them, then subject to the limitations set forth in Section 3.2(a)(iii)(C), Company or Eisai, as applicable, may elect to exercise its final decision- making authority to decide such matter or dispute related to any Eisai Collaboration Product as described in Section 2.5(c). Notwithstanding anything herein to the contrary, if the JSC is unable to reach consensus on the determination of whether the Phase II/III Criteria for BAN2401 Eisai Collaboration Product have been met at the JSC meeting to be held within thirty (30) days after Eisai's submission of the applicable final Phase II Clinical Study report to the JSC pursuant to Section 2.2(b)(ix), then the JSC shall escalate such dispute to the Senior Officers for resolution. If the Senior Officers are unable to mutually agree on the resolution of such dispute regarding the determination of whether Phase II/III Criteria have been met within fifteen (15) days (which fifteen (15) day period may or may not include an in-person meeting) after the JSC's submission of such dispute to them, then either Party may submit the resolution of such determination to the Phase II/III Criteria Panel in accordance with Section 15.2.

(c) Final Decision Making Authority.

(i) Eisai Final Decision-Making Authority.

(A) General Decision-Making Authority. Subject to the limitations set forth in Section 3.2, 3.2(a)(iii)(B), Section 6.1 and Section 3.2(a)(iii)(C), Eisai shall have responsibility for, control over and final decision-making authority on all matters and activities relating to the Collaboration, including all decisions that impact Development, Commercialization, Manufacturing and regulatory matters of the Eisai Collaboration Product, all pricing decisions and decisions related to Pricing Approvals and Regulatory Approvals, and any issues related to Eisai Collaboration Product withdrawals and recalls, Medical Activities, intellectual property matters, all public disclosures of data related to an Eisai Collaboration Product (including publications of scientific data) and all activities related to the distribution of an Eisai Collaboration Product, including all JSC and Subcommittee decisions, determinations and approvals for any and all of the foregoing

(B) US Commercialization; Mutual Consent.

(1) If, during the three (3) year period commencing with the first Calendar Quarter beginning immediately following the launch of an Eisai Collaboration Product in the United States (such three (3) year period the "**Initial 3 Year Commercialization Period**"), the Commercialization Entities (as defined in the United States Commercialization Agreement) in the United States, taken as a whole, fail to achieve a cumulative Collaboration Operating Profit with respect to such Eisai Collaboration Product in the United States for at least

one (1) period consisting of four (4) consecutive Calendar Quarters during the Initial 3 Year Commercialization Period, as calculated at the end of the relevant four (4) consecutive Calendar Quarters, then, at the expiration of the Initial 3 Year Commercialization Period, the Commercialization Plan Budget for such Eisai Collaboration Product in the United States shall become a Mutual Consent Matter for purposes of Section 3.2(a)(iii)(C). In the event that the Commercialization Plan Budget for the Eisai Collaboration Product in the United States shall become a Mutual Consent Matter pursuant to this Section 2.5(c)(i)(B)(1), the Parties shall enter into good faith negotiations with respect to the establishment of the Commercialization Plan Budget for the twelve (12) month period following the expiration of the Initial 3 Year Commercialization Period (the "**First Subsequent 12 Month Commercialization Period**"); provided that, if the Parties are unable to reach an agreement as to such Commercialization Plan Budget for such First Subsequent 12 Month Commercialization Period within thirty (30) days after commencing such good faith negotiations, the Parties agree that the Commercialization Plan Budget for such First Subsequent 12 Month Commercialization Period in the United States shall be equal to the lower of (a) an amount equal to seventy-five percent (75%) of the total amount of Commercialization Costs incurred by the Parties to Commercialize the Eisai Collaboration Product in the United States during the last four (4) consecutive Calendar Quarters of the Initial 3 Year Commercialization Period, or (b) the amount that in the good faith estimate of the Parties would result in the Commercialization Entities in the United States, taken as whole, achieving a cumulative Collaboration Operating Profit of at least One Dollar ($1.00) during the First Subsequent 12 Month Commercialization Period. If the Commercialization Entities in the United States, taken as a whole, fail to achieve a cumulative Collaboration Operating Profit with respect to the Eisai Collaboration Product in the United States during the First Subsequent 12 Month Commercialization Period, then, subject to Section 2.5(c)(i)(B)(3), for each consecutive twelve
(12) month period thereafter (each such period, a "**Subsequent 12 Month Commercialization Period**"), if the Parties are unable to reach agreement as to the Commercialization Plan Budget for such Subsequent 12 Month Commercialization Period in the United States as a Mutual Consent Matter, subject to Section 13.5(b), the Commercialization Plan Budget for such Subsequent 12 Month Commercialization Period shall be equal to the lower of (x) an amount equal to seventy- five percent (75%) of the total amount of Commercialization Costs incurred by the Parties to Commercialize the Eisai Collaboration Product in the United States during the twelve (12) month period prior to such Subsequent 12 Month Commercialization Period , or (y) the amount that in the good faith estimate of the Parties would result in the Collaboration Entities in the United States, taken as a whole, achieving a cumulative Collaboration Operating Profit of at least One Dollar ($1.00) during such Subsequent 12 Month Commercialization Period.

(2) If during any consecutive eight (8) Calendar Quarter period commencing with the first Calendar Quarter immediately after the expiration of the Initial 3 Year Commercialization during which the Commercialization Entities in the United States, taken as a whole, achieved a cumulative Collaboration Operating Profit in at least one (1) period consisting of four (4) consecutive Calendar Quarters such that the Commercialization Plan Budget for the applicable Eisai Collaboration Product in the United States did not become a Mutual Consent Matter pursuant to Section 2.5(c)(i)(B)(1) (each such eight (8) Calendar Quarter period, a "**Follow-On 2 Year Commercialization Period**"), the Commercialization Entities (as defined in the United States Commercialization Agreement) in the United States, taken as a whole, fail to achieve a cumulative Collaboration Operating Profit with respect to the applicable Eisai Collaboration Product in the United States for at least one (1) period consisting of four (4)

consecutive Calendar Quarters during such Follow-On 2 Year Commercialization Period, as calculated at the end of the relevant four (4) consecutive Calendar Quarters, then at the expiration of such Follow-On 2 Year Commercialization Period, the Commercialization Plan Budget for such Eisai Collaboration Product in the United States shall become a Mutual Consent Matter for purposes of Section 3.2(a)(iii)(C). In the event that the Commercialization Plan Budget for such Eisai Collaboration Product in the United States becomes a Mutual Consent Matter pursuant to this Section 2.5(c)(i)(B)(2), the Parties shall enter into good faith negotiations with respect to the establishment of the Commercialization Plan Budget for the twelve (12) month period following the expiration of the relevant Follow-On 2 Year Commercialization Period (the "**First Subsequent Follow-On Period**"); provided that, if the Parties are unable to reach an agreement as to such Commercialization Plan Budget for such First Subsequent Follow-On Period within thirty (30) days after commencing such good faith negotiations, the Parties agree that the Commercialization Plan Budget for such First Subsequent Follow-On Period in the United States shall be equal to the lower of (a) an amount equal to seventy-five percent (75%) of the total amount of Commercialization Costs incurred by the Parties to Commercialize such Eisai Collaboration Product in the United States during the last four (4) consecutive Calendar Quarters of the relevant Follow-On 2 Year Commercialization Period, or (b) the amount that in the good faith estimate of the Parties would result in the Collaboration Entities in the United States, taken as whole, achieving a cumulative Collaboration Operating Profit of at least One U.S. Dollar ($1.00) during the First Subsequent Follow-On Period. If the Commercialization Entities in the United States, taken as a whole, fail to achieve a cumulative Collaboration Operating Profit with respect to such Eisai Collaboration Product in the United States during the First Subsequent Follow-On Period, then, subject to Section 2.5(c)(i)(B)(3), for each Subsequent 12-Month Commercialization Period, if the Parties are unable to reach agreement as to the Commercialization Plan Budget for such Subsequent 12-Month Commercialization Period in the United States as a Mutual Consent Matter, subject to Section 13.5(b), the Commercialization Plan Budget for such Subsequent 12-Month Commercialization Period shall be equal to the lower of (x) an amount equal to seventy-five percent (75%) of the total amount of Commercialization Costs incurred by the Parties to Commercialize such Eisai Collaboration Product in the United States during the twelve (12) month period prior to such Subsequent 12 Month Commercialization Period, or (y) the amount that in the good faith estimate of the Parties would result in the Collaboration Entities in the United States, taken as a whole, achieving a cumulative Collaboration Operating Profit of at least One U.S. Dollar ($1.00) during such Subsequent 12 Month Commercialization Period.

(3) If during any of the First Subsequent 12-Month Commercialization Period, the First Subsequent Follow-On Period, the First Subsequent Reversion Period (as defined in this Section 2.5(c)(i)(B)(3)) or any Subsequent 12-Month Commercialization Period, as applicable, the Commercialization Parties in the United States, taken as a whole, achieve a cumulative Collaboration Operating Profit for the relevant twelve (12) month period, then, for each consecutive two (2) year period commencing with the first Calendar Quarter immediately following such twelve (12) month period (each such two (2) year period, an "**Eisai Reversion Period**"), the Commercialization Plan Budget for the applicable Eisai Collaboration Product in the United States shall no longer be a Mutual Consent Matter for purposes of Section 3.2(a)(iii)(C), and, consistent with Section 2.5(c)(i)(A), shall be within the final decision-making authority of Eisai. If, during the Eisai Reversion Period, the Commercialization Entities in the United States, taken as a whole, fail to achieve a cumulative Collaboration Operating Profit with respect to the Eisai Collaboration Product in the United States for at least one (1) period consisting

of four (4) consecutive Calendar Quarters during the Eisai Reversion Period, as calculated at the end of the relevant four (4) consecutive Calendar Quarters, then, at the expiration of the Eisai Reversion Period, the Commercialization Plan Budget for the Eisai Collaboration Product in the United States shall become a Mutual Consent Matter for purposes of Section 3.2(a)(iii)(C). In the event that the Commercialization Plan Budget for the Eisai Collaboration Product in the United States shall become a Mutual Consent Matter pursuant to this Section 2.5(c)(i)(B)(3), the Parties shall enter into good faith negotiations with respect to the establishment of the Commercialization Plan Budget for the twelve (12) month period following the expiration of the relevant Eisai Reversion Period (the "**First Subsequent Reversion Period**"); provided that, if the Parties are unable to reach an agreement as to such Commercialization Plan Budget for such First Subsequent Reversion Period within thirty (30) days after commencing such good faith negotiations, the Parties agree that the Commercialization Plan Budget for such First Subsequent Reversion Period in the United States shall be equal to the lower of (a) an amount equal to seventy-five percent (75%) of the total amount of Commercialization Costs incurred by the Parties to Commercialize the Eisai Collaboration Product in the United States during the last four (4) consecutive Calendar Quarters of the relevant Eisai Reversion Period, or (b) the amount that in the good faith estimate of the Parties would result in the Collaboration Entities in the United States, taken as whole, achieving a cumulative Collaboration Operating Profit of at least One U.S. Dollar ($1.00) during First Subsequent Reversion Period. If the Commercialization Entities in the United States, taken as a whole, fail to achieve a cumulative Collaboration Operating Profit with respect to the Eisai Collaboration Product in the United States during the First Subsequent Reversion Period, then, subject to this Section 2.5(c)(i)(B)(3), for each Subsequent 12-Month Commercialization Period, if the Parties are unable to reach agreement as to the Commercialization Plan Budget for such Subsequent 12-Month Commercialization Period in the United States as a Mutual Consent Matter, subject to Section 13.5(b), the Commercialization Plan Budget for such Subsequent 12- Month Commercialization Period shall be equal to the lower of (x) an amount equal to seventy- five percent (75%) of the total amount of Commercialization Costs incurred by the Parties to Commercialize the Eisai Collaboration Product in the United States during the twelve (12) month period prior to such Subsequent 12 Month Commercialization Period, or (y) the amount that in the good faith estimate of the Parties would result in the Collaboration Entities in the United States, taken as a whole, achieving a cumulative Collaboration Operating Profit of at least One U.S. Dollar ($1.00) during such Subsequent 12 Month Commercialization Period.

(4) Eisai agrees that it shall exercise its final-decision making authority and engage in its Commercialization activities in the United States in good faith, including, to the extent commercially reasonable, incurring Commercialization Costs along a consistent trajectory during the course of each Commercialization Period, and shall not engage in, or fail to engage in, any Commercialization activities with the intent of manipulating Commercialization Costs in order to achieve a Collaboration Operating Profit for the sole purpose of avoiding the consequences intended under this Section 3.2.

(5) Any reference in this Section 3.2 to "cumulative" Collaboration Operating Profit for any period means the cumulative Collaboration Operating Profit measured from the beginning of such period and shall (a) include Third Party Milestones and Royalties that are one-time payments under Third Party Licenses in force and effect as of the Effective Date that are not sales-based milestone payments that are made by the Commercialization Entities during such period, provided that any such one-time payments shall

be counted solely on an amortized basis, and (b) exclude (i) one-time sales-based milestone payments incurred after the commercial launch of the Eisai Collaboration Product under Third Party Licenses in force and effect as of the Effective Date, and (ii) Third Party Milestones and Royalties and upfront payments under Third Party Licenses that are not in force and effect as of the Effective Date, for each of (a) and (b) solely for the purpose of determining whether a "cumulative" Collaboration Operating Profit has occurred under Section 3.2.

(ii) Company Final Decision Making Authority. Notwithstanding anything to the contrary herein, Company shall have final decision making authority on all matters related to the Option Product prior to the time when the Parties enter into a definitive agreement with respect to the Option Product pursuant to Section 3.6(b)(ii).

(d) Mutual Consent Matters. Notwithstanding anything to the contrary herein, the following matters shall each be a Mutual Consent Matter with respect to each Eisai Collaboration Product, and each Party must expressly provide their written consent with respect to each such Mutual Consent Matter:

(i) the Commercialization Plan Budget of an Eisai Collaboration Product in the United States at such times as such Commercialization Plan Budget is a Mutual Consent Matter pursuant to Section 3.2;

(ii) the termination of any Development Program or Commercialization Plan for an Eisai Collaboration Product, except as permitted in accordance with Section 14.2(c)(i) (due to safety reason), which shall not be a Mutual Consent Matter;

(iii) any decision, with respect to each Eisai Collaboration Product, to not include Company's logo and relevant trademarks on all packaging for and materials (including promotional materials) regarding such Eisai Collaboration Product; and

(iv) any decision, with respect to each Eisai Collaboration Product, to not include Eisai's logo and relevant trademarks on all packaging for and materials (including promotional materials) regarding such Eisai Collaboration Product.

2.6. Phase II/III Criteria Panel. Within sixty (60) days of the Effective Date, the Parties will mutually agree in writing on a list of ten (10) Phase II/III Criteria Experts (the "Phase II/III Criteria Expert List"). On a BAN2401 Eisai Collaboration Product-by- BAN2401 Eisai Collaboration Product basis, beginning on the date that Eisai delivers the final Phase II Clinical Study report for such BAN2401 Eisai Collaboration Product, the Parties will jointly contact Phase II/III Criteria Experts from the Phase II/III Criteria Expert List in alphabetical order by last name or confirm any existing Phase II/III Criteria Experts currently serving in such capacity. In the event there are no Phase II/III Criteria Experts appointed for a BAN2401 Eisai Collaboration Product, the first three (3) Phase II/III Criteria Experts contacted pursuant to the preceding sentence who advise that they have availability to act on the Phase II/III Criteria Panel during the period when the Parties anticipate, based on the timeline for consideration of such report by the JSC and Senior Officers pursuant to Section 3.1(b), that a dispute could arise regarding whether or not the Phase II/III Criteria have been met for such BAN2401 Eisai Collaboration Product, shall constitute the Phase II/III Criteria Panel for such BAN2401 Eisai Collaboration Product; provided

that, if any such Phase II/III Criteria Expert is not actually available at the time that the Phase II/III Criteria Panel is required to act pursuant to Section 15.4, then the Parties will continue to jointly contact Phase II/III Criteria Experts from the Phase II/III Criteria Panel List in alphabetical order by last name until three (3) Phase II/III Criteria Experts are actually able to serve on the Phase II/III Criteria Panel at such time, and such three (3) Phase II/III Criteria Experts shall constitute the applicable Phase II/III Criteria Panel. In order to serve as a member of a Phase II/III Criteria Panel, a Phase II/III Criteria Expert must first enter into an appropriate confidentiality agreement, in a form submitted to him or her by the Parties, otherwise the Parties shall continue to jointly contact Phase II/III Criteria Experts in order to constitute a Phase II/III Criteria Panel pursuant to this Section 2.6. The fees and costs of the Phase II/III Criteria Panel shall be shared equally (50%/50%) by the Parties.

2.7. Alliance Managers.

(a) Appointment. Within thirty (30) days following the Effective Date each Party will appoint, or confirm the current appointment of, (and notify the other Party of the identity of) a senior Representative of such Party having a general understanding of pharmaceutical Development and Commercialization issues to act as its alliance manager under this Agreement (each an "**Alliance Manager**"). Each Party may replace its Alliance Manager at any time by written notice to the other Party.

(b) Specific Responsibilities. The Alliance Managers will serve as the primary contact point between the Parties for the Collaboration for the purpose of providing each Party with information on the progress of Development and Commercialization of each Eisai Collaboration Product and shall have the following responsibilities:

(i) facilitating the flow of information and otherwise promoting communication, coordination and collaboration between the Parties for such Eisai Collaboration Product;

(ii) coordinating the various functional Representatives of each Party, as appropriate, in developing and executing strategies and plans for the applicable Eisai Collaboration Product;

(iii) providing a single point of communication for seeking consensus both internally within the respective Party's organization and between the Parties regarding key strategy and planning issues for such Eisai Collaboration Product;

(iv) assisting the integration of teams across functional areas for such Eisai Collaboration Product;

(v) assisting Subcommittees in identifying and raising cross-Party and/or cross-functional disputes in a timely manner; and

(vi) performing such other functions as directed by the JSC.

2.8. General Authority; Conduct of Parties. Each of the JSC, the Subcommittees and the Alliance Managers shall have solely the powers expressly assigned to them in this ARTICLE

2 and elsewhere in this Agreement. Neither the JSC nor any Subcommittee or Alliance Manager shall have any power to amend, modify, or waive compliance with this Agreement. In conducting themselves on the JSC and the Subcommittees, and as Alliance Managers, and in exercising their rights under this ARTICLE 2, all Representatives of both Parties shall consider diligently, reasonably and in good faith all input received from the other Party, and shall use reasonable efforts to reach unanimity, where required, on all matters before them.

ARTICLE 3 DEVELOPMENT; OPTIONS

3.1. Joint Development.

(a) General. Subject to the terms and conditions of this Agreement, the Parties intend and agree to collaborate with one another with respect to the Development of Eisai Collaboration Products in the Field as provided in this ARTICLE 3 under the direction of the applicable JDC and pursuant to the respective Development Program throughout the Territory. The Parties' respective responsibilities with respect to each Eisai Collaboration Product shall be as set forth in a detailed written development plan (each, a "**Development Plan**") for each of the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product set forth in **Exhibit 3.1(a)(i)** or **Exhibit 3.1(a)(ii)**, as applicable. Each Development Plan shall be updated annually, upon review by the applicable JDC and approval by the JSC in accordance with ARTICLE 2. Each Development Plan and any updates thereto shall (i) reflect the application of Commercially Reasonable Efforts to Develop the applicable Eisai Collaboration Product, (ii) set forth and be consistent with the then-current Established Overall Budget for such Eisai Collaboration Product, (iii) specify in reasonable detail all material Development activities to (A) generate the preclinical, clinical, CMC, regulatory and other information required for filing Regulatory Approval applications for such Eisai Collaboration Product and (B) achieve Regulatory Approval for such Eisai Collaboration Product in the Territory and (iv) include those obligations assigned to each Party with respect to the performance of the Development activities contemplated by such Development Plan. In the event of any inconsistency between any Development Plan and this Agreement, the terms of this Agreement shall prevail. The JDC shall be responsible for preparing and submitting to the JSC an overall budget for the Development Program for each Eisai Collaboration Product (such initial budgets are set forth on **Exhibit 3.1(b)(i)** or **3.1(b)(ii)**, as applicable) (as each such budget may be amended from time to time, an "**Established Overall Budget**"). Notwithstanding anything to the contrary in this Agreement, neither Party shall have the right to increase the Total Development Spending Cap without executing a formal amendment in accordance with Section 16.1.

(b) Annual Development Plan Budgets. The applicable JDC shall be responsible for preparing and submitting to the JSC a detailed budget consistent with the Established Overall Budget for Development Costs relating to the activities set forth in the Development Plan for both the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product for each Calendar Year (broken down by Calendar Quarters) covered by the Development Plan (as such budget may be amended from time to time, the "**Annual Development Plan Budget**"). The Annual Development Plan Budgets for the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product for the Calendar Year ending **December**

31, 2018 are set forth on **Exhibit 3.1(b)(i)** or **3.1(b)(ii)**, as applicable. Subject to Section 3.6(b)(ii), each Party shall use Commercially Reasonable Efforts to manage the Development activities allocated to such Party in the applicable Development Plan such that the Development Costs associated with such Development activities do not exceed the applicable budgeted amounts for such activities in the applicable Established Overall Budget and Annual Development Plan Budget.

(c) Amendments to Development Plans and Annual Development Plan Budgets. From time to time as the applicable JDC shall deem appropriate, such JDC shall prepare amendments to the then-current Development Plan for the applicable Eisai Collaboration Product for approval by JSC. Each such amended Development Plan shall reflect any changes, re- prioritization of studies within, reallocation of resources with respect to, or additions to the then- current Development Plan for such Eisai Collaboration Product, including any Discretionary Development, Required Development or New Development for such Eisai Collaboration Product. In addition, such JDC shall prepare annual updates to the Annual Development Plan Budget for such Eisai Collaboration Product (without necessarily having to amend the corresponding Development Plan) no later than November 1st of each Calendar Year in order to reflect changes in such budget for the following Calendar Year and recommend such amendment for approval by the JSC. Each such amended Annual Development Plan Budget shall specify with reasonable detail the budget for the items described in the applicable Development Plan. Once approved by the JSC, each amended Development Plan and/or Annual Development Plan Budget shall become effective for the applicable period on the date approved by the JSC (or such other date as the JSC shall specify). Any JSC-approved amended Development Plan and/or Annual Development Plan Budget shall supersede the previous Development Plan and/or Annual Development Plan Budget for the applicable period.

(d) Amendments to the Established Overall Budget. From time to time as the applicable JDC shall deem appropriate, such JDC shall prepare amendments to the then- current Established Overall Budget for the applicable Eisai Collaboration Product for approval by the JSC. Any JSC-approved amended Established Overall Budget shall supersede the previous Established Overall Budget.

(e) Territory Development. If the Eisai desires to undertake Territory Development for an Eisai Collaboration Product that is Required Development, New Development or Discretionary Development, then Eisai may propose such Territory Development by submitting to Company and the JDC a written summary of, and proposed protocol for, such Territory Development. The JDC shall consider in good faith, take into account and implement where possible the reasonable comments made by Company with respect to such Territory Development and the JDC shall prepare amendments to the then-current Development Plan and Annual Development Plan Budget in each case for approval by the JSC, subject to Section 3.2(a). Upon JSC approval, Eisai shall undertake such Territory Development.

3.2. Development Costs.

(a) Allocation of Development Costs in the Territory

(i) Required Development. With regards to Territory Development that is Required Development, Eisai shall be responsible for fifty percent (50%) and Company

shall be responsible for fifty percent (50%) of all Development Costs incurred by the Parties with respect to each Eisai Collaboration Product.

(ii) Overall Development Spending Cap for Original Development, Discretionary Development and New Development. With respect to the aggregate Development Costs for Territory Development that is Original Development, Discretionary Development and New Development, notwithstanding any other provision of this Agreement, Company shall have no obligation to pay to Eisai any amounts in excess of Company's fifty percent (50%) of one hundred and fifty percent (150%) (*i.e.*, seventy-five percent (75%)) of the applicable Total Development Spending Cap (the "**Overall Development Spending Cap**") for either E2609 Eisai Collaboration Product or the BAN2401 Eisai Collaboration Product, except to the extent that Company becomes obligated to pay Original Development Success Payments or New Development Success Payments following obtaining Regulatory Approval for an Eisai Collaboration Product as contemplated by Section 3.2(a)(iii)(C) and Section 3.2(a)(iv)(C), as applicable; provided that Company may, at any time prior to the time that Regulatory Approval is obtained, elect to share in such Development Costs above the Overall Development Spending Cap, New Development Overall Cap and/or Original Development Overall Cap, as applicable, in which event the Original Development Success Payment or New Development Success Payment, as applicable, shall only apply to Company's portion of Development Costs in excess of the applicable Original Development Overall Cap or New Development Overall Cap that Company did not so elect to fund. For the purpose of clarification, the Overall Development Spending Cap shall not apply to Territory Development that is Required Development.

(iii) Original Development.

(A) With regards to Territory Development that is Original Development, Eisai shall be responsible for fifty percent (50%) and Company shall be responsible for fifty percent (50%) up to an aggregate amount of all Development Costs for such Original Development incurred by both Parties equal to one hundred and twenty percent (120%) of the applicable Total Development Spending Cap (the "**Original Development Overall Cap**").

(B) Subject to Sections 3.2(a)(ii) (Overall Development Spending Cap) and 3.2(a)(iii)(A) (Original Development Overall Cap) and unless Company otherwise agrees prior to when such Development Costs are incurred or as otherwise provided in Section 3.2(a)(iii)(C), Eisai shall be solely responsible for all Development Costs for Territory Development that is Original Development that are in excess of the applicable Original Development Overall Cap and the Overall Development Spending Cap, as applicable (such excess Development Costs, the "**Original Development Overage**"), and notwithstanding any other provision of this Agreement, Company shall have no obligation to pay to Eisai any Original Development Overage for such Eisai Collaboration Product except to the extent Company becomes obligated to pay Original Development Success Payments following obtaining Regulatory Approval for the applicable Eisai Collaboration Product (unless Company in its sole discretion otherwise elected to share in such Original Development Overage as described in Section 3.2(a)(ii)(b)) as contemplated by Section 3.2(a)(iii)(C).

(C) Eisai shall report on the progress of Original Development activities associated with Original Development Overage at each meeting of the applicable JDC.

Subject to the immediately following sentence, if, following the completion of such Original Development activities, a Regulatory Approval for the Primary Indication(s) of the applicable Eisai Collaboration Product is obtained in one or more Major Markets, then Company shall pay to Eisai within thirty (30) days of such Regulatory Approval, an amount equal to seventy five percent (75%) of the difference between the Original Development Overage and any amount above the Original Development Overall Cap that Company has paid pursuant to an election made under Section 3.2(a)(ii) (such amount, the "**Original Development Success Payment**"). At any time before such Regulatory Approval, Company in its sole discretion may elect to pay to Eisai that portion of the Original Development Success Payment due for the period beginning when Eisai began undertaking such Original Development activities associated with Original Development Overage at its sole cost and expense and ending on the date when Company pays such amount, and thereafter (1) Company shall not owe to Eisai any other portion of the Original Development Success Payment and (2) Eisai shall be responsible for fifty percent (50%) and Company shall be responsible for fifty percent (50%) of all Development Costs for such Original Development activities incurred by the Parties with respect to the applicable Eisai Collaboration Product.

(iv) New Development.

(A) With regards to Territory Development that is New Development, Eisai shall be responsible for fifty percent (50%) and Company shall be responsible for fifty percent (50%) up to an aggregate amount of all Development Costs for such New Development incurred by both Parties equal to thirty five percent (35%) of the applicable Total Development Spending Cap (the "**New Development Overall Cap**").

(B) Subject to both Sections 3.2(a)(ii) (Overall Development Spending Cap) and 3.2(a)(iv)(A) (New Development Overall Cap) and unless Company otherwise agrees prior to when such Development Costs are incurred or as otherwise provided in Section 3.2(a)(iv)(C), Eisai shall be solely responsible for all Development Costs for Territory Development that is New Development that are in excess of both the New Development Overall Cap and the Overall Development Spending Cap, as applicable (such excess Development Costs, the "**New Development Overage**"), and notwithstanding any other provision of this Agreement, Company shall have no obligation to pay to Eisai any New Development Overage for such Eisai Collaboration Product except to the extent Company becomes obligated to pay New Development Success Payments following obtaining Regulatory Approval for the applicable Eisai Collaboration Product (unless Company in its sole discretion otherwise elected to share in such New Development Overage as described in Section 3.2(a)(ii)) as contemplated by Section 3.2(a)(iv)(C).

(C) Eisai shall report on the progress of New Development activities associated with New Development Overage at each meeting of the JDC. Subject to the immediately following sentence, if following the completion of such New Development activities, a Regulatory Approval for the applicable Eisai Collaboration Product for (a) a new form or new indication, or (b) a change to the Clinical Studies, Warnings and Precautions, or Adverse Reactions sections of the then-existing prescribing information for such Eisai Collaboration Product to the extent such change (i) is the result of "adequate and well-controlled stud(ies)" (as defined in Section 314.126 of Chapter 1, Subchapter D in the FDA Title 21), and (ii) expands the FDA- approved patient population in Alzheimer's disease specified in such then-existing prescribing information and wherein such Regulatory Approval is obtained in one or more Major Markets and

data from such New Development activities supported such Regulatory Approval, then, in each case (a) and (b), Company shall pay to Eisai within thirty (30) days of such Regulatory Approval, an amount equal to seventy five percent (75%) of the difference between the New Development Overage and any amount above the New Development Overall Cap that Company has paid pursuant to an election made under Section 3.2(a)(ii) (such amount, the "**New Development Success Payment**"). At any time before such Regulatory Approval, Company in its sole discretion may elect to pay to Eisai that portion of the New Development Success Payment due for the period beginning when Eisai began undertaking such New Development activities associated with New Development Overage at its sole cost and expense and ending on the date when Company pays such amount, and thereafter (1) Company shall not owe to Eisai any other portion of the New Development Success Payment and (2) Eisai shall be responsible for its Applicable Development Cost Percentage and Company shall be responsible for its Applicable Development Cost Percentage of all Development Costs for such New Development activities incurred by the Parties with respect to the applicable Eisai Collaboration Product.

(v) Discretionary Development.

(A) With regards to Territory Development that is Discretionary Development, Eisai shall be responsible for fifty percent (50%) and Company shall be responsible for fifty percent (50%) up to an aggregate amount of all Development Costs for such Discretionary Development incurred by both Parties equal to twenty percent (20%) of the applicable Total Development Spending Cap (the "**Discretionary Development Overall Cap**").

(B) Subject to both Sections 3.2(a)(ii) (Overall Development Spending Cap) and 3.2(a)(v)(A) (Discretionary Development Overall Cap) and unless Company otherwise agrees prior to when such Development Costs are incurred or as otherwise provided in this Section 3.2(a)(v)(B), Eisai shall be solely responsible for all Development Costs for Territory Development that is Discretionary Development that are in excess of both the Discretionary Development Overall Cap and the Overall Development Spending Cap, as applicable (such excess Development Costs, the "**Discretionary Development Overage**"), and notwithstanding any other provision of this Agreement, Company shall have no obligation to pay to Eisai any amounts in excess of the Discretionary Development Overall Cap for such Eisai Collaboration Product, unless Company in its sole discretion otherwise agrees.

(C) Eisai shall report on the progress of Discretionary Development activities associated with Discretionary Development Overage at each meeting of the applicable JDC. Following the completion of such Discretionary Development activities, the Parties, through the applicable JDC, shall discuss in good faith the results of such Discretionary Development activities and if Company, in its sole discretion, determines whether such Discretionary Development activities are reasonably useful to achieve Regulatory Approval for the applicable Eisai Collaboration Product in one or more Major Markets for the initial indications contemplated by the Original Development and whether Company would pay to Eisai amount equal to fifty percent (50%) of the Discretionary Development Overage, then Company may do so; provided that, for the avoidance of doubt, Company shall have no obligation to pay any amount of the Discretionary Development Overage.

(vi) Combination Products; Co-Administration. With respect to Development Costs for Combination Products or Co-Administration of the Eisai Collaboration Molecule with another drug or therapy (each a "**Combination Therapy**" and collectively "**Combination Therapies**"), Company shall only have the obligation to pay fifty percent (50%) of the Development Costs that are directly allocable to the Development of the Eisai Collaboration Molecule; provided, however, that any amounts in excess of the development plan budgets for any Development Costs excluded hereunder shall not be used to calculate any Original Development Success Payment or New Development Success Payment. By way of example and not limitation, if a Clinical Study for a Combination Product has the following four arms: (a) Eisai Collaboration Molecule; (b) placebo; (c) Eisai Collaboration Molecule + product other than Eisai Collaboration Molecule and (d) product other than Eisai Collaboration Molecule, then Company would be responsible for (w) fifty percent (50%) of the Development Costs for the Eisai Collaboration Molecule arm, (x) twenty five percent (25%) of the Development Costs for the placebo arm, (y) twenty five percent (25%) of the Development Costs for the Eisai Collaboration Molecule + product other than Eisai Collaboration Molecule arm, and (z) zero percent (0%) of the Development Costs for the product other than Eisai Collaboration Molecule arm.

(b) Calculation and Payment of Development Costs. With respect to each Eisai Collaboration Product, each Party will keep accurate records of its Development Costs. Beginning with the first Calendar Quarter after the Effective Date, each Party shall report to the other Party (i) within three (3) Business Days after the end of each Calendar Quarter during the Term a preliminary report of all of its Development Costs, by applicable Territory and Development activity, incurred in such Calendar Quarter for each Eisai Collaboration Product and
(ii) within twenty-one (21) days after the end of such Calendar Quarter, a final report of all of such Development Costs (each such final report, a "**Development Costs Report**"); provided, that the initial Development Costs Report shall also include those Development Costs incurred by Eisai for the period beginning on the Effective Date and ending on the day immediately before the first day of the first full Calendar Quarter of the Term. Each Development Costs Report shall include a progress report of actual versus budgeted Development Costs allocated to and incurred by the applicable Party during the applicable Calendar Quarter and a forecast of any remaining budgeted Development Costs expected to be incurred in the remaining Calendar Quarters of the respective Calendar Year. Promptly following the exchange of the Development Costs Reports, but no later than forty-five (45) days after the end of the relevant Calendar Quarter, Eisai shall submit to Company a report setting forth the calculation of the amount (if any) a Party will need to pay to the other Party to result in the sharing of the Development Costs in the proportions described in Section 3.6(b)(ii), as applicable (the "**Development Costs Calculation Report**"). The Party which is owed such amount as set forth in the Development Costs Calculation Report shall submit an invoice for such amount to the other Party. Within forty-five (45) Business Days after receipt of such invoice, Eisai or Company, as applicable, shall make a payment to Company or Eisai, respectively, as applicable, so that each of Eisai and Company has borne its respective share of the Development Costs as set forth hereunder. Following the Effective Date, each Party shall consider in good faith other reasonable procedures proposed by the other Party for sharing financial information in order to permit each Party to close its books periodically in a timely manner. In addition, at the request of either Party, the other Party shall provide any supporting documentation of the Development Costs incurred by it as reported in a Development Costs Calculation Report.

3.3. Diligence; Standards of Conduct. Each Party shall use Commercially Reasonable Efforts to perform its obligations with respect to the Development of the Eisai Collaboration Products (including regulatory matters) set forth in the applicable Development Plan. Company shall use Commercially Reasonable Efforts to perform its obligations with respect to the Development of the Option Products (including regulatory matters) before the expiration of the applicable option periods provided for in Section 3.6(a). Each Party shall conduct such activities (including regulatory matters) in a good scientific manner and in compliance with Applicable Law. Each Party agrees that each Clinical Study and each Nonclinical Study with respect to an Eisai Collaboration Product and an Option Product that is required to be posted pursuant to Applicable Law or applicable industry codes, including the PhRMA Code, on clinicaltrials.gov or any other similar registry shall be so posted. Unless otherwise agreed upon by the Parties (and as permitted by Applicable Law or applicable industry codes), Eisai shall be responsible for such posting for the Eisai Collaboration Products and Company shall be responsible for such posting for the Option Products. In the course of the Development of any of the Eisai Collaboration Products or Option Products, neither Party shall use any employee, agent or independent contractor who has been debarred by any Regulatory Authority, or, to the best of such Party's knowledge, is the subject of debarment proceedings by a Regulatory Authority or has been convicted pursuant to Section 306 of the FD&C Act.

3.4. Development Records and Reports; Inspections.

(a) Each Party shall maintain complete and accurate records (in the form of technical notebooks and/or electronic files where appropriate) of all work conducted by it under each Development Program and all Know-How resulting from such work. Such records shall fully and properly reflect all work done, data generated and results achieved in the performance of each Development Program in sufficient detail and in good scientific manner appropriate for patent and regulatory purposes. Each Party shall have the right to receive copies of such records maintained by the other Party, including in electronic format if maintained in such format, at reasonable times to the extent reasonably necessary to perform such Party's obligations or exercise its rights under this Agreement, and to obtain access to originals to the extent needed for patent or regulatory purposes. In addition, each Party shall make available to the other Party such other information about its Development Program activities (including Development activities prior to the Effective Date) as may be reasonably requested by the other Party from time to time for purposes of performing its obligations or exercising its rights under this Agreement.

(b) Each Party shall ensure that the other Party's authorized Representatives may, during regular business hours and no more than once per Calendar Year, (i) examine and inspect such Party's and its Affiliates' and their respective subcontractors' facilities used by it in the performance of Development activities pursuant to the applicable Development Plan, and (ii) subject to Applicable Law, inspect all data, documentation and work products relating to the activities performed by it, its Affiliates and/or their respective subcontractors, in each case generated pursuant to a Development Plan, provided that to the extent a Party does not have the right to permit the other Party to directly conduct inspections of its subcontractors under subsections (i) and (ii) above, such Party agrees, upon the other Party's request, to conduct such inspections on the other Party's behalf. This right to inspect facilities, data, documentation, and work products relating to the Eisai Collaboration Products may be exercised at any time upon thirty (30) days advance written notice. Each Party shall be responsible for all costs incurred by it

with regard to any inspections conducted pursuant to this Section 3.4(b), which costs shall not be considered Development Costs or Commercialization Costs.

3.5. Development Subcontractors. Either Party may subcontract its Development obligations to one or more Third Parties, provided that (a) the subcontracting Party remains responsible for the work allocated to, and payment to, such subcontractors to the same extent it would if it had done such work itself, including performing the applicable Development activities in accordance with the requirements, timelines and budget set forth in the applicable Development Plan, (b) the subcontractor undertakes in writing to comply with the obligations set forth in Section 9.8 and (c) the non-subcontracting Party shall not bear any cost or liability for any income tax, withholding tax or payroll taxes that may result from the use of a Third Party subcontractor by the subcontracting Party.

3.6. Option Products; Option Exercise.

(a) Eisai Collaboration Product Containing Molecule BAN2401.

(i) Post-Phase 2 Option for Eisai Collaboration Product Containing Molecule BAN2401

(A) Eisai Collaboration Product containing Molecule BAN2401. Company shall have the right to terminate this Agreement solely with respect to Eisai Collaboration Product containing Molecule BAN2401 pursuant to Section 13.4(a) if such Eisai Collaboration Product fails to meet the applicable Phase II/III Criteria. If Company terminates this Agreement with respect to Eisai Collaboration Product containing Molecule BAN2401 pursuant to Section 13.4(a), Eisai shall have the right, but not the obligation, to Develop Eisai Collaboration Product containing Molecule BAN2401 at its expense outside of the Collaboration, subject to Section 3.6(a)(ii), or license or divest its rights to such Eisai Collaboration Product to a Third Party.

(ii) Post-Phase 3 Option Period for Eisai Collaboration Product Containing Molecule BAN2401. In the event that Eisai determines to Develop the Eisai Collaboration Product containing Molecule BAN2401 outside of the Collaboration pursuant to Section 3.6(a)(i)(A), and has not licensed, granted or divested any material Commercialization rights in a Major Market to its product to any Third Party prior to the end of the Phase III Clinical Study for such product, which Eisai may do in its sole discretion (Eisai, to the extent it has not so licensed or divested such rights, as applicable, the "**Developing Party**"), then Company shall have the right to exercise the Phase 3 Option as described in this Section 3.6(a)(ii) with respect to the Eisai Collaboration Product containing Molecule BAN2401 in all countries of the Territory in which the Developing Party has not licensed, granted or divested its rights to the Eisai Collaboration Product containing Molecule BAN2401. The Developing Party shall provide to Company (1) the final Phase III Clinical Study report for the Developing Party's product promptly after such report becomes available and (2) the Development Costs that were incurred by the Developing Party in the conduct of the Phase III Clinical Study and Commercialization Costs, if any, for such product and a proposed Commercialization Plan and Commercialization Plan Budget for such product, in each case within thirty (30) days of providing the report as described in clause (1) of this sentence (collectively (1) and (2), the "**Phase III Package**"). During the period

beginning on the date when the Phase III Package has been delivered to Company and ending ninety (90) days thereafter (such ninety (90) day period, the "**Post-Phase 3 Option Period**"), Company may elect to co-promote the Eisai Collaboration Product containing Molecule BAN2401 in the Territory in exchange for its share of Collaboration Operation Profit/Loss in accordance with Section 8.1(a) to the extent that Developing Party has not licensed, granted or divested rights in such countries (the "**Phase 3 Option**") by providing written notice of such election to the Developing Party during the Post-Phase 3 Option Period. If Company provides such written notice to the Developing Party within the Post-Phase 3 Option Period, then (i) the Parties shall discuss in good faith to promptly reach mutual agreement on an appropriate, expedient, and efficient transition plan for Company to resume activities under this Agreement with respect to the Eisai Collaboration Product containing Molecule BAN2401, (ii) if such transition plan has been agreed to, the terms of this Agreement shall again automatically apply to the Eisai Collaboration Product containing Molecule BAN2401 and Company shall, within ten (10) Business Days of the resumption of activities under this Agreement (which time shall be evidenced by the Parties in writing) pay to the Developing Party an amount equivalent to [***] of the aggregate Development Costs and Commercialization Costs that were incurred by the Developing Party in the conduct of Phase III Clinical Studies and Commercialization activities of the Eisai Collaboration Product containing Molecule BAN2401 by the Developing Party prior to the time that the Phase 3 Option was exercised.

(b) Anti-Tau Option Product.

(i) Development of Anti-Tau Option Product by Company. Company or its Affiliates shall, at its own cost and expense use Commercially Reasonable Efforts to, undertake and complete those certain Development activities to complete a Phase I Clinical Study for the Option Product containing Molecule Anti-Tau (the "**Anti-Tau Option Product**"), as such plan of Development is specified in **Exhibit 3.6(a)(i)** attached hereto. If Company desires to materially amend such plan of Development prior to the exercise of the Anti-Tau Option, including termination of Development of Development activities for Molecule Anti-Tau, then Company, prior to effecting any such amendment or termination, shall notify Eisai and the Parties shall discuss such matter at the AB JDC. Commencing on the Effective Date and continuing until the expiration of the Anti-Tau Option Period, Company and its Affiliates shall (A) deal exclusively with Eisai in connection with the Development and/or Commercialization of the Anti-Tau Option Product (other than dealings with Third Parties acting on Company's behalf); and (B) not solicit, or engage others to solicit offers for, not negotiate with or enter into any agreements or understandings with any Third Party with respect to, the Development and/or Commercialization of the Anti-Tau Option Product, other than any such Third Parties performing Development or Commercialization activities on behalf of Company with respect to the Anti-Tau Option Product; provided that any such dealings with such Third Parties shall not negatively impact Eisai's rights to exercise the Anti-Tau Option.

(ii) Anti-Tau Option. No later than three (3) months prior to the anticipated delivery of the Anti-Tau Updated Schedules, the Parties shall commence negotiating the terms of the definitive agreement for the co-Development and co-promotion of the Anti-Tau Option Product in accordance with the terms and conditions set forth in **Exhibit 3.6(ii)** (such agreement, the "**Definitive Anti-Tau Agreement**"). Promptly following the completion of the Development activities to complete a Phase I Clinical Study for the Anti-Tau Option Product as

specified in **Exhibit 3.6(ii)**, Company shall deliver to Eisai a data package containing the complete Results of such Development activities as well as (A) a detailed description of and plan for the further Development activities that are proposed for such Anti-Tau Option Product and (B) a detailed proposed budget for undertaking and completing such further Development activities for such Anti-Tau Option Product. Company shall also provide to Eisai (1) any additional information available to Company that Eisai may reasonably request to assist Eisai in evaluating such Results and (2) an updated Company Disclosure Schedule respect to the Anti- Tau Option Product made by Company contained in Section 11.4, which may include a supplement to any Company Disclosure Schedule section or exhibit referred to in Section 11.4 or one or more new Company Disclosure Schedule sections or exhibits to Section 11.4 with respect to the applicable representation and warranty (the "**Anti-Tau Updated Schedules**"), as if such representations and warranties were made as of the date of delivery of such Anti-Tau Updated Schedules (such date being the "**Anti-Tau Updated Schedules Date**"). Eisai may elect to conduct co-Development and co-promotion of the Anti-Tau Option Product ("**Anti-Tau Option**"), by providing written notice of such election to Company within one hundred and twenty (120) days of its receipt of the Anti-Tau Updated Schedules (such one hundred and twenty (120) day period, the "**Anti-Tau Option Period**"). If Eisai provides such written notice to Company within the Anti-Tau Option Period, the Parties shall enter into the Definitive Anti- Tau Agreement.

(c) During each Calendar Quarter prior to the exercise or expiration of Eisai's option to each Option Product, Company shall provide reasonably detailed progress updates to the AB JDC on the status of its Development activities for each Option Product, including summaries of data associated with Company's Development activities and a timetable for completion of the Development activities for each Option Product provided for under this Agreement. In addition, Company shall promptly report to the AB JDC any material developments with respect to each Option Product as and when such developments arise (not wait for the next scheduled update to report such information).

3.7. Backups for the E2609 Eisai Collaboration Product.

(a) If all Development and Commercialization activities with respect to the E2609 Eisai Collaboration Product are terminated at any time during the Backup Term for any reason, then within thirty (30) days following such termination (such thirtieth (30^{th}) day, the "**Backup Trigger Date**"), Eisai shall deliver to Company (1) a data package containing the complete Results of its Development activities for all Backup Products that exist at such time, (2) any additional information available to Eisai that Company may reasonably request to assist Company in evaluating such Results and (3) a proposed summary Development Plan and summary Established Overall Budget for each such Backup Product (collectively (1) - (3), the "**Backup Product Package**").

(b) Backup Products. Company shall notify Eisai in writing within ninety (90) days of receipt of the Backup Product Package, if any, of whether Company elects to Develop and Commercialize any Backup Product(s) set forth in the Backup Product Package under the Collaboration. If Company elects within such ninety (90) day period to Develop and Commercialize any such Backup Product under the Collaboration, then with respect to each such elected Backup Product:

(i) the definition of Eisai Collaboration Product shall be amended to include such Backup Product;

(ii) this Agreement shall be amended by including the Milestone Payments on **Exhibit 3.7(b)**, in lieu of the Milestone Payments with respect to Eisai Collaboration Products containing Molecule E2609 set forth in ARTICLE 8, by replacing the Development Plan and Established Overall Budget for Eisai Collaboration Products containing Molecule E2609 with the summary Development Plan and summary Established Overall Budget delivered by Eisai to Company pursuant to Section 3.7(a) (in each case as may have been amended by mutual agreement of the Parties) and by any other terms and conditions agreed by the Parties with respect to such Backup Product;

(iii) Company shall pay to Eisai:

(A) a one-time, non-refundable, non-creditable payment of [***] for such Backup Product within fifteen (15) Business Days of when this Agreement is amended pursuant to Section 3.7(b)(ii); and

(B) the applicable Milestone Payments when due as set forth on **Exhibit 3.7(b)**.

(iv) Company shall share fifty percent (50%) of all Development Costs and Commercialization Costs for such Backup Product incurred on or after Company's election to include such Backup Product in the Collaboration under this Section 4.3, subject to increase and the limitations set forth in this ARTICLE 3;

(v) the JDC that had overseen the Development Program for Eisai Collaboration Products containing Molecule E2609 (the "**SM JDC**") shall oversee Development activities with respect to such Backup Product; and

(vi) Eisai shall provide to the SM JDC (for review by such JDC and approval by the JSC in accordance with ARTICLE 2) the initial Development Plan and initial Established Overall Budget for such Backup Product based on the summary Development Plan and summary Established Overall Budget for such Backup Product, within thirty (30) days following amendment of this Agreement pursuant to Section 3.7(b)(ii) (or as soon as reasonably practicable following such thirty (30) day period).

The Parties shall thereafter Develop, Manufacture and Commercialize each such Backup Product under the Collaboration pursuant to such terms and conditions as agreed by the Parties; and Company shall have no further rights with respect to any other Backup Products or Backup Candidates.

(c) Backup Candidates. If no Backup Product exists as of the Backup Trigger Date or if Company has not exercised its right to an existing Backup Product pursuant to Section 4.3, then Eisai shall promptly deliver to Company on or before the Backup Trigger Date in the event no Backup Product exists as of the Backup Trigger Date (or promptly after the ninety (90)- day period described in Section 4.3, if Company has not exercised its right to an existing Backup Product pursuant to Section 4.3) (1) a data package containing the Results of its Development

activities for any Backup Candidates that exist at such time for which Eisai has determined to continue Development, (2) any additional information available to Eisai that Company may reasonably request to assist Company in evaluating such Results and (3) a proposed summary Development Plan and summary Established Overall Budget for each such Backup Candidate (collectively (1) - (3), a "**Backup Candidate Package**"). In the event that no Backup Candidate exists on the date when Eisai is required to deliver a Backup Candidate Package to Company pursuant to the immediately preceding sentence for which Eisai has determined to continue Development, then Eisai shall promptly deliver such a Backup Candidate Package to Company at the time during the Backup Term when (x) a Small Molecule pharmaceutical product Controlled by Eisai and/or its Affiliates and having a primary mechanism of action through inhibition of beta- secretase becomes a Backup Candidate and (y) Eisai has determined to continue Developing such Backup Candidate. Within one hundred and twenty (120) days of when Company receives a Backup Candidate Package from Eisai, Company shall notify Eisai in writing of whether Company elects to Develop Backup Candidates under the Collaboration. Upon Company's election to Develop Backup Candidates under the Collaboration:

(i) this Agreement shall be amended by including the Milestone Payments on **Exhibit 3.7(d)**, in lieu of the Milestone Payments with respect to Eisai Collaboration Products containing Molecule E2609 set forth in ARTICLE 8, by replacing the Development Plan and Established Overall Budget for Eisai Collaboration Products containing Molecule E2609 with the summary Development Plan and summary Established Overall Budget delivered by Eisai to Company pursuant to Section 3.7(c) (in each case as may have been amended by mutual agreement of the Parties) and by any other terms and conditions agreed by the Parties with respect to such Backup Candidate(s);

(ii) Company shall pay to Eisai a one-time, non-refundable, non- creditable payment of [***] within fifteen (15) Business Days of when this Agreement is amended pursuant to Section 5.3(a) (for clarity such payment shall be in consideration for Company's right to Develop any and all Small Molecule pharmaceutical products Controlled by Eisai and/or its Affiliates having a primary mechanism of action through inhibition of beta-secretase and that are, became or become Backup Candidates during the Backup Term, and shall be payable only one time, even if there are more than one such Backup Candidates);

(iii) Eisai shall provide to the SM JDC (for review by such JDC and approval by the JSC in accordance with ARTICLE 2) the initial Development Plan(s) and initial Established Overall Budget(s) for such Backup Candidate(s) based on the applicable summary Development Plan and summary Established Overall Budget for each such Backup Candidate, within thirty (30) days following amendment of this Agreement pursuant to Section 5.3(a) (or as soon as reasonably practicable following such thirty (30) day period);

(iv) Eisai shall deliver a data package containing the Results of its Development activities for any other Small Molecule pharmaceutical products Controlled by Eisai and/or its Affiliates and that have a primary mechanism of action through inhibition of beta- secretase which become Backup Candidates during the remainder of the Backup Term promptly after each such Small Molecule pharmaceutical product becomes a Backup Candidate, and thereafter Eisai and Company shall Develop such additional Backup Candidates under the Collaboration pursuant to a Development Plan and Established Overall Budget as mutually agreed

by the Parties within sixty (60) days of when Eisai delivers such Results (or as soon as reasonably practicable following such sixty (60) day period);

(v) the SM JDC shall oversee Development activities with respect to all Backup Candidates (including any other Small Molecule pharmaceutical products which become Backup Candidates after the Backup Trigger Date and during the Backup Term pursuant to Section 5.4);

(vi) subject to Section 3.7(c)(v), Company shall share fifty percent (50%) of the Development Costs for the ongoing Development of all Backup Candidates incurred on or after Company's election to include such Backup Candidates in the Collaboration under this Section 3.7(c), subject to increase and the limitations set forth in this ARTICLE 3; and

(vii) the Parties shall thereafter Develop and Manufacture such Backup Candidates under the Collaboration pursuant to such terms and conditions as agreed by the Parties until any such Backup Candidate becomes a Backup Product pursuant to Section 3.7(d).

Notwithstanding the foregoing, on or after the expiration of the Backup Term, (1) Eisai shall have no obligation to disclose to Company its Development activities with respect to any Small Molecule pharmaceutical products Controlled by Eisai and/or its Affiliates that have a primary mechanism of action through inhibition of beta-secretase and that have not become Backup Candidates prior to the expiration of the Backup Term, and Company shall have no right to any such Small Molecule pharmaceutical products and (2) if Company elected to Develop Backup Candidates pursuant to this Section 3.7(c), Eisai and Company shall continue Developing such Backup Candidates under the Collaboration in accordance with this Agreement.

(d) Conversion of the First Backup Candidate to a Backup Product. At the time when the first Backup Candidate completes a Phase I Clinical Study and the SM JDC determines to evaluate such first Backup Candidate in a Phase II Clinical Study (which determination shall be approved in writing by Company):

(i) such first Backup Candidate shall be deemed a Backup Product and the definition of Eisai Collaboration Product shall be amended to include such Backup Product;

(ii) the Parties shall continue Developing and Manufacturing such Backup Product under the Collaboration pursuant to the Development Plan and Established Overall Budget as agreed by the Parties under Section 3.7(c) with respect to the corresponding Backup Candidate, subject to increase and the limitations set forth in this ARTICLE 3, and subsequently Commercialize such Backup Product under the Collaboration;

(iii) Company shall pay to Eisai:

(A) a one-time, non-refundable, non-creditable payment of [***] within fifteen (15) Business Days of such determination by the SM JDC; and

(B) the Milestone Payments when due as set forth on **Exhibit 3.7(d)**, in lieu of the Milestone Payments with respect to Eisai Collaboration Products containing Molecule E2609 set forth in ARTICLE 8; and

(iv) the Parties shall terminate all Development activities under the Collaboration with respect to any other Backup Candidates, and Eisai shall have the right, but not the obligation, subject to Section 6.1 and Section 14.3 (**Stand-Still**), to Develop and Commercialize any such other Backup Candidates at its expense outside of the Collaboration, including licensing or divesting its rights to such other Backup Candidates to a Third Party.

(e) Failure to Exercise or Determine to Evaluate. If Company does not timely exercise its rights to one or more Backup Product(s) under Section 4.3 or the Backup Candidates under Section 3.7(c), or the SM JDC determines to not evaluate one or more Backup Candidates in a Phase II Clinical Study under Section 3.7(d), then neither Party shall have any further obligation (financial or otherwise) to the other Party with respect to such Backup Product(s) and Backup Candidates, and subject to Section 14.3 (**Stand-Still**), Eisai may Develop, Commercialize and otherwise commercially exploit such Backup Product(s) and Backup Candidates in the manner determined by Eisai in its sole direction; provided that if the SM JDC determines not to evaluate one or more Backup Candidates in a Phase II Clinical Study under Section 3.7(d) notwithstanding Company's written notification to Eisai that Company desired to perform such evaluation at the time the SM JDC was making such decision, then at any time thereafter during the Term if Eisai determines to evaluate any such Backup Candidate in a Phase II Clinical Study, then Eisai shall notify Company in writing prior to any such evaluation and Company, in its sole discretion, may elect within ninety (90) days of any such notification to Develop and Commercialize such Backup Candidate under the Collaboration by providing Eisai written notice of such election, and thereafter, the provisions of 3.7(d)(i) - 3.7(d)(iii) shall apply to any such Backup Candidate.

ARTICLE 4 REGULATORY MATTERS

4.1. Overview. The Development Plan for each Eisai Collaboration Product shall set forth the regulatory strategy for seeking Regulatory Approvals for such Eisai Collaboration Product.

4.2. Ownership of Regulatory Filings and Regulatory Approvals. All Regulatory Filings and Regulatory Approvals relating to the Eisai Collaboration Products shall be filed by and held in the name of Eisai.

4.3. Regulatory Meetings and Correspondence.

(a) Generally. Eisai shall be responsible for interfacing, corresponding and meeting with Regulatory Authorities worldwide with respect to the Eisai Collaboration Products, unless otherwise stipulated herein. The cost for interfacing, corresponding and meeting with Regulatory Authorities in each country in the Commercial Territory shall be equally shared between Parties, except for travel expenses which shall not be shared.

(b) Regulatory Responsibilities.

(i) Eisai shall be responsible for submitting all Regulatory Approval applications and related filings relating to the Eisai Collaboration Molecules and Eisai

Collaboration Products in the Commercial Territory. Company shall have the right to have up to two (2) senior, experienced employees reasonably acceptable to Eisai, participate (to the extent practicable) as observers in (a) material or scheduled face-to-face meetings, video conferences and any teleconferences, with the FDA, EMA and other applicable Regulatory Authorities in the Commercial Territory, and (b) any preparatory meetings for such meetings with Regulatory Authorities. Eisai shall provide Company copies of (1) Eisai's material documentation prepared for such meetings and (2) material submissions to the FDA, EMA and other applicable Regulatory Authorities in the Territory relating to Development of, or the process of obtaining Regulatory Approval for, the applicable Eisai Collaboration Products, in each case (to the extent practicable) sufficiently in advance of the applicable meeting or submission, as applicable, to allow Company a reasonable opportunity to review and provide comment on such materials, and Eisai shall consider in good faith Company's comments with respect thereto. Eisai shall provide Company with copies of any material correspondence from the FDA, EMA and other applicable Regulatory Authorities in the Territory relating to Development of, or the process of obtaining Regulatory Approval for, the applicable Eisai Collaboration Products, and respond within a reasonable time frame to all reasonable inquiries by Company with respect thereto.

(ii) Eisai may delegate to Company its responsibility for interfacing, corresponding and meeting with Regulatory Authorities with respect to an Eisai Collaboration Product in one or more countries in the Commercial Territory, as may be mutually agreed upon by the Parties.

4.4. Eisai Collaboration Product Withdrawals and Recalls. If (a) any Regulatory Authority threatens, initiates or advises any action to remove any Eisai Collaboration Product from the market or requires or advises a Party or any of their respective Affiliates, sublicensees or distributors to distribute a "Dear Doctor" letter or its equivalent regarding use of such Eisai Collaboration Product, or (b) either Party determines that an event, incident or circumstance has occurred that may result in the need for a recall or market withdrawal of any Eisai Collaboration Product or distribution of a "Dear Doctor" letter or its equivalent regarding use of such Eisai Collaboration Product, then in each case ((a) or (b)) Eisai or Company, as applicable, shall notify the other Party of such event or determination immediately, and in any event within twenty-four (24) hours (or sooner if required by Applicable Law) after such Party becomes aware of the event or makes such determination. Eisai shall, to the extent practicable, endeavor to discuss and agree with Company upon whether to recall or withdraw the Eisai Collaboration Product in question; provided, however, that if such discussion is not practicable or if the Parties fail to agree within an appropriate time period (recognizing the exigencies of the situation), then Eisai shall decide whether to recall or withdraw such Eisai Collaboration Product in the applicable country(ies) of the Commercial Territory, as applicable.

4.5. Pharmacovigilance Agreement. The Pharmacovigilance Agreement entered into by the Parties regarding the Eisai Collaboration Products under Section 4.5 of the Original Agreement shall remain in full force and effect after the Effective Date.

ARTICLE 5 COMMERCIALIZATION

5.1. Overview. The Parties intend and agree to collaborate with one another with respect to the Commercialization of Eisai Collaboration Products in the Field in the Territory, as provided in this ARTICLE 5 under the direction of the JCC, and pursuant to the Commercialization Plan applicable to either the E2609 Eisai Collaboration Product or the BAN2401 Eisai Collaboration Product, including jointly and exclusively Commercializing Eisai Collaboration Products in the Field in the Commercial Territory. Eisai shall book all monies received by Selling Parties from Third Party customers for sale of Eisai Collaboration Products in the Commercial Territory.

5.2. Global Branding Strategy. For both the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product, the JCC shall develop and implement (and thereafter update from time to time, in each case with the approval of the JSC) a global branding strategy, including global positioning and global brand elements (as listed on Exhibit 5.3 attached hereto), for such Eisai Collaboration Product for use in the Field in the Territory (each, a "Global Branding Strategy") with such Global Branding Strategy to be approved by the JSC no later than the first Initial Launch Plan.

5.3. Commercialization Plans and Budgets.

(a) Commercialization Plans. With respect to both the E2609 Eisai Collaboration Product and the BAN2401 Eisai Collaboration Product, the JCC shall prepare a comprehensive rolling, three (3)-Calendar Year plan with the tactics and strategy for the Commercialization of Eisai Collaboration Products in each Commercial Territory (including for each Major Commercialization Country) and shall update each such plan annually as set forth in Section 7.6(a) (each such plan, a "**Commercialization Plan**"). Unless otherwise agreed to by the Parties, each Commercialization Plan and any updates thereto shall (x) reflect the application of Commercially Reasonable Efforts to Commercialize Eisai Collaboration Products either globally or in the applicable Commercial Territory, (y) implement the Global Branding Strategy for the Eisai Collaboration Products and (z) describe in detail the pre-launch, launch and subsequent Commercialization of Eisai Collaboration Products either globally or in the applicable Commercial Territory, including the following components: (1) overall goals of the Parties with regard to the Commercialization of Eisai Collaboration Products; (2) anticipated activities relating to messaging, branding, marketing and training with respect to Eisai Collaboration Products; and (3) key tactics and strategies with respect to Eisai Collaboration Products. Each Commercialization Plan shall allocate the responsibilities of the Parties for the activities under plan in an equitable fashion taking into account the Parties' respective capabilities, provide a meaningful role for each Party and be consistent with the co-promotion terms set forth on Exhibit 5.3(a). With respect to (A) each Commercial Territory that is not a Major Commercialization Country, the JSC shall approve the initial Commercialization Plan at least one hundred eighty (180) days prior to the anticipated First Commercial Sale of an Eisai Collaboration Product anywhere in such Commercial Territory, and (B) each Major Commercialization Country, the JSC shall approve the Initial Commercialization Plan at least ten (10) months prior to the anticipated First Commercial Sale of an Eisai Collaboration Product anywhere in such Major Commercialization Country. In the event

of any inconsistency between a Commercialization Plan and this Agreement, the terms of this Agreement shall prevail unless otherwise mutually agreed by the Parties.

(b) Commercialization Plan Budgets. The JCC shall be responsible for preparing a detailed rolling three (3)-Calendar Year budget for all costs and expenses relating to the Commercialization activities set forth in each then-current Commercialization Plan (each such budget with respect to the Initial Launch Plan (an "**Initial Launch Plan Budget**") and together with each such other budget, each a "**Commercialization Plan Budget**") and shall submit such Commercialization Plan Budget to the JSC for approval subject to Section 7.6(a). With respect to each Commercial Territory (including for each Initial Launch Plan for each Major Commercialization Country), an initial Commercialization Plan Budget for the first three (3) Calendar Years of Commercialization of Eisai Collaboration Products in the applicable Commercial Territory shall be prepared by the JCC and submitted to the JSC for approval together with the initial Commercialization Plan in such Commercial Territory pursuant to Section 5.3(a). The JCC will prepare updates to the respective Commercialization Plan Budget on an annual basis as set forth in Section 5.3(a). In addition, the JCC shall review each Commercialization Plan Budget each Calendar Quarter during the applicable Term and may propose amendments to each Commercialization Plan Budget (without necessarily having to propose amendments to the applicable Commercialization Plan) as set forth in Section 7.6(a).

(c) Amendments to Commercialization Plans and Commercialization Plan Budgets. On an annual basis (with the specific timing to be determined by the JCC) or more often as the Parties deem appropriate, the JCC shall prepare and recommend amendments to any then-current rolling, three (3)-Calendar Year Commercialization Plan and Commercialization Plan Budget, as applicable, for approval of the JSC subject to Section 3.1. Each such amended Commercialization Plan and Commercialization Plan Budget shall cover the immediately following three (3) Calendar Years of Commercialization of each Eisai Collaboration Product. Each such amended Commercialization Plan shall reflect any changes, re-prioritization of activities within, reallocation of resources with respect to, or additions to each then-current Commercialization Plan. Each such amended Commercialization Plan Budget shall specify with reasonable detail the budget for the items described in the amended Commercialization Plan. With respect to each Commercialization Plan Budget, the JCC shall review such Commercialization Plan Budget each Calendar Quarter during the applicable Term and may prepare and recommend amendments to such Commercialization Plan Budget (without necessarily having to prepare amendments to the applicable Commercialization Plan) to the JSC for review and approval. In addition, the JCC may prepare amendments for approval by the JSC to each Commercialization Plan and/or the Commercialization Plan Budget from time to time in order to reflect changes in such plan or budget, in each case, in accordance with the foregoing. Once approved by the JSC, an amended Commercialization Plan and/or amended Commercialization Plan Budget shall become effective for the applicable period on the date approved by the JSC (or such other date as the JSC shall specify). Any JSC-approved amended Commercialization Plan and/or Commercialization Plan Budget shall supersede the previous Commercialization Plan and/or Commercialization Plan Budget for the applicable period.

5.4. Reporting. Each Party shall keep the JCC fully informed regarding the progress and results of such Party's Commercialization activities for the Eisai Collaboration Products

throughout the Territory, including a quarterly and an annual review of results versus goals (as such goals are set forth in the applicable Commercialization Plan).

5.5. Commercialization Standards of Conduct.

(a) Each Party shall use Commercially Reasonable Efforts to perform its Commercialization obligations in the Territory with respect to each Eisai Collaboration Product in accordance with the Global Branding Strategy and as set forth in the applicable Commercialization Plan.

(b) Each Party shall, and shall cause its Affiliates and its subcontractors and distributors to, in all respects comply with all Applicable Law in Developing and Commercializing the Eisai Collaboration Products, in the Field in the Territory, including to the extent applicable, the Foreign Corrupt Practices Act of 1977, as amended ("**FCPA**") and the UK Bribery Act 2010, Chapter 23, as amended ("**UK Bribery Act**"); the FD&C Act; the Public Health Service Act, as amended; the Prescription Drug Marketing Act of 1987, as amended; Federal Health Care Program Anti-Kickback Law (42 U.S.C. §§ 1320a-7b), as amended; the Health Insurance Portability and Accountability Act of 1996, as amended; the FDA Guidance for Industry-Supported Scientific and Educational Activities; and all federal, state and local "fraud and abuse," consumer protection and false claims statutes and regulations, including the Medicare and State Health Programs Anti- Fraud and Abuse Amendments of the Social Security Act and the "Safe Harbor Regulations" found at 42 C.F.R. §1001.952 et seq.; the Office of the Inspector General's Compliance Guidance Program, the Pharmaceutical Research and Manufacturers of America Code on Interactions with Healthcare Professionals, as hereafter amended from time to time; the standards set forth by the Accreditation Council for Continuing Medical Education relating to educating the medical community in the Territory; 42 U.S.C. 1320a-7h and its implementing regulations (also known as the National Physician Payment Transparency Program and the Open Payments Program) ("**Sunshine Act**"); and all foreign equivalents in the Territory of any of the foregoing; provided that with respect to the Sunshine Act, each Party shall be responsible for reporting relating to payments or other transfers of value actually made by such Party, and each Party shall use Commercially Reasonable Efforts to cooperate with the other Party to coordinate such disclosure. Each Party represents and warrants to the other Party that, as of the Effective Date, such first Party and its Affiliates have adequate procedures in place to support their compliance with the FCPA and the UK Bribery Act in the Territory. Each Party and its Affiliates shall maintain such procedures throughout the Term and shall promptly notify the other Party in writing with respect to any material non-compliance with any Applicable Law regarding the Development or Commercialization of an Eisai Collaboration Product in the Field in the Territory.

(c) Each Party and its Affiliates shall not and shall use Commercially Reasonable Efforts to cause its subcontractors and distributors not to directly or indirectly, promote or market any Eisai Collaboration Product (i) in any country in the Territory for which such Persons are not authorized under or pursuant to this Agreement or (ii) for any use or indication not approved by the applicable Regulatory Authority in such country.

(d) Each Party shall, and shall cause its Affiliates and its subcontractors and distributors to, ensure that all of its and their sales Representatives promoting Eisai Collaboration Products (i) have skills, training and experience generally consistent with industry standards in the

applicable country in the Territory applicable to the promotion, marketing and sale of prescription pharmaceutical products in such country and (ii) have satisfactorily completed all Eisai Collaboration Product-specific training (including any such training set forth in the Commercialization Plan for such Eisai Collaboration Product) and ethics and compliance training required by such Party.

(e) Each Party shall not, and shall cause its Affiliates and its subcontractors and distributors, and its and their respective sales Representatives not to, (i) make any statement, representation or warranty, oral or written, concerning any Eisai Collaboration Product in any country in the Territory, or use any labeling, literature or promotional or marketing material for any Eisai Collaboration Product in any country in the Territory that (A) is contrary to or inconsistent with Regulatory Approval for such Eisai Collaboration Product in such country in a manner that violates any Applicable Law in such country or (B) violates any Applicable Law in such country or (ii) make any arrangements with, make payments to or provide gifts or other incentives to any healthcare professionals in violation of Applicable Law in such country relating thereto. Each Party shall, and shall cause its Affiliates and its subcontractors and distributors to, ensure that its and their sales Representatives are familiar with the procedures, obligations, rights, and responsibilities imposed by the terms of this Agreement as applicable to the performance of promotional activities hereunder.

5.6. Commercialization Subcontractors. If either Party wishes to subcontract its Commercialization obligations that are Customer-Facing Activities to a contract sales organization or other Third Party, such subcontracting Party shall first notify the other Party in writing, including a description of the Customer-Facing Activities to be performed by the Third Party. The other Party shall have thirty (30) days after receipt of such notice to notify the subcontracting Party whether it wishes to perform such Customer-Facing Activities on behalf of the subcontracting Party. If the other Party wishes to perform such Customer-Facing Activities, then such Customer- Facing Activities shall be included in the applicable Commercialization Plan and such other Party shall perform such Customer-Facing Activities in accordance with the requirements and the timelines set forth in the applicable Commercialization Plan. If the other Party declines to perform such Customer-Facing Activities or fails to respond to such notice, then the subcontracting Party may subcontract such Customer-Facing Activities to one or more Third Parties, provided that (a) the subcontracting Party remains responsible for the work allocated to, and payment to, such subcontractors to the same extent it would if it had done such work itself, (b) the subcontractor undertakes in writing to comply with the obligations set forth in Section 9.8 and (c) the non- subcontracting Party shall not bear any cost or liability for any income tax, withholding tax or payroll taxes that may result from the use of a Third Party subcontractor by the subcontracting Party.

5.7. Generic Entry. During the applicable Term, neither Party nor any of its Affiliates may launch the first Generic Collaboration Product that references the applicable Eisai Collaboration Product in a country in the Territory without the prior written consent of other Party.

5.8. Pricing of Combination Products and Co-Administration. Company shall not, and shall use Commercially Reasonable Efforts to cause its Affiliates and sub-distributors not to, in connection with its or their sale of an Eisai Collaboration Product that is Co-Administered with another drug or therapy in which Company or any of its Affiliates have an economic interest or

that is sold by Company or any of its Affiliates, disproportionately discount the gross invoiced sales price of the Eisai Collaboration Product in a manner that is intended to benefit, or provide an incentive to enhance sales of, such other drug or therapy, or use such Collaboration Product as a loss leader.

5.9. Expansion of Field for Eisai Collaboration Products Containing Molecule BAN2401. Prior to entering into any agreement with [***] for any AD related Indications or Other Indications with respect to Molecule BAN2401 or other rights to any additional indications with respect to Molecule BAN2401, Eisai shall provide Company with a copy thereof and reasonable opportunity to comment thereon and shall consider all such comments of Company in good faith. Company shall pay to Eisai fifty percent (50%) of all payments due from Eisai to [***]under any such agreement or otherwise in connection with such field expansion and the definition of Field with respect to Eisai Collaboration Products containing Molecule BAN2401 shall be expanded to include such AD related Indications, Other Indications or additional indications, as applicable.

ARTICLE 6 MANUFACTURE AND SUPPLY

6.1. Overview. Eisai shall be responsible for the Manufacture and supply of each Eisai Collaboration Product throughout the Territory. In the exercise of Eisai's responsibility for such Manufacture, Eisai shall allocate a role to Company sufficient to permit Company's activities to constitute manufacturing for purposes of section 954(d) of the Internal Revenue Code to the extent doing so would be commercially reasonable and not result in a material adverse effect to Eisai, certain activities in connection with the Manufacture of either drug substance or drug product for each Eisai Collaboration Product for sale in the Territory as described in this Section 6.1. The Parties acknowledge and agree that during Company's participation in the Manufacture of each Eisai Collaboration Product (either directly with respect to the activities allocated to Company by Eisai or through the use of Eisai or a Third Party as a contract manufacturing organization (CMO)), title and risk of loss of the respective Eisai Collaboration Product shall remain with Company during the period that Company is responsible for such activities prior to delivery to Eisai of such Eisai Collaboration Product. The Parties also agree that Company shall sell to Eisai a finished Eisai Collaboration Product on a country-by-country basis at an amount equal to Company's COGS with respect to such Eisai Collaboration Product (such amount, the "Eisai Promotion Inventory Price"). If Company is supplying finished form of an Eisai Collaboration Product, Eisai shall sell to Company intermediate form of such Eisai Collaboration Product at Eisai's COGS with respect to such intermediate form plus [***]. Commercial samples of Eisai Collaboration Product (or an intermediate or non-finished form thereof) in the Territory shall be supplied at COGS by a Party. The Parties shall have a good faith discussion to arrange the Manufacture and supply of each Eisai Collaboration Product upon the initiation of a Phase III Clinical Trial of such Eisai Collaboration Product based on the structure above described. In ordering its pre-commercial launch supply of an Eisai Collaboration Product, Eisai shall not order an aggregate amount of such Eisai Collaboration Product that is in excess of Eisai's customary product launch practices.

6.2. Development of Manufacturing Process; Certain Clinical Supply. With respect to each Eisai Collaboration Product, Eisai shall develop the manufacturing process for such each Eisai Collaboration Product or, subject to mutual agreement of the Parties, allocate responsibilities

to Company to do so. Manufacturing process development and scale up shall be shared as Development Costs. Company and Eisai through the JMC shall establish a manufacturing chain for clinical supplies in mutual agreement considering among other things regulatory requirements and guidelines.

6.3. Supply Agreement. At least one (1) year prior to the anticipated submission of an NDA in respect of an Eisai Collaboration Product in any country in the Territory, the Parties will enter into a mutually agreeable commercial supply agreement on customary and commercially reasonable terms which shall provide for a supply price for such Eisai Collaboration Product at COGS; provided, that entering into such agreement is permitted under Applicable Law.

6.4. Pre-NDA Review. At least eighteen (18) months prior to the anticipated filing of an NDA for the first Eisai Collaboration Product in any country in the Territory, the Parties shall discuss in good faith and review the economic structure contemplated by this Agreement in light of Applicable Law in effect at the time of such discussions. If the Parties mutually agree that any amendment is necessary or desirable, this Agreement may be amended in order to maintain such economic structure consistent with then Applicable Law.

ARTICLE 7 GRANT OF RIGHTS

7.1. Rights Granted to Company.

(a) Development. Subject to the terms and conditions of this Agreement, including Section 7.7, during the Collaboration Term, Eisai hereby grants to Company and its Affiliates a co-exclusive (with Eisai and its Affiliates), licensable (pursuant to Section 7.1(d)) right under the Eisai Patents and Eisai Know-How solely to undertake Development activities for the Eisai Collaboration Products in the Field to the limited extent contemplated by and authorized pursuant to this Agreement.

(b) Commercialization. Subject to the terms and conditions of this Agreement, including Section 7.7, during the Term, Eisai hereby grants to Company and its Affiliates a co-exclusive (with Eisai and its Affiliates), sublicensable (pursuant to Section 7.1(d)), fully paid, royalty free, irrevocable right under the Eisai Patents and Eisai Know-How solely to Commercialize the Eisai Collaboration Products and Eisai Collaboration Molecule in the Field in the Territory to the extent contemplated by and authorized pursuant to this Agreement.

(c) Manufacture. Subject to the terms and conditions of this Agreement, Eisai hereby grants to Company and its Affiliates a co-exclusive (with Eisai and its Affiliates), sublicensable (pursuant to Section 7.1(d)) right under the Eisai Patents and Eisai Know-How solely to undertake Manufacturing activities for the Eisai Collaboration Products in the Field to the extent contemplated by and authorized pursuant to this Agreement and any other written agreement of the Parties.

(d) Sublicense Rights. Subject to the terms and conditions of this Agreement, Company shall have the right to sublicense the rights granted to it by Eisai under this Agreement to Affiliates of Company. Subject to the terms and conditions of this Agreement, Company may,

only after obtaining the prior written consent of Eisai (which consent shall not be unreasonably withheld, conditioned or delayed) license the rights granted to it by Eisai under this Agreement to Company's and its Affiliates' respective subcontractors, distributors and other service providers. Any sublicense shall automatically terminate upon termination of this Agreement and shall be subject in all respects to the terms and conditions of this Agreement, and Company shall be responsible for its licensees' compliance with such terms and conditions. An uncured failure by any sublicensee of Company to comply with any of the obligations of Company under this Agreement shall constitute a breach of this Agreement by Company.

7.2. Rights Granted to Eisai. Subject to the terms and conditions of this Agreement, including Section 7.7, Company hereby grants to Eisai a fully paid, royalty-free, perpetual, irrevocable right (which shall be sub-licensable in multiple tiers) under the Company Technology solely to Develop (a) Eisai Collaboration Products and (b) Backup Candidates and Backup Products (but only to the extent and only during the period when such Backup Candidates and Backup Products are being Developed under the Collaboration pursuant to Section 4.3, 3.7(c), or 3.7(d), as applicable), and to Manufacture, have Manufactured, use, import, Commercialize and have Commercialized Eisai Collaboration Products in the Field, worldwide. The right granted to Eisai pursuant to this Section 7.2 shall be co-exclusive (with Company and its Affiliates) during the applicable Term and non-exclusive after such Term. For clarity, the license granted by Company to Eisai under this Section 7.2 shall not grant Eisai the right under any Company Technology to Develop, Manufacture, have Manufactured, use, import, Commercialize and have Commercialized any Eisai Collaboration Molecule as a Combination Product or Co-Administered with any other product or treatment.

7.3. Covenant Not to Sue. During the Term, each Party hereby agrees that it and its Affiliates shall not (a) sue the other Party or its Affiliates or sublicensees under or in connection with or (b) commence, aid, prosecute, or cause to be commenced, aided or prosecuted any action or other proceeding against the other Party, its Affiliates or sublicensees with respect to, in each case ((a) and (b)), the exploitation of any Company Technology or Eisai Technology, as applicable that would be infringed or misappropriated by the Development, Manufacture or Commercialization of any Eisai Collaboration Product or Eisai Collaboration Molecule in accordance with this Agreement anywhere in the world.

7.4. No Implied Licenses. Except as explicitly set forth in this Agreement, neither Party grants to the other Party any license, express or implied, under the Patent Rights, Know- How or any other intellectual property rights Controlled by such Party.

7.5. Generic or Proprietary Molecule Combination Products.

(a) During the applicable Term, neither Party shall be permitted to Develop, Manufacture and/or Commercialize any Combination Product containing both (i) the applicable Eisai Collaboration Molecule, and (ii) one or more Proprietary Products and/or Generic Products (a "**Generic or Proprietary Molecule Combination Product**"), except as permitted under the Collaboration pursuant to Section 7.5(b).

(b) If either Party desires to Develop a Generic or Proprietary Molecule Combination Product during the applicable Term, prior to initiating any such Development

activities, such Party shall prepare and provide to the JSC and the other Party a proposed Development Plan and Established Overall Budget for such proposed Generic or Proprietary Molecule Combination Product, proposed financial terms under which the Collaboration would thereafter Develop and Commercialize such proposed Generic or Proprietary Molecule Combination Product and such other information as the other Party may reasonably request in connection with the evaluation of such proposed Generic or Proprietary Molecule Combination Product. Following receipt of such materials by the other Party and the JSC, the Parties shall enter into good faith negotiations to attempt to reach agreement on the terms and conditions under which the Parties would jointly Develop, Manufacture and Commercialize such proposed Generic or Proprietary Molecule Combination Product under the Collaboration. Such negotiations shall include discussions of the competitive landscape and commercial viability of such Generic or Proprietary Molecule Combination Product and the likelihood that such Generic or Proprietary Molecule Combination Product would receive Regulatory Approval prior to the end of the applicable Term. If the Parties are able to reach agreement, the definition of Eisai Collaboration Product shall be amended to include such Generic or Proprietary Molecule Combination Product, the Parties shall form a new JDC to oversee Development activities with respect to such Generic or Proprietary Molecule Combination Product, this Agreement shall be amended by any other terms and conditions agreed by the Parties with respect to such Generic or Proprietary Molecule Combination Product (including the financial terms, Development Plan and Established Overall Budget (in each case as may have been amended by mutual agreement of the Parties during the good faith negotiations)) and the Parties shall thereafter Develop, Manufacture and Commercialize such Generic or Proprietary Molecule Combination Product under the Collaboration pursuant to such terms and conditions as agreed by the Parties.

7.6. Third Party Molecule Combination Products.

(a) On a country-by-country basis, during the applicable Non-Compete Term, neither Party shall be permitted to Commercialize any Combination Product, where such Combination Product (i) contains, in addition to an Eisai Collaboration Product, one or more active ingredients that are owned or Controlled by a Third Party, and (ii) is indicated for the prevention, diagnosis or treatment of Alzheimer's Disease, AD related Disease or any other indication for which such Eisai Collaboration Molecule or an Eisai Collaboration Product is or has been Developed or Commercialized under the Collaboration (a "**Third Party Molecule Combination Product**").

(b) With respect to a given Eisai Collaboration Product in a given country, during the period beginning on the day after the last day of the applicable Non-Compete Term and ending on the day that is one (1) year before the anticipated LOE for such given Eisai Collaboration Product in such given country (such period, the "**LOE Term**"), if Eisai desires to Commercialize a Third Party Molecule Combination Product, Eisai shall provide Company with all relevant information regarding such Third Party Molecule Combination Product, including (1) a data package containing the Results of its Development activities for such Third Party Molecule Combination Product, (2) any additional information available to Eisai that Company may reasonably request to assist Company in evaluating such Results, (3) a proposed Commercialization Plan and Commercialization Plan Budget for such Third Party Molecule Combination Product, (4) proposed financial terms under which the Collaboration would thereafter Commercialize such Third Party Molecule Combination Product in such given country and (5)

Eisai's estimate of the anticipated LOE for such given Eisai Collaboration Product in such given country (collectively (1) - (5), a "**Third Party Combination Package**"). Upon Company's receipt of the applicable Third Party Combination Package, if Company desires to Develop and Commercialize such Third Party Molecule Combination Product pursuant to this Agreement, Company shall so notify Eisai within thirty (30) days of receipt of the Third Party Combination Package and, if Company does so notify Eisai of such desire within such thirty (30)-day period, each Party shall negotiate in good faith to attempt to reach agreement on the terms under which the Parties would amend this Agreement to Commercialize such Third Party Molecule Combination Product under the Collaboration in such given country. If the Parties do not enter into such an amendment within ninety (90) days after Company notifies Eisai of its desire to Develop and Commercialize such Third Party Molecule Combination Product or Company does not so notify Eisai of such desire within the applicable thirty (30)-day period, Eisai may enter into an agreement with a Third Party to Commercialize such Third Party Molecule Combination Product during the LOE Term in such given country provided that such Third Party agreement provides that Eisai shall have only a financial interest in such Third Party Molecule Combination Product and no operational rights, including no information rights or decision making authority with respect to Developing, Manufacturing or Commercializing such Third Party Molecule Combination Product, except solely to the extent required to reflect Eisai's financial interest in such Third Party Molecule Combination Product, and Eisai may not otherwise Commercialize a Third Party Molecule Combination Product except pursuant to Section 8.2(b).

(c) Eisai may Commercialize a Third Party Molecule Combination Product outside of the Collaboration directly or indirectly after the applicable LOE Term in a given country.

7.7. Compliance with Third Party Agreements. The license grant under Section 7.1 by Eisai to Company with respect to Molecule BAN2401 and Eisai Collaboration Products containing Molecule BAN2401 include the sublicense of certain rights licensed to Eisai under the Existing Third Party Licenses. Company's rights and licenses under, or with respect to, such sublicense rights are limited to the rights granted by [***] and [***] to Eisai under the [***] and the [***] and are subject to all applicable restrictions, limitations and obligations imposed on Eisai or its sublicensees in the [***] and the [***]. Company acknowledges receipt of unredacted copies of the [***] and the [***], which Company shall maintain as part of the Confidential Information of Eisai and shall not use or disclose other than in connection with its exercise of rights and fulfillment of its obligations under this Agreement. Exhibit 7.7 sets forth material obligations under the Existing Third Party Licenses that are obligations of Company under this Agreement other than those financial obligations described in Section 8.3(a). Eisai shall promptly provide to Company copies of any notices required to be given to any Third Party licensors (a) of Existing Third Party Licenses, on account of the execution of this Agreement (or any other sublicense executed under this Agreement), (b) of Third Party Licenses entered into after the Effective Date, on account of the grant of a sublicense to Company, and (c) of any Third Party License that is terminated during the Term, wherein such notice would be required upon such termination to effect the applicable sublicensee survival provision with respect to Company's rights under this Agreement. Eisai agrees that it shall not provide a copy of this Agreement to any Third Party licensor except to the extent otherwise required under the applicable Third Party License. Prior to providing any such copies, Eisai shall, (1) unless otherwise required under the applicable Third Party License, redact the terms of this Agreement to the extent not pertinent to an understanding of a Party's obligations or benefits under this Agreement or a verification of compliance with the

applicable Third Party License; (2) provide Company a proposed redacted version of this Agreement within a reasonable amount of time to permit Company to review and comment thereon, and consider in good faith and take into account and implement Company's reasonable comments with respect to any such proposed redactions; and (3) provide to Company a copy of this Agreement provided to the applicable Third Party licensor.

7.8. Limited Disclosure of Know-How. Eisai has delivered to Company all Eisai Know-How (excluding Manufacturing Know-How which may be disclosed at Eisai's sole discretion pursuant to (b) below and excluding Third Party Know-How licensed to Eisai to the extent that Eisai does not have the right to disclose such Third Party Know-How) that was in existence as of the Original Agreement Effective Date that Company reasonably needs to know in order to carry out the purposes and intent of this Agreement and that are reasonably necessary for Company's role in the Development, Manufacture, use and/or Commercialization of the Eisai Collaboration Products, including applicable data and results relating to Development activities, Manufacturing activities, Nonclinical Studies and Clinical Studies conducted by or on behalf of Eisai and/or its Affiliates prior to the Original Agreement Effective Date. On a continuing basis during the Term, each Party, without additional consideration, shall disclose to the other Party additional Eisai Know-How or Company Know-How, as applicable, which comes into existence from time to time, and which the receiving Party reasonably needs to know in order to carry out the purposes and intent of this Agreement provided such Know-How is reasonably necessary for such other Party's role in the Development, Manufacture, use and/or Commercialization of such Eisai Collaboration Product.

ARTICLE 8 FINANCIAL TERMS

8.1. Commercialization Agreements.

(a) Each Party agrees that, as of the Effective Date, it shall, or shall cause one or more of its Affiliates (each such Affiliate, a "**Commercialization Affiliate**") to, enter into individual commercialization agreements with respect to each Commercial Territory, in the form of **Exhibit 8.1(a)** (the "**Commercialization Agreements**"), and the Parties shall share the Collaboration Operation Profit/Loss in accordance with such Commercialization Agreements.

(b) Each Party shall deliver to the other Party within forty-five (45) days after the end of each Calendar Quarter (commencing with the first Calendar Quarter in which either Party or its Commercialization Affiliate conducts Commercialization activities or otherwise incurs a Commercialization Cost with respect to any Eisai Collaboration Product) (i) a Quarterly Report in respect of such ended Calendar Quarter (and in the case of the first such Quarterly Report, each prior Calendar Quarter in which such Party or its Commercialization Affiliate incurred any Commercialization Costs) and (ii) a Quarterly Forecast in respect of the current Calendar Quarter. Each Party shall provide to the other Party any supporting documentation with respect to its Quarterly Report reasonably requested by such other Party and, if requested by a Party and reasonably available to the other Party, such preliminary or estimated information in respect of such Calendar Quarter as may be required by the requesting Party in connection with its financial reporting.

(c) The JCC shall review the Commercialization Plan Budgets during the course of each year based on the previously delivered Quarterly Reports and Quarterly Forecasts. If either Party expects that its or its applicable Commercialization Affiliate's actual costs of implementing a Commercialization Plan during any Calendar Quarter are expected to vary by more than [***] from the amounts budgeted for expenditure by such Party during such Calendar Quarter pursuant to a Commercialization Plan Budget, then such Party shall promptly propose amendments to such Commercialization Plan Budget and submit such proposed amendments in writing, with an explanation of the variance and the reasons therefore, to the other Party for consideration by the JCC.

8.2. Milestone Payments. In further consideration of the licenses and other rights granted to Company hereunder, upon achievement of each of the milestone events (each, a "Milestone") set forth in the tables set forth in Section 8.2(a) and Section 8.2(b), the corresponding one-time milestone payment (each, a "Milestone Payment") shall be payable by Company to Eisai as set forth in Section 8.4.

(a) Milestones for the Eisai Collaboration Product containing Molecule E2609.

Row	Milestone	Payment (U.S. Dollars Millions)
1	Acceptance by the FDA of the first filing of an NDA in the U.S. for the first Eisai Collaboration Product containing Molecule E2609.	[***]
2	Acceptance by the EMA in the EU of the first MAA for the first Eisai Collaboration Product containing Molecule E2609.	[***]
3	First Commercial Sale in the U.S. for the Eisai Collaboration Product containing Molecule E2609.	[***]
4	First Commercial Sale in the EU for the Eisai Collaboration Product containing Molecule E2609.	[***]
5	First Commercial Sale in Japan for the Eisai Collaboration Product containing Molecule E2609	[***]

(b) Commercial Sales Milestones based on the aggregate Net Sales in a given Calendar Year of the Eisai Collaboration Product containing Molecule E2609.

In a given Calendar Year, achievement of aggregate Net Sales of Eisai Collaboration Products containing Molecule E2609 in the Territory in the Field, where such total sum first equals or exceeds:	**Payment (U.S. Dollars Millions)**
US$1 Billion	[***]
US$2 Billion	[***]
US$3 Billion	[***]

(c) Clarifications.

(i) Any Milestone Payment made by Company in accordance with Section 8.2(a) or Section 8.2(b) shall, once they are paid, not be refundable nor creditable for any reason whatsoever (including but not limited to termination of this Agreement for any reason or no reason).

(ii) Each Milestone Payment made by Company in accordance with Section 8.2(a) or Section 8.2(b) shall be made only one time upon achievement of each Milestone described above.

8.3. Third Party Obligations.

(a) Existing In-License Payments. With respect to Eisai Collaboration Product containing Molecule BAN2401, any amounts payable (including royalties, milestone payments and other consideration) to [***] under each of the [***] and the [***] arising on and after the Original Agreement Effective Date and for the duration of the applicable Term from the Development, Manufacture, use or Commercialization of such Eisai Collaboration Product in the Commercial Territory shall be shared equally by the Parties as Commercialization Costs. Further, with respect to Eisai Collaboration Product containing Molecule BAN2401, Eisai shall be responsible for one hundred percent (100%) of any amounts payable (including royalties, milestone payments and other consideration) to [***] under each of the [***] and the [***] arising on and after the Original Agreement Effective Date and for the duration of the applicable Term from the Development, Manufacture, use or Commercialization of such Eisai Collaboration Product containing Molecule BAN2401 in the Commercial, except that any such milestone payments that are owed as a result of events occurring in the Commercial Territory but that are not solely and specifically related to the Development, Manufacture, use or Commercialization of such Eisai Collaboration Product containing Molecule BAN2401 in the Commercial Territory shall be shared equally by the Parties in accordance with the first sentence of this Section 8.3(a).

(b) Other Third Party Payments. In the event that Eisai or any of its Affiliates (A) determines, after reasonable discussion and consultation with Company, that Patent Rights, Know-How or other intellectual property rights owned or Controlled by a Third Party should be licensed or acquired because such rights are necessary in order to Develop, Manufacture, use or Commercialize an Eisai Collaboration Product in the Commercial Territory or (B) shall be subject to a final court or other binding order or ruling requiring any such payments, including the

payment of a royalty to a Third Party in respect of sales of such Eisai Collaboration Product in the Territory, then, in each case, (1) any such Third Party license or other agreement that Eisai enters into with respect to such rights and any such ruling or order shall be deemed a Third Party License and the rights obtained by Eisai thereunder shall be included as Eisai Technology licensed to Company hereunder and (2) any and all amounts payable to such Third Parties as a result of the exercise or reasonably planned exercise of such rights shall be deemed Out-of-Pocket Costs and allocated in the manner set forth in **Exhibit 8.9**, provided that (x) any such amounts payable that are incurred with respect to any active ingredient in a Combination Product that is not Eisai Collaboration Molecule or any drug or therapy used for Co-Administration with Eisai Collaboration Molecule that is not an Eisai Collaboration Product in each case shall not be Out- of-Pocket Costs, including any such amounts payable for the acquisition of such rights, (y) any monetary upfront payments payable to such Third Party for entering into such agreements shall be deemed Out-of-Pocket Costs if and when Eisai incurs a milestone or royalty payment obligation that results from the exercise or reasonably planned exercise of such rights by either Party, and (z) for any one-time payments made to Third Parties that are treated as an Out-of-Pocket Cost in full at the time of such payment, Eisai shall not include the amortization expense for such one-time payment as an Out- of-Pocket Cost to avoid double counting.

8.4. Payment Terms.

(a) Milestone Payments. On or after the achievement of a Milestone, Eisai shall send a notice of such achievement in writing to Company and submit an invoice to Company in the form separately to be confirmed between the Parties with respect to the corresponding Milestone Payment. Unless otherwise disputed by Company in good faith, Company shall pay to Eisai the corresponding Milestone Payment within [***] days after receipt of such invoice.

(b) Form of Payment; Currency. All payments made hereunder shall be made by wire transfer in U.S. Dollars in immediately available funds to the credit of such bank account as may be designated by the Party to which the payment is due in this Agreement or in due hereunder. Any payment which falls due on a date which is not a Business Day may be made on the next succeeding Business Day.

(c) Late Payments. If a Party does not receive payment of any sum due to it on or before the due date therefor, interest shall thereafter accrue on the sum due to the Party from the due date until the date of payment at the per annum rate equal to the lesser of (i) the rate announced by Bank of America (or its successor) as its prime rate in effect on the date that such payment would have been first due plus [***] or (ii) the maximum rate permissible under Applicable Law.

8.5. Taxes.

(a) Payment of Taxes; Withholding. Each Party will, and will cause its Commercialization Affiliate to, provide timely and accurate documentation to the other Party upon request that shall enable the Parties to determine if a payment is subject to withholding, or entitled to reduced withholding under an existing income tax treaty. Each Party will, and will cause its Commercialization Affiliate to, pay any and all taxes levied on account of any payments made to it under this Agreement or any Commercialization Agreement. If any taxes are required to be

withheld by a Party or its Commercialization Affiliate, such Party or Commercialization Affiliate will: (a) deduct such taxes from the payment made to the other Party or its Commercialization Affiliate, as applicable; (b) timely pay the taxes to the proper taxing authority; (c) send proof of payment to the other Party or its Commercialization Affiliate, as applicable; and (d) reasonably assist the other Party or its Commercialization Affiliate, as applicable, in its efforts to obtain a credit for such tax payment. Each Party will, and will cause its Commercialization Affiliate to, reasonably assist the other Party or its Commercialization Affiliate, as applicable, in lawfully claiming exemptions from and/or minimizing such deductions or withholdings under double taxation laws or similar circumstances.

(b) VAT. It is understood and agreed among the Parties hereto that any payments made by or for the benefit of a Party or its Commercialization Affiliate under this Agreement or any Commercialization Agreement are exclusive of any value-added or similar tax ("**VAT**") imposed upon such payments. Each Party agrees that none of the payments under this Agreement or any Commercialization Agreement are intended to be subject to VAT. Each Party shall, and shall cause its Commercialization Affiliate to, provide the other Party or its Commercialization Affiliate, as applicable, with any information and documentation reasonably requested to (i) mitigate the levying of any VAT on any payments made by or for the benefit of such Party or Commercialization Affiliate under this Agreement or any Commercialization Agreement and/or (ii) recover any VAT incurred on such payments.

8.6. Records and Audit Rights.

(a) Financial Records. Each Party shall, and shall cause its Commercialization Affiliate to, keep complete and accurate books and records with respect to activities undertaken pursuant to this Agreement and each Commercialization Agreement in accordance with Accounting Standards and in sufficient detail to support calculations of all payments that may become due hereunder or thereunder. The Parties shall reasonably cooperate in good faith to provide assistance to one another in order to translate financial information and results from one set of Accounting Standards to the other, as reasonably necessary. If necessary, a Party will make the appropriate adjustments to the financial information it or its Commercialization Affiliate supplies under this Agreement or any Commercialization Agreement to permit the other Party to conform such financial information to its Accounting Standards in order to facilitate an accurate reporting of results of operations. Each Party will, and will cause its Commercialization Affiliate to, keep such books and records for the longer of (i) seven (7) years following the end of the Calendar Year to which they pertain and (ii) the expiry of the applicable statute of limitations for tax.

(b) Audits.

(i) Each Party shall have the right to appoint an internationally- recognized independent accounting firm (which is reasonably acceptable to the other Party) (the "**Auditor**") to audit the relevant books and records of the other Party and the correctness of any payments made or required to be made to or by the other Party or its Commercialization Affiliate, as applicable, pursuant to the terms of this Agreement or the relevant Commercialization Agreement. Before beginning its audit, the Auditor shall execute an undertaking acceptable to the other Party by which the Auditor shall keep confidential all information reviewed during such

audit. The Auditor shall have the right to disclose to the auditing Party only its conclusions regarding any payments owed under this Agreement.

(ii) The audited Party shall make its books and records available for inspection by such Auditor during regular business hours at such place or places where such books and records are customarily kept, upon receipt of reasonable advance notice from the other Party, solely to verify the accuracy of the payments to be made hereunder or its Commercialization Affiliate, as applicable. The Auditor may only audit the books and records of the audited Party from the three (3) Calendar Years prior to the Calendar Year in which the audit request is made. Such inspection right shall not be exercised more than once in any Calendar Year in respect of any Commercial Territory and not more frequently than once with respect to books and records covering any specific period of time and all such inspections to be conducted in any Calendar Year must be requested in the same notice to the audited Party. All information received and all information learned by a Party in the course of any audit or inspection shall constitute Confidential Information of the other Party.

(iii) The auditing Party shall pay for the cost of the Auditor, as well as its own expenses associated with enforcing its rights with respect to any payments hereunder, except that in the event there is any upward adjustment in aggregate amounts payable for any Calendar Year shown by such audit of more than [***] of the amount paid, the audited Party shall pay for the cost of the Auditor and in no event shall costs incurred under this Section 8.6 be deemed Development Costs or Commercialization Costs.

8.7. No Projections. Eisai and Company acknowledge and agree that nothing in this Agreement or any Commercialization Agreement shall be construed as representing an estimate or projection of anticipated sales of any Eisai Collaboration Product, and that the Milestones and Net Sales levels set forth above or elsewhere in this Agreement or that have otherwise been discussed by the Parties are merely intended to define the Milestone Payments or royalty obligations in the event such Milestones or Net Sales levels are achieved. NEITHER PARTY MAKES ANY REPRESENTATION OR WARRANTY, EITHER EXPRESS OR IMPLIED, THAT EITHER PARTY WILL BE ABLE TO SUCCESSFULLY DEVELOP OR COMMERCIALIZE ANY EISAI COLLABORATION PRODUCT OR, IF COMMERCIALIZED, THAT ANY PARTICULAR NET SALES LEVEL OF SUCH EISAI COLLABORATION PRODUCT WILL BE ACHIEVED.

8.8. Accounting Principles; Calculations. All Development Costs, Inventory Build Costs and Commercialization Costs will be calculated based on the principles set forth on Exhibit 8.8**.**

ARTICLE 9 INTELLECTUAL PROPERTY

9.1. Disclosure of Inventions. Each Party shall promptly disclose to the other Party all inventions and discoveries that are conceived, discovered or otherwise made by or on behalf of such Party in the course of conducting activities under this Agreement and/or the Original Agreement, whether or not patentable, and all Joint Inventions, in each case including all invention

disclosures or other similar documents submitted to such Party by its, or its Affiliates', subcontractors' or sublicensees' Representatives describing such inventions, as applicable ("Disclosed Inventions"). Each Party shall not take any steps with respect to filing of a patent or other form of intellectual property protection for any such Disclosed Inventions before the inventorship of such Disclosed Invention is determined by the Parties through good faith discussions between their respective intellectual property counsel.

9.2. Ownership of Inventions. Eisai shall own Eisai Patents and Eisai Know-How existing on the Original Agreement Effective Date, and Company shall own Company Patents and Company Know-How existing on the Original Agreement Effective Date. All inventions and discoveries that are conceived, discovered or otherwise made solely by or on behalf of a Party (or any of their Affiliates, subcontractors or sublicensees or its or their respective Representatives), in the course of conducting Development, Manufacturing and/or Commercialization activities for any Eisai Collaboration Product under or relating to this Agreement and/or the Original Agreement, whether or not patentable, shall be owned by such Party. Each Party shall own an equal, undivided interest in all inventions, and discoveries that are conceived, discovered or otherwise made jointly by or on behalf of both Parties (or their respective Affiliates, subcontractors or sublicensees or its or their respective Representatives) in the course of performing activities under this Agreement and/or the Original Agreement whether or not patentable (collectively, "Joint Inventions"), and any and all Patent Rights arising therefrom (collectively, such Patent Rights with respect to Joint Inventions, "Joint Patents"), and Know-How that is conceived, discovered or otherwise made jointly by or on behalf of both Parties (or their respective Affiliates, subcontractors or sublicensees or its or their respective Representatives) in the course of performing activities under this Agreement and/or Original Agreement (collectively "Joint Know- How"), and other intellectual property rights thereto. Each Party shall have full rights to license, assign and exploit such Joint Inventions (and any Patents arising therefrom) anywhere in the world, without any requirement of gaining the consent of, or accounting to, the other Party, subject to the licenses granted herein and subject to Section 7.4. Inventorship shall be determined in accordance with Japanese patent law. For the purpose of clarification, ownership of Regulatory Filings and Regulatory Approvals shall be governed by Section 6.4.

9.3. Prosecution and Maintenance of Patents.

(a) Eisai First Right.

(i) Eisai (or [***], to the extent required by the [***] Agreement, or [***], to the extent required by the [***]) shall have the first right and authority to file, prosecute and maintain in all jurisdictions worldwide (1) the Eisai Patents, (2) Joint Substantially Related Patents and (3) Company Patents Covering inventions made in the course of conducting Development, Manufacturing and/or Commercialization activities for any Eisai Collaboration Product under or relating to this Agreement and/or the Original Agreement, in each case, that Substantially Relate to an Eisai Collaboration Product, excluding any Company Manufacturing Patents ("**Company Substantially Related Patents**", and collectively with Eisai Patents and the Joint Substantially Related Patents, the "**Eisai Prosecution Patents**"). Eisai shall (to the extent not restricted under the [***]or the [***]) provide Company (A) a reasonable opportunity to review and comment on such filing, prosecution and maintenance efforts regarding the Eisai Prosecution Patents in the Territory reasonably prior to any submissions with applicable patent

authorities, and (B) with a copy of material communications from any patent authority in any jurisdiction in the Territory regarding the Eisai Prosecution Patents, and shall provide drafts of any material filings or material responses to be made to such patent authorities a reasonable amount of time in advance of submitting such filings or responses so that Company may have an opportunity to review and comment thereon. All costs in the course of performing the filing, prosecution and maintenance activities in the Territory set forth in this Section 9.3(a)(i) shall be equally shared between the Parties or their Commercialization Affiliates.

(ii) If Eisai desires to abandon any of the Eisai Prosecution Patents in any jurisdiction in the Territory, then to the extent not restricted by the [***] or the [***], Eisai shall provide Company with reasonable written notice of such decision so as to permit Company to decide whether to file, prosecute or maintain such the Eisai Prosecution Patents and to take any necessary action with respect thereto. Following notice from Eisai, Company may, with prior written consent of Eisai, which shall not be unreasonably withheld, conditioned or delayed assume control of the filing, prosecution and/or maintenance of such Eisai Prosecution Patents in one or more countries in the Territory where Eisai desired to abandon such Patent Rights in the name of the owner(s) of such Eisai Prosecution Patents, and the costs thereof shall be borne solely by Company.

(b) Company First Right.

(i) Company shall have the first right and authority to file, prosecute and maintain in all jurisdictions worldwide the Company Patents, excluding Company Substantially Related Patents. Company shall provide Eisai (A) a reasonable opportunity to review and comment on such filing, prosecution and maintenance efforts regarding such Company Patents in the Territory reasonably prior to any submissions with applicable patent authorities, and (B) with a copy of material communications from any patent authority in any jurisdiction in the Territory regarding such Company Patents, and shall provide drafts of any material filings or material responses to be made to such patent authorities a reasonable amount of time in advance of submitting such filings or responses so that Eisai may have an opportunity to review and comment thereon. Company shall reflect any such Eisai comments on the filing, prosecution or maintenance of Company Manufacturing Patents, and if Company fails to reflect any such Eisai comments, at Eisai's election, Company shall delete all specific references to Eisai Collaboration Products from any such filing and, to the extent permitted by Applicable Law, thereafter not include any such specific references to Eisai Collaboration Products in any such filing, prosecution or maintenance of the applicable Company Manufacturing Patent. Company shall be responsible for all costs incurred by it in the course of performing the filing, prosecution and maintenance activities set forth in this Section 9.3(b)(i).

(ii) If Company desires to abandon any Company Patent, excluding Company Substantially Related Patents, in any jurisdiction worldwide, then unless Company has a strategic business or patent portfolio justification for such abandonment, Company shall provide Eisai with reasonable written notice of such decision so as to permit Eisai to decide whether to file, prosecute or maintain such Company Patent and to take any necessary action. Following notice from Company, Eisai may, with prior written consent of Company, which shall not be unreasonably withheld, conditioned or delayed, assume control of the filing, prosecution and/or maintenance of such Company Patent in one or more countries in worldwide where Company

desires to abandon such Company Patent Rights in the name of Company, and the costs thereof shall be borne solely by Eisai.

(c) Joint Manufacturing Patents.

(i) Company shall have the first right and authority to file, prosecute and maintain for joint ownership in all jurisdictions worldwide the Joint Manufacturing Patents. Company shall provide Eisai (1) a reasonable opportunity to review and comment on such filing, prosecution and maintenance efforts regarding such Joint Manufacturing Patents in the Territory reasonably prior to any submissions with applicable patent authorities, and (2) with a copy of material communications from any patent authority in any jurisdiction in the Territory regarding such Joint Manufacturing Patents, and shall provide drafts of any material filings or material responses to be made to such patent authorities a reasonable amount of time in advance of submitting such filings or responses that Eisai may have an opportunity to review and comment thereon. Company shall reflect any such Eisai comments on the filing, prosecution or maintenance of Joint Manufacturing Patents, and if Company fails to reflect any such Eisai comments, at Eisai's election, Company shall delete all specific references to Eisai Collaboration Products from any such filing and, to the extent permitted by Applicable Law thereafter not include any such specific references to Eisai Collaboration Products in any such filing, prosecution or maintenance of the applicable Joint Manufacturing Patent. All costs in the course of performing the filing, prosecution and maintenance activities in the Territory set forth in this Section 9.3(c)(i) shall be equally shared between the Parties or their Commercialization Affiliates, as applicable.

(ii) If Company desires to abandon any Joint Manufacturing Patent, in any jurisdiction worldwide, then unless Company has a strategic business or patent portfolio justification for such abandonment, Company shall provide Eisai with reasonable written notice of such decision so as to permit Eisai to decide whether to file, prosecute or maintain such Joint Manufacturing Patent and to take any necessary action. Following notice from Company, Eisai may, with prior written consent of Company, which shall not be unreasonably withheld, conditioned or delayed, assume control of the filing, prosecution and/or maintenance of such Joint Manufacturing Patent in one or more countries in worldwide where Company desires to abandon such Joint Manufacturing Patent Rights in the name of the owner(s) of such Joint Manufacturing Patent, and the costs thereof shall be equally shared between the Parties or their Commercialization Affiliates, as applicable.

(iii) Joint Other Patents. The Parties will mutually agree on which Party will file, prosecute and maintain Joint Other Patents.

(d) Cooperation. Each Party shall provide the other Party all reasonable notice, assistance and cooperation in the Patent prosecution efforts of the other Party, including, with respect to patent term extensions, supplemental protection certificates, Orange Book listings and other patent linkages, including providing any necessary powers of attorney and executing any other required documents or instruments for such prosecution.

(e) Patent Term Extensions. Eisai shall have the right to select, after giving reasonable consideration to Company's comments, which patent term extension or related extension of rights, including supplementary protection certificates and similar rights (a "**Patent**

Term Extension"), for any of the Eisai Prosecution Patents anywhere worldwide. Company shall provide reasonable assistance to Eisai in connection with obtaining any such Patent Term Extension. To the extent reasonably and legally required in order to obtain any such Patent Term Extension in a particular country, Company shall make available to Eisai a copy of the necessary documentation to enable Eisai to use the same for the purpose of obtaining the Patent Term Extension in such country.

9.4. Infringement of Patent Rights by Third Parties.

(a) Notification. Each Party shall promptly provide the other Party with written notice reasonably detailing any known or alleged infringement by a Third Party of any Eisai Patents, Company Patents or Joint Patents, including any "patent certification" filed in the United States under 21 U.S.C. §355(b)(2) or 21 U.S.C. §355(j)(2) or similar provisions in other jurisdictions, and of any declaratory judgment, opposition, or similar action alleging the invalidity, unenforceability or non-infringement of any such Patent Right (collectively "**Third Party Infringement**").

(b) Enforcement.

(i) Eisai Prosecution Patents. Eisai shall have the first right, but not the obligation, to bring an action against any Third Party allegedly engaged in any Third Party Infringement of any Eisai Prosecution Patents (and to defend any related counterclaim). All Out- of-Pocket Costs and expenses incurred in the course of such action shall be equally shared between the Parties or their Commercialization Affiliates, as applicable. If Eisai fails to provide its intention in writing or provide its intention to decline to bring such action within twenty (20) days from first becoming aware of such Third Party Infringement with respect to any Joint Substantially Related Patent or Company Substantially Related Patent, then Company, with prior written consent of Eisai, which shall not be unreasonably withheld, conditioned or delayed, shall have a right, but not the obligation, to bring an action against any Third Party allegedly engaged in any Third Party Infringement of any Patent Rights with respect to such Joint Substantially Related Patent or Company Substantially Related Patent. All Out-of-Pocket Costs and expenses incurred in the course of such action shall be equally shared between the Parties or their Commercialization Affiliates, as applicable.

(ii) Company Patents. Company shall have the sole right, but not the obligation, to bring an action against any Third Party allegedly engaged in any Third Party Infringement of any Company Patents, except Company Substantially Related Patents (and to defend any related counterclaim). All Out-of-Pocket Costs and expenses incurred in the course of such action shall be equally shared between the Parties or their Commercialization Affiliates, as applicable, if such Third Party Infringement relates to any activity by a Third Party that is competitive with the exploitation of the Eisai Collaboration Products and shall otherwise be borne solely by Company. Notwithstanding the foregoing, Company, with prior written consent of Eisai, which shall not be unreasonably withheld, conditioned or delayed, shall have the first right, but not the obligation, to bring an action against any Third Party allegedly engaged in any Third Party Infringement of Company Manufacturing Patents (and to defend any related counterclaim). All Out-of-Pocket Costs and expenses incurred in the course of such action shall be equally shared between the Parties or their Commercialization Affiliates, as applicable. Company shall have a

period of twenty (20) days from first becoming aware of such Third Party Infringement to notify Eisai of its intent if it will bring such action or not. If Company fails to provide its intention in writing or provide its intention not to bring such action in the time period provided, then Eisai, with prior written consent of Company, which shall not be unreasonably withheld, conditioned or delayed, shall have a right, but not the obligation, to bring an action against any Third Party allegedly engaged in any Third Party Infringement of any Patent Rights related to an Eisai Collaboration Product with respect to such Company Manufacturing Patents.

All out-of-pocket costs and expenses incurred in the course of such action shall be equally shared between the Parties or their Commercialization Affiliates, as applicable.

(iii) Joint Patents.

(A) Joint Manufacturing Patents.

(1) First Right. Company, with prior written consent of Eisai, which shall not be unreasonably withheld, conditioned or delayed, shall have the first right, but not the obligation, to bring an action against any Third Party allegedly engaged in any Third Party Infringement of any Joint Manufacturing Patents (and to defend any related counterclaim). All Out-of-Pocket Costs and expenses incurred in the course of such action shall be equally shared between the Parties or their Commercialization Affiliates, as applicable,. Company shall have a period of twenty (20) days (provided that such time period may be shorter in recognition of the exigencies of the particular situation due to procedural or other demands) from first becoming aware of such Third Party Infringement to notify Eisai of its intention if it will bring such action or not.

(2) Second Right. If Company fails to provide its intention in writing or provide its intention to decline to bring such action in the time period provided in Section 9.4(b)(iii)(A)(1), then Eisai, with prior written consent of Company, which shall not be unreasonably withheld, conditioned or delayed, shall have a right, but not the obligation, to bring an action against any Third Party allegedly engaged in any Third Party Infringement of such Joint Manufacturing Patents related to an Eisai Collaboration Product. All Out-of-Pocket Costs and expenses incurred in the course of such action shall be equally shared between the Parties or their Commercialization Affiliates, as applicable.

(B) Joint Other Patents. The Parties will mutually agree on which Party shall have the first right, but not the obligation, to bring an action against any Third Party allegedly engaged in any Third Party Infringement of any Joint Other Patents (and to defend any related counterclaim).

(iv) Cooperation. Each Party shall provide to the Party enforcing any such rights under this Section 9.4(b) reasonable assistance in such enforcement, at such enforcing Party's request and expense, including joining in such action as a party plaintiff if required to perfect or maintain jurisdiction to pursue such action. The enforcing Party shall keep the other Party regularly informed of the status and progress of such enforcement efforts, and shall reasonably consider the other Party's comments on any such efforts.

(v) Settlement.

(A) Eisai Patents. Eisai, with the prior written consent of Company, which shall not be unreasonably withheld, conditioned, or delayed, shall have the first right, but not the obligation, to enter into a settlement with a Third Party involving Eisai Prosecution Patents. All Out-of-Pocket Costs and expenses incurred in the course of such settlement shall be equally shared by the Parties or their Commercialization Affiliates, as applicable. Eisai shall keep Company regularly informed of the status and progress of such settlement efforts, and shall reasonably consider Company's comments on any such efforts.

(B) Company Patents. Company, with the prior written consent of Eisai, which shall not be unreasonably withheld, conditioned or delayed, shall have the sole right, but not the obligation, to enter into a settlement with a Third Party involving Company Patents, except Company Substantially Related Patents. All Out-of-Pocket Costs and expenses incurred in the course of such settlement shall be equally shared between the Parties or their Commercialization Affiliates, as applicable, if such Third Party Infringement relates to any activity by a Third Party that is competitive with the exploitation of the Eisai Collaboration Products and shall otherwise be borne solely by Company. Company shall keep Eisai regularly informed of the status and progress of such settlement efforts and shall reasonably consider Eisai's comments on any such efforts if such Third Party Infringement relates to any activity by a Third Party that is competitive with the exploitation of the Eisai Collaboration Products.

(C) Joint Patents.

(1) Joint Manufacturing Patents. Company shall have the sole right, but not the obligation, to enter into a settlement with a Third Party involving Joint Manufacturing Patents; provided, however, that the Company shall not enter into any such settlement without the prior written consent of Eisai if such settlement would reasonably be expected to have a material adverse effect on an Eisai Collaboration Product. All Out-of-Pocket Costs and expenses incurred in the course of such settlement shall be equally shared between the Parties or their Commercialization Affiliates, as applicable, if such Third Party Infringement relates to any activity by a Third Party that is competitive with the exploitation of the Eisai Collaboration Products and shall otherwise be borne solely by Company or its Commercialization Affiliate. Company shall keep Eisai regularly informed of the status and progress of such settlement efforts and shall reasonably consider Eisai's comments on any such efforts if such Third Party Infringement relates to any activity by a Third Party that is competitive with the exploitation of the Eisai Collaboration Products.

(2) Joint Other Patents. The Parties will mutually agree on which Party shall have the first right, but not the obligation, to enter into a settlement with a Third Party involving Joint Other Patents. All Out-of-Pocket Costs and expenses incurred in the course of such settlement shall be equally shared between the Parties or their Commercialization Affiliates, as applicable.

(c) Expenses and Recoveries. If a Party recovers monetary damages or settlement fees or awards from a Third Party based on a suit or action described in Section 9.4(b) above, such recovery shall be allocated first to the unreimbursed expenses incurred by the Parties in such litigation (including, for this purpose, a reasonable allocation of expenses of internal

counsel) and any remaining amount shall be distributed as follows: fifty percent (50%) to Company and fifty percent (50%) to Eisai.

9.5. Defense of Patent Rights. To the extent any Party receives notice by counterclaim, or otherwise, alleging the invalidity or unenforceability of any Eisai Prosecution Patents, Company Patents and/or Joint Patents, it shall bring such fact to the attention of the other Party, including all relevant information related to such claim. The Parties, through the JSC, shall discuss such claim. Where such allegation is made in an opposition, reexamination, interference or other patent office proceeding, the provisions of Section 9.10 shall apply. Where such allegation is made in a counterclaim to a suit or other action brought under Section 9.4, the provisions of Section 9.4 shall apply. With respect to Eisai Prosecution Patents, Eisai, with prior written consent of Company (which shall not be unreasonably withheld, conditioned or delayed), shall take the lead in defending such allegation and Company shall cooperate with Eisai in such defense. All reasonable costs incurred by each Party in connection with such defense shall be included as Commercialization Costs. In the event Eisai does not so elect to defend an action with respect to any Eisai Prosecution Patent under this Section 9.5, it shall so notify Company in writing, and Company shall have the right, but not the obligation, with prior written consent of Eisai (which shall not be unreasonably withheld, conditioned or delayed), to so defend such action, at its expense. With respect to Company Patents (excluding Company Substantially Related Patents) and Joint Manufacturing Patents, Company shall take the lead in defending such allegation and Eisai shall cooperate with Company in such defense. All reasonable costs incurred by each Party in connection with such defense shall be included as Commercialization Costs. With respect to Joint Other Patents, the Parties shall mutually agree on which Party shall take the lead in defending such allegation. The non-defending Party shall cooperate with the defending Party in such defense and all reasonable costs incurred by each Party in connection with such defense shall be included as Commercialization Costs. Each Party shall provide to the Party defending any such rights under this Section 9.5 all reasonable assistance in such enforcement, at such defending Party's request with any expenses related thereto to be included as Commercialization Costs. The defending Party shall keep the other Party regularly informed of the status and progress of such efforts, and shall reasonably consider the other Party's comments on any such efforts.

9.6. Patent Marking. Each Party shall, and shall require its Affiliates and sublicensees, to mark Eisai Collaboration Products sold by it hereunder (in a reasonable manner consistent with industry custom and practice) with appropriate patent numbers or indicia to the extent permitted by Applicable Law, in those countries in which such markings or such notices impact recoveries of damages or equitable remedies available with respect to infringements of patents.

9.7. Confirmatory Patent Licenses. Each Party shall, if so requested by the other Party, promptly enter into confirmatory license agreements, in a form consistent with the terms of this Agreement and reasonably acceptable to the Parties, for purposes of recording the licenses granted under this Agreement with such patent offices in the Territory as the licensee hereunder reasonably considers appropriate. Such licensee shall bear any filing costs and any costs of outside counsel or experts required with respect to such recordations.

9.8. Personnel Obligations. Prior to beginning work under this Agreement relating to any Development, Manufacture, use or Commercialization of an Eisai Collaboration Molecule, Eisai Collaboration Product, Backup Candidate or Backup Product, each employee, subcontractor,

consultant, Representative or agent of Company or Eisai or of either Party's respective Affiliates or sublicensees shall be bound by non-disclosure and invention assignment obligations which are consistent with the obligations of Company or Eisai, as applicable, in this ARTICLE 9, to the extent permitted by Applicable Law, including: (a) promptly reporting to Company or Eisai, as applicable, any invention, discovery, process or other intellectual property right; (b) assigning to Company or Eisai, as applicable, all of his, her or its right, title and interest in and to any invention, discovery, process or other intellectual property right; (c) taking actions reasonably necessary to secure patent or other intellectual property protection of such invention, discovery, process or other intellectual property right; (d) performing all acts and signing, executing, acknowledging and delivering any and all documents required for effecting the obligations and purposes of this Agreement; and (e) abiding by the obligations of confidentiality and non-use set forth in ARTICLE
12. It is understood and agreed that such non-disclosure and invention assignment agreement need not reference or be specific to this Agreement.

9.9. No Challenge.

(a) During the Term, Eisai and its Affiliates shall not make any request for, or filing or declaration of, or commence or maintain any action involving any interference, opposition, challenges as to ownership, assertions of invalidity or unenforceability, unpatentability, revocation or reexamination relating to any of the Company Patents Covering any Eisai Collaboration Product, or based on any of the foregoing, challenge or withhold any payment under this Agreement, in each case of the foregoing in any lawsuit or any other civil or administrative proceeding, or in connection with making of any claim or counterclaim, before any court, tribunal, agency or governmental entity anywhere in the world ("**Patent Action**").

(b) During the Term, Company and its Affiliates shall not make any request for, or filing or declaration of, or commence or maintain any action involving any interference, opposition, challenges as to ownership, assertions of invalidity or unenforceability, unpatentability, revocation or reexamination relating to any of the Eisai Patents or Joint Patents, or based on any of the foregoing in any lawsuit or any other civil or administrative proceeding, or in connection with making of any claim or counterclaim, before any court, tribunal, agency or governmental entity anywhere in the world (also, a "**Patent Action**"), challenge or withhold any payment under this Agreement, in each case of the foregoing in any Patent Action, except that Company may defend itself in any action brought against it for infringement of an Eisai Patent based on the Development, Manufacture or Commercialization of the Eisai Collaboration Product (as defined in the BIIB037 Collaboration Agreement).

(c) This Section 9.9 shall not apply to any Affiliates of a Party that first become Affiliates of such Party after the Effective Date in connection with a merger or acquisition event, where such Affiliates of such Party were already engaged in a Patent Action prior to such merger or acquisition event, so long as such Party uses reasonable efforts to cause such Patent Action to terminate within forty-five (45) days after such merger or acquisition event. Nothing in this Section 9.9 shall be construed as an admission or concession by a Party that the other Party or its Affiliates has, or ever will have, any standing, right, or basis to challenge the validity or enforceability of any such payment or such Patent Rights included within the Company Patents, Joint Patents or Eisai Patents, as applicable.

9.10. Trademarks.

(a) Corporate Trademarks and Logos. Each Party and its Affiliates shall retain all right, title and interest in and to its and their respective corporate trademarks, house marks, corporate names or logos. Neither Party shall, without the other Party's prior written consent, use any such trademarks, house marks, corporate names or logos of the other Party, or marks confusingly similar thereto, in connection with such Party's Commercialization of Eisai Collaboration Products under this Agreement; provided that with regards to each Eisai Collaboration Product, to the extent legally permissible, Eisai will include Company's logo and relevant trademarks on all packaging for and materials regarding such Eisai Collaboration Product during the Co-Promotion Term for such Eisai Collaboration Product in a given country of the Commercial Territory.

(b) Marks. Eisai, after reasonable consultation with Company, shall be responsible for the selection of all trademarks (the "**Marks**") for use in connection with the sale or marketing of such Eisai Collaboration Product in the Territory in the Field (provided that unless the Parties mutually agree otherwise, no such Mark shall contain the name of the Company or another trademark owned or Controlled by Company). Eisai shall be responsible for the registration, maintenance and defense of such Marks and shall own such Marks. The Trademark Costs incurred in connection therewith for Marks applicable to Eisai Collaboration Products in the Territory shall be determined by the JCC and all Trademark Costs shall be shared equally by the Parties or their Commercialization Affiliates, as applicable. All uses of the Marks in the U.S. shall be reviewed by the JCC and shall comply with Applicable Law (including those laws and regulations particularly applying to the proper use and designation of trademarks).

ARTICLE 10 REPRESENTATIONS AND WARRANTIES

10.1. Mutual Representations and Warranties. Each Party hereby represents and warrants to the other Party as of the Effective Date as follows:

(a) Corporate Existence and Power. It is a corporation duly organized, validly existing, and in good standing under the laws of the jurisdiction in which it is incorporated, and has full corporate power and authority and the legal right to own and operate its property and assets and to carry on its business as it is now being conducted and as contemplated in this Agreement, including the right to grant the licenses granted by it hereunder.

(b) Authority and Binding Agreement. (i) It has the corporate power and authority and the legal right to enter into this Agreement and perform its obligations hereunder;
(ii) it has taken all necessary corporate action on its part required to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder; and (iii) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, and binding obligation of such Party that is enforceable against it in accordance with its terms.

(c) No Conflict. It is not a party to any agreement, arrangement or commitment that would prevent it from granting, or otherwise limit, the rights granted or intended to be granted to the other Party under this Agreement or from performing its obligations under this Agreement, or that actually results in a restriction on the Parties ability to Develop, Manufacture, use or Commercialize the Eisai Collaboration Molecule and Eisai Collaboration Products in the Field in the Territory.

(d) No Debarment. Neither such Party nor any Affiliate thereof is debarred, has been convicted, or is subject to debarment or conviction pursuant to Section 306 of the FD&C Act.

10.2. Representations, Warranties and Covenants by Eisai. Except as set forth on the Eisai Disclosure Schedule or as supplemented within fourteen (14) days of the Effective Date with information that does not have a material negative impact on Company's rights under this Agreement, Eisai hereby represents and warrants to Company, as of the Effective Date, and with respect to Section 10.2(l), covenants during the Term as follows with respect to the Eisai Collaboration Products and the Eisai Collaboration Molecules:

(a) Exhibit 1(E) attached hereto, or as supplemented within fourteen (14) days of the Effective Date with information that does not have a material negative impact on Company's rights under this Agreement, sets forth a complete and accurate list of all Eisai Patents in existence as of the Effective Date, including the owner and/or co-owner(s) thereof;

(b) Exhibit 10.2(b) attached hereto, or as supplemented within fourteen (14) days of the Effective Date with information that does not have a material negative impact on Company's rights under this Agreement, sets forth a complete and accurate list of all license, assignment, distribution or other agreements relating to the Eisai Patents and Eisai Collaboration Products and true, complete, and correct copies of such agreements as amended on or prior to the Effective Date, have been provided to Company on or prior to the Effective Date;

(c) Eisai or one of its Affiliates owns or licenses all of the Eisai Patents and Eisai Know-How free from Encumbrances and is listed in the records of the appropriate Governmental Authorities as the owner of record or licensee for each registration, grant and application included in the Eisai Patents or Eisai Know-How;

(d) Eisai has, with respect to Patent Rights or Know-How owned by it or one of its Affiliates and to its knowledge with respect to Patent Rights or Know-How licensed to it or one of its Affiliates, obtained from all individuals who participated in any respect in the invention or authorship of any Patent Rights or Know-How, effective assignments of all ownership rights of such individuals in such Patent Rights or Know-How to the extent that any such Patent Rights or Know-How would constitute Eisai Patents or Eisai Know-How, as applicable, if Controlled by Eisai or one of its Affiliates, either pursuant to written agreement or by operation of law;

(e) all of its and its Affiliates' employees, officers, subcontractors and consultants have executed agreements or have existing obligations under Applicable Law requiring assignment to Eisai or its Affiliates, as applicable, of all inventions made during the course of and as the result of their association with Eisai or one of its Affiliates and obligating the individual to

maintain as confidential Eisai's Confidential Information of Eisai and its Affiliates as well as confidential information of other parties (including Company and its Affiliates) which such individual may receive, to the extent required to support Eisai's obligations under this Agreement;

(f) Eisai has the right to grant to Company the rights under the Eisai Patents and Eisai Know-How that it purports to grant hereunder;

(g) all application, registration, maintenance and renewal fees in respect of the Eisai Patents as of the Effective Date have been, with respect to Eisai Patents owned by Eisai or one of its Affiliates and, to Eisai's knowledge, with respect to Eisai Patents licensed to Eisai or one of its Affiliates, paid and all necessary documents and certificates have been filed with the relevant agencies for the purpose of maintaining the Eisai Patents;

(h) to Eisai's knowledge, the Development, Manufacture, use or Commercialization of the Eisai Collaboration Molecules or Eisai Collaboration Products do not infringe the Patent Rights or misappropriate the Know-How of any Third Party, nor has Eisai or ones of its Affiliates received any written notice alleging such infringement or misappropriation;

(i) there are no agreements or arrangements to which Eisai or any of its Affiliates is a party relating to the Eisai Collaboration Products, Eisai Collaboration Molecules, Eisai Patents, or Eisai Know-How that would limit the rights granted to Company under this Agreement or that actually results in a restriction on the Parties' ability to Develop, Manufacture, use or Commercialize the Eisai Collaboration Molecules and the Eisai Collaboration Products in the Field in the Territory;

(j) neither Eisai nor any of its Affiliates, nor any of its or their respective Representatives has made an untrue statement of material fact or fraudulent statement to the FDA or any other Regulatory Authority with respect to the Development of the Eisai Collaboration Molecules or the Eisai Collaboration Products, failed to disclose a material fact required to be disclosed to the FDA or any other Regulatory Authority with respect to the Development of the Eisai Collaboration Molecules or the Eisai Collaboration Products, or committed an act, made a statement, or failed to make a statement with respect to the Development of the Eisai Collaboration Molecules or the Eisai Collaboration Products that could reasonably be expected to provide a basis for the FDA to invoke its policy respecting "Fraud, Untrue Statements of Material Facts, Bribery, and Illegal Gratuities", set forth in 56 Fed. Reg. 46191 (September 10, 1991) and any amendments thereto;

(k) in the course of the Development of Eisai Collaboration Products, neither Eisai nor any of its Affiliates has used prior to the Original Agreement Effective Date any employee, agent or independent contractor who has been debarred by any Regulatory Authority, or, to Eisai's knowledge, is the subject of debarment proceedings by a Regulatory Authority or has been convicted pursuant to Section 306 of the FD&C Act;

(l) the Existing Third Party Licenses are in full force and effect as modified or amended prior to the Effective Date and Eisai has provided to Company accurate copies of all such Existing Third Party Licenses, and any redacted portions thereof are not material to Company's decision to enter into or assert its rights and perform its obligation under this Agreement. Neither

Eisai nor, to Eisai's knowledge, any Third Party licensor is in default with respect to a material obligation under, and neither such party has claimed or, to Eisai's knowledge, has grounds upon which to claim that the other party is in default with respect to a material obligation under, any Existing Third Party License. Except as identified in **Exhibit 1(I)**, as supplemented within fourteen (14) days of the Effective Date with information that does not have a material negative impact on Company's rights under this Agreement, neither Eisai nor any of its Affiliates Controls any other Third Party intellectual property necessary for Company to practice the licenses and rights granted under this Agreement. Eisai shall, during the Term and with respect to each Third Party License (i) maintain in full force and effect such Third Party License; (ii) promptly provide Company with a party's notice of any default under such Third Party License; (iii) to the extent within Eisai's reasonable control, not take any action, fail to take any action or allow any event to occur that would give the respective Third Party licensor the right to terminate such Third Party License, without the written consent of Company; (iv) not amend or modify such Third Party License in a manner that will adversely affect Company's rights under this Agreement, without Company's prior written consent; (v) not exercise any right to itself terminate or waive any material right under, which waiver would adversely affect Company's rights under this Agreement, such Third Party License without the prior written consent of Company; and (vi) to the extent practicable, notify Company prior to any termination of such Third Party License. In addition, Eisai shall promptly provide Company with a copy of any amendments to Third Party Licenses made after the Effective Date. No Third Party has granted Eisai or any of its Affiliates a license to Patent Rights or Know-How that are not Controlled by Eisai or its Affiliates but that would, if Controlled by Eisai or its Affiliates, be within the definition of Eisai Technology; and

(m) to Eisai's knowledge, no breach, event or other circumstance exists that would reasonably be expected to give rise to any Claim or Loss for which Eisai may seek indemnification from Company under Section 11.2 of this Agreement.

10.3. Representations and Warranties by Company.

(a) Except as set forth on the Company Disclosure Schedule, Company hereby represents and warrants to Eisai, as of the Effective Date, as follows with respect to the Eisai Collaboration Products, Eisai Collaboration Molecules, Option Products and Option Molecules, as applicable:

(i) Exhibit 1(F) attached hereto sets forth a complete and accurate list of all Company Patents in existence as of the Effective Date, including the owner and/or co- owner(s) thereof;

(ii) Exhibit 10.3(a)(ii) attached hereto sets forth a complete and accurate list of all license, assignment, distribution or other agreements relating to the Company Patents and true, complete, and correct copies of such agreements have been provided to Eisai on or prior to the Effective Date;

(iii) Company or one of its Affiliates owns or licenses all of the Company Patents and Company Know-How free from Encumbrances and is listed in the records of the appropriate Governmental Authorities as the owner of record or licensee for each registration, grant and application included in the Company Patents or Company Know-How;

(iv) Company or one of its Affiliates has obtained from all individuals who participated in any respect in the invention or authorship of any Patent Rights or Know-How effective assignments of all ownership rights of such individuals in such Patent Rights or Know-How to the extent that any such Patent Rights or Know-How would constitute Company Patents or Company Know-How, as applicable, if Controlled by Company, either pursuant to written agreement or by operation of law;

(v) all of its and its Affiliates' employees, officers, subcontractors and consultants have executed agreements or have existing obligations under Applicable Law requiring assignment to Company or its Affiliates, as applicable, of all inventions made during the course of and as the result of their association with Company or one of its Affiliates and obligating the individual to maintain as confidential all Confidential Information of Company and its Affiliates as well as confidential information of other parties (including Company and its Affiliates) which such individual may receive, to the extent required to support Eisai's obligations under this Agreement;

(vi) Company has the right to grant to Eisai the licenses under the Company Patents and Company Know-How that it purports to grant hereunder;

(vii) all application, registration, maintenance and renewal fees in respect of the Company Patents as of the Effective Date have been paid and all necessary documents and certificates have been filed with the relevant agencies for the purpose of maintaining the Company Patents;

(viii) to Company's knowledge, the Development, Manufacture, use or Commercialization of the Option Molecule or Option Product do not infringe the Patent Rights or misappropriate the Know-How of any Third Party, nor has Company received any written notice alleging such infringement or misappropriation;

(ix) there are no agreements or arrangements to which Company or any of its Affiliates is a party relating to the Option Product, Option Molecule, Company Option Product Patents, or Company Option Product Know-How that would limit the rights granted to Eisai under this Agreement or that actually results in a restriction on the Parties' ability to Develop, Manufacture, use or Commercialize the Option Molecule and the Option Product in the Field in the Territory;

(x) neither Company nor any of its Affiliates, nor any of its or their respective officers, employees, representatives or agents has made an untrue statement of material fact or fraudulent statement to the FDA or any other Regulatory Authority with respect to the Development of the Option Molecule or the Option Product, failed to disclose a material fact required to be disclosed to the FDA or any other Regulatory Authority with respect to the Development of the Option Molecule or the Option Product, or committed an act, made a statement, or failed to make a statement with respect to the Development of the Option Molecule or the Option Product that could reasonably be expected to provide a basis for the FDA to invoke its policy respecting "Fraud, Untrue Statements of Material Facts, Bribery, and Illegal Gratuities", set forth in 56 Fed. Reg. 46191 (September 10, 1991) and any amendments thereto;

(xi) in the course of the Development of the Option Product, neither Company nor any of its Affiliates used prior to the Effective Date any employee, agent or independent contractor who has been debarred by any Regulatory Authority, or, to Company's knowledge, is the subject of debarment proceedings by a Regulatory Authority or has been convicted pursuant to Section 306 of the FD&C Act; and

(xii) to Company's knowledge, no breach, event or other circumstance exists that would reasonably be expected to give rise to any Claim or Loss for which Company may seek indemnification from Eisai under Section 11.1 of this Agreement.

(b) Option Product containing Molecule Anti-Tau

(i) The representations and warranties of Company contained in Sections **11.7 - (a)(x10.3(a)(xi)** be updated by the Anti-Tau Updated Schedules shall be true and correct in all material respects as of the Anti-Tau Updated Schedules Date, except, in each case, for those certain representations and warranties that by their terms are not made on such a date, which representations and warranties shall be true and correct in all material respects as of the date made. Any Anti-Tau Updated Schedules provided by Company pursuant to Section 3.6(b)(ii) shall not cure any breach or inaccuracy of any representation or warranty made in this Agreement on the Original Agreement Effective Date, but the final Anti-Tau Updated Schedules delivered by Company shall be deemed to modify and qualify all representations and warranties made in this Agreement on and as of the Anti-Tau Updated Schedules Date. Solely with respect to the Anti- Tau Updated Schedules, each reference to the "Original Agreement Effective Date" in Section
11.4 shall be deemed to instead refer to the Anti-Tau Updated Schedules Date.

(ii) Within five (5) Business Days after the Anti-Tau Updated Schedules Date, Company shall deliver to Eisai a certificate (substantially in the form attached hereto as **Exhibit 10.3(b)(ii)**), signed on behalf of Company by the chief executive officer or chief financial officer thereof, certifying that the condition specified in Section 10.3(b)(i) has been fulfilled.

10.4. Restrictions on Technology.

(a) No Transfer of Title.

(i) Eisai covenants and agrees that from the Effective Date until the expiration of the Term, neither it nor its Affiliates shall enter into any agreement with any Third Party, whether written or oral, with respect to, or otherwise assign, transfer, license, convey its right, title or interest in or to or grant any other Encumbrance to or under, the Eisai Technology, Molecule E2609, Molecule BAN2401, any Eisai Collaboration Product containing Molecule E2609, or any Eisai Collaboration Product containing Molecule BAN2401 in each case, that would prevent it from granting the rights to Company by Eisai under this Agreement or that would restrict either Party's ability to Develop, Manufacture, use or Commercialize such Molecules and such Eisai Collaboration Products in the Field in the Territory in accordance with this Agreement.

(ii) Company covenants and agrees that from the Effective Date until the expiration of the Anti-Tau Option, neither it nor its Affiliates shall enter into any agreement with any Third Party, whether written or oral, with respect to, or otherwise assign, transfer, license, convey its right, title or interest in or to or grant any other Encumbrance to or under, the Company

Option Product Technology, Molecule Anti-Tau, or the Option Product containing Molecule Anti- Tau, as applicable, in each case, that would prevent it from granting the rights to Eisai by Company under this Agreement or that would restrict either Party's ability to Develop, Manufacture, use or Commercialize such Molecules and such products in the Field in the Territory in accordance with this Agreement.

(b) Third Party Agreements. During the applicable Term, Eisai and its Affiliates shall not take any action, or omit to take any action, which would result in a material breach or early termination of the [***], the [***], or any material rights thereunder. Eisai shall promptly notify Company upon receipt by Eisai of any notice from [***] or [***], as applicable, of any actual or alleged breach under the [***] or [***], as applicable, that could result in the termination of such agreement(s) or any material reduction or other material limitation in Eisai's rights thereunder. Company shall be entitled to cure any such breach and set off any Losses incurred in doing so against any payment due to Eisai under this Agreement.

10.5. No Other Representations or Warranties. EXCEPT AS EXPRESSLY STATED IN THIS AGREEMENT, NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON- INFRINGEMENT IS MADE OR GIVEN BY OR ON BEHALF OF A PARTY. EXCEPT AS EXPRESSLY STATED IN THIS AGREEMENT, ALL REPRESENTATIONS AND WARRANTIES, WHETHER ARISING BY OPERATION OF LAW OR OTHERWISE, ARE HEREBY EXPRESSLY EXCLUDED.

ARTICLE 11 INDEMNIFICATION

11.1. Indemnification by Eisai. Subject to the other provisions of this ARTICLE 11,
Eisai shall defend Company, its Affiliates and its sublicensees and each of their respective Representatives (collectively, "Company Indemnitees") from and against all charges, allegations, notices, civil, criminal or administrative claims, demands, complaints, causes of action, proceedings or investigations of a Third Party (collectively, "Claims"), and indemnify and hold harmless such Company Indemnitees from and against any and all losses, liabilities, obligations, awards, settlements, penalties, fines, sanctions, damages and reasonable costs (including awards of court costs and reasonable attorneys' fees) (collectively, "Losses") that result from any such Claims, where and to the extent that such Claims are made or brought against any Company Indemnitee by or on behalf of a Third Party, and solely to the extent such Claim is based on or arises out of:

(a) the grossly negligent, reckless or willful actions or omissions of Eisai or its Affiliates in performing Eisai's obligations under this Agreement or any other agreement entered into in connection with this Agreement, including any Commercialization Agreement;

(b) the breach of any obligation, covenant, warranty or representation made by Eisai under this Agreement or any other agreement entered into in connection with this Agreement, including any Commercialization Agreement;

(c) the Development, Manufacture or use of any Eisai Collaboration Molecule or Eisai Collaboration Product by or on behalf of Eisai and/or its Affiliates or licensees prior to the Effective Date;

(d) any violation of Applicable Law by Eisai, its Affiliates or licensees in the course of its activities under this Agreement or any Commercialization Agreement;

(e) Eisai's breach of any of the [***];

(f) Eisai's breach of the [***]; or

(g) the Development, Manufacture, Commercialization, or use of any Eisai Collaboration Molecule or Eisai Collaboration Product occurring following the expiration or termination of this Agreement with respect to such Eisai Collaboration Molecule or Eisai Collaboration Product;

provided, however, except in the case of clauses (a) through (f), to the extent that such Claim or Loss is attributable to any matter for which Company is obligated to indemnify an Eisai Indemnitee pursuant to Section 11.2 below.

11.2. Indemnification by Company. Subject to the other provisions of this ARTICLE 11, Company shall defend Eisai, its Affiliates and its sublicensees and each of their respective Representatives (collectively, "Eisai Indemnitees"), from and against all Claims, and indemnify and hold harmless such Eisai Indemnitees from and against any and all Losses that result from such Claims, where and to the extent that such Claims are made or brought against any Eisai Indemnitee by or on behalf of a Third Party, and solely to the extent such Claim is based on or arises out of:

(a) the grossly negligent, reckless or willful actions or omissions of Company or its Affiliates in performing Company's obligations under this Agreement or any other agreement entered into in connection with this Agreement or any Commercialization Agreement;

(b) the breach of any obligation, covenant, warranty or representation made by Company under this Agreement or any other agreement entered into in connection with this Agreement or any Commercialization Agreement;

(c) the Development, Manufacture or use of any Option Molecule or Option Product by or on behalf of Company and/or its Affiliates or licensees prior to the Original Agreement Effective Date or during the Term prior to the date Eisai exercise its optional rights to the applicable Option Product under this Agreement;

(d) any violation of Applicable Law by Company, its Affiliates or licensees in the course of its activities under this Agreement or any Commercialization Agreement; or

(e) the Development, Manufacture, Commercialization, or use of any Option Product occurring following the expiration or termination of this Agreement with respect to such Option Product;

provided, however, except in each case of clauses (a) through (d) to the extent that such Claim or Loss is attributable to any matter for which Eisai is obligated to indemnify Company Indemnitee pursuant to Section 11.1 above.

11.3. Indemnification Procedures. A Person entitled to indemnification pursuant to either Section 11.1 or Section 11.2 will hereinafter be referred to as an "Indemnitee." A Party obligated to indemnify an Indemnitee hereunder will hereinafter be referred to as an "Indemnitor." In the event any Company Indemnitee or Eisai Indemnitee is seeking indemnification under either Section 11.1 or Section 11.2, Company or Eisai, as applicable, will inform the applicable Indemnitor of a Claim as soon as reasonably practicable, but in no event more than [***] Business Days, after it receives notice of the Claim, it being understood and agreed that the failure to give notice of a Claim as provided in this Section 11.3 will not relieve the Indemnitor of its indemnification obligation under this Agreement except and only to the extent that such Indemnitor is actually and materially prejudiced as a result of such failure to give notice. The Indemnitee will permit the Indemnitor to assume direction and control of the defense of such Claim using counsel of its choosing, and, at the Indemnitor's expense, will cooperate as reasonably requested in the defense of such Claim. The Indemnitee will have the right to retain its own counsel at its own expense; provided, that, if the Indemnitor assumes control of such defense and the Indemnitee reasonably concludes, based on advice from counsel, that the Indemnitor and the Indemnitee may have conflicting interests with respect to such Claim, the Indemnitor will be responsible for the cost of one counsel for the Indemnitee (and all other Indemnitees in connection with the same Claim or multiple Claims arising out of the same events or circumstances). The Indemnitor may not settle such Claim, or otherwise consent to an adverse judgment in such Claim without the Indemnitee's prior written consent, not to be unreasonably withheld or delayed; provided that the Indemnitor shall not be required to obtain such consent with respect to the settlement of any Claim under which the sole relief provided is for monetary damages that are paid in full by the Indemnitor, which would not diminish or limit or otherwise adversely affect the rights, activities or financial interests of the Indemnitee, and which does not result in any finding or admission of fault by the Indemnitee.

11.4. Defense of and Indemnification for Product Liability Claims. Subject to the right of a Party to make Claims under Section 11.1 or 11.2 for Losses incurred with respect to a Product Liability Claim under this Section 11.4, during the Term, the Parties agree with respect to a Product Liability Claim that:

(a) Each of Eisai and Company shall indemnify and hold harmless the Company Indemnitees or the Eisai Indemnitees, as applicable, from and against fifty percent (50%) of any and all Losses incurred by such Company Indemnitees or Eisai Indemnitees, as applicable, based on or arising out of any Product Liability Claim made or brought against any Company Indemnitees or Eisai Indemnitees, as applicable, by or on behalf of a Third Party.

(b) If either Party becomes aware of any Product Liability Claim, it shall inform the other Party as soon as soon as reasonably practicable, but in no event more than [***] Business Days, after it receives notice of such Product Liability Claim, it being understood and agreed that the failure by either Party to give notice of a Product Liability Claim will not relieve the other Party of its obligations under this Agreement except and only to the extent that such the other Party is actually and materially prejudiced as a result of such failure to give notice.

(c) Eisai shall assume direction and control of the defense of any Product Liability Claim, and Company will cooperate as reasonably requested in the defense of such Product Liability Claim; provided that Eisai shall (i) use counsel reasonably acceptable to Company; and provided further that, if Company reasonably concludes, based on advice from counsel, that Eisai and Company have conflicting interests with respect to such Product Liability Claim, Company shall have the right to obtain counsel of its own at its own cost, (ii) keep Company reasonably informed as to the status of such defense, and (iii) consult with Company in good faith with regard to all material litigation strategy decisions in connection with such defense, including, if applicable, joining Company as a co-party. Eisai shall provide Company an invoice for fifty percent (50%) of the costs of such defense each Calendar Quarter during the Term, and unless otherwise disputed by Company in good faith, Company shall pay the amount set forth in such invoice to Company within [***] days after receipt.

(d) Neither Party may settle any Product Liability Claim, or otherwise consent to an adverse judgment in any Product Liability Claim without the other Party's prior written consent, such consent not to be unreasonably withheld or delayed.

(e) Each Calendar Quarter during the Term, each Party shall provide the other Party with a full accounting of all Losses incurred (if any) in connection with any Product Liability Claim for which each Party is obligated to indemnify the other pursuant to subsection (a) above, together with an invoice for fifty percent (50%) of such Losses. Unless otherwise disputed by the other Party in good faith, such other Party shall pay the amount set forth in the invoice within forty-five (45) days after receipt of such invoice.

11.5. Limitation of Liability. NEITHER PARTY NOR ANY OF ITS AFFILIATES SHALL BE LIABLE IN LAW, EQUITY, CONTRACT, TORT, NEGLIGENCE, BREACH OF STATUTORY DUTY OR OTHERWISE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFITS SUFFERED BY THE OTHER PARTY OR ANY OF ITS AFFILIATES, EXCEPT TO THE EXTENT ANY SUCH DAMAGES ARE REQUIRED TO BE PAID TO A THIRD PARTY AS A RESULT OF A CLAIM FOR WHICH A PARTY PROVIDES INDEMNIFICATION UNDER THIS ARTICLE 11. NOTWITHSTANDING ANYTHING EXPRESS OR IMPLIED IN THIS SECTION 13.5(a), A PARTY OR ITS AFFILIATE, AS APPLICABLE, SHALL BE ENTITLED TO RECOVER ALL AMOUNTS ACCRUED AND OWING UNDER THIS AGREEMENT, INCLUDING, WITHOUT LIMITATION, AMOUNTS ACCRUED AND OWING UNDER ARTICLE 3, ARTICLE 5, ARTICLE 6 AND ARTICLE 8.

11.6. Insurance. Each Party shall procure and maintain insurance (which may take the form of self-insurance), including product liability insurance, with respect to its activities hereunder and which are consistent with normal business practices of prudent companies similarly situated at all times during which any Eisai Collaboration Product is being clinically tested in human subjects or commercially distributed or sold. It is understood that such insurance shall not be construed to create a limit of either Party's liability with respect to its indemnification obligations under this ARTICLE 11. Each Party shall provide the other Party with written evidence of such insurance upon request.

11.7. Knowledge Exception. Notwithstanding anything to the contrary set forth in this Agreement, the Parties hereto agree and acknowledge that any Indemnitee may bring a claim for indemnification for any Loss under this ARTICLE 11 even though such Indemnitee had Knowledge of the breach, event or circumstance giving rise to such Loss prior to the Effective Date.

ARTICLE 12

CONFIDENTIALITY

12.1. Duty of Confidence.

(a) Subject to the other provisions of this ARTICLE 12, all Confidential Information disclosed by a Party or its Affiliates under this Agreement will be maintained in confidence and otherwise safeguarded by the recipient Party. The recipient Party may only use the Confidential Information for the purposes of this Agreement and pursuant to the rights granted to the recipient Party under this Agreement. Subject to the other provisions of this ARTICLE 12, each Party shall hold and shall cause its Affiliates to hold as confidential such Confidential Information of the other Party or its Affiliates in the same manner and with the same protection as such recipient Party maintains its own confidential information. Subject to the other provisions of this ARTICLE 12, a recipient Party may only disclose Confidential Information of the other Party to Representatives, sublicensees and subcontractors of the recipient Party and its Affiliates to the extent reasonably necessary for the purposes of, and for those matters undertaken pursuant to, this Agreement; provided that such Persons are bound to maintain the confidentiality of the Confidential Information in a manner consistent with the confidentiality provisions of this Agreement.

(b) Subject to the other provisions of this ARTICLE 12, the existence of this Agreement and the terms and conditions of this Agreement shall be considered Confidential Information of both Parties and each Party shall maintain in confidence and otherwise safeguard such terms and conditions as such in accordance with this ARTICLE 12, except as permitted by Section 7.7.

12.2. Exceptions. The obligations under this ARTICLE 12 shall not apply to any information to the extent the recipient Party can demonstrate by competent evidence that such information:

(a) is (at the time of disclosure) or becomes (after the time of disclosure) known to the public or part of the public domain through no breach of this Agreement by the recipient Party or its Affiliates;

(b) was known to, or was otherwise in the possession of, the recipient Party or its Affiliates prior to the time of disclosure by the disclosing Party or any of its Affiliates;

(c) is disclosed to the recipient Party or an Affiliate on a non-confidential basis by a Third Party who is entitled to disclose it without breaching any confidentiality obligation to the disclosing Party or any of its Affiliates; or

(d) is independently developed by or on behalf of the recipient Party or its Affiliates, as evidenced by its written records, without reference to the Confidential Information disclosed by the disclosing Party or its Affiliates under this Agreement.

Specific aspects or details of Confidential Information shall not be deemed to be within the public domain or in the possession of the recipient Party or its Affiliate merely because the Confidential Information is embraced by more general information in the public domain or in the possession of the recipient Party or its Affiliate. Further, any combination of Confidential Information shall not be considered in the public domain or in the possession of the recipient Party or its Affiliate merely because individual elements of such Confidential Information are in the public domain or in the possession of the recipient Party or its Affiliates unless the combination and its principles are in the public domain or in the possession of the recipient Party or its Affiliate.

12.3. Residual Knowledge Exception. Notwithstanding any provision of this Agreement to the contrary, neither the Eisai Confidential Information nor the Company Confidential Information will include Residual Knowledge. Each Party shall permit the other Party, and any of its Affiliates, to use its Residual Knowledge for any legitimate business purpose; provided, that any such use made by a receiving Party of Residual Knowledge is on an "as is, where is" basis, with all faults and all representations and warranties disclaimed and at its sole risk.

12.4. Authorized Disclosure.

(a) In addition to disclosures allowed under Section 12.2, each Party may disclose Confidential Information belonging to the other Party or its Affiliates solely to the extent such disclosure is necessary in the following instances: (i) filing or prosecuting Patent Rights as permitted by this Agreement; (ii) in connection with Regulatory Filings for Eisai Collaboration Products; (iii) prosecuting or defending litigation as permitted by this Agreement; (iv) complying with Applicable Law or the rules of any stock exchange on which such Party's shares are listed;
(v) Eisai's disclosure of Confidential Information under this Agreement (including Company's Confidential Information) to [***] or [***] to the limited extent required by the [***] and the [***]; or (vi) to the extent otherwise necessary or appropriate in connection with exercising its rights or performing its obligations hereunder, including disclosure to the Phase II/III Criteria Panel pursuant to Section 15.2; provided that Eisai acknowledges that the use of Company's Confidential Information pursuant to subsection (v) shall only be to further the Development and/or Commercialization of the Eisai Collaboration Products under which [***] or [***], as applicable, has rights, as contemplated by this Agreement, and such Confidential Information may not be used in any manner in connection with any other Eisai Collaboration Product under this Agreement or any other products of any Person. Each Party may also disclose Confidential Information belonging to the other Party or its Affiliates to any Person that has agreed in writing that it will hold such information confidential on terms no less favorable than those set forth in this ARTICLE 12 or that is otherwise bound by obligations of professional responsibility to keep such information confidential.

(b) In the event the recipient Party is required to disclose Confidential Information of the disclosing Party by law, applicable court order or governmental regulation or in connection with bona fide legal process, such disclosure shall not be a breach of this Agreement;

provided that the recipient Party (i) informs the disclosing Party as soon as reasonably practicable of the required disclosure; (ii) limits the disclosure to that which is legally required to be disclosed; and (iii) at the disclosing Party's request and expense, assists in an attempt to object to or limit the required disclosure.

12.5. Public Disclosures of Data.

(a) Neither Party nor any of its Affiliates shall, except as may be required by Applicable Law in the reasonable judgment of such Party or its Affiliates and its or their counsel, publicly disclose data or results of Clinical Studies or Nonclinical Studies that have not already been publicly disclosed with respect to any Eisai Collaboration Molecule or Eisai Collaboration Product (whether conducted prior to or during the Term), except as provided in this Section 14.

(b) Scientific and Medical Conferences. All presentations of data and results of Clinical Studies or Nonclinical Studies relating to or arising out of Development activities hereunder at scientific and medical conferences shall be by Eisai pursuant to this Section 12.5(b). Eisai shall provide Company copies of any such presentation sufficiently in advance of the applicable conference to allow Company a reasonable opportunity to review and provide comments on such presentation, which Eisai shall consider in good faith.

(c) Publications. Publications of data and results of Clinical Studies or Nonclinical Studies relating to or arising out of Development activities hereunder in peer- reviewed journals ("**Publications**") shall be made only pursuant to this Section 12.5(c). The Party proposing a Publication shall provide the other Party with the opportunity to review the proposed Publication at least thirty (30) Business Days prior to its intended submission for publication. If the other Party offers no comments on the Publication, the submitting Party may submit the Publication thirty (30) Business Days after it provided the Publication to the reviewing Party (or earlier, with the written consent of the reviewing Party). The submitting Party shall consider the comments of the reviewing Party in good faith. If the Parties are unable to agree upon any aspect of the Publication, including its form, content, timing (including with respect to additional time required for seeking patent protection for inventions disclosed in the Publication), or proposed medium of publication, either Party may refer the dispute to the JSC, which shall resolve the dispute in the best interests of the Development and Commercialization of the Eisai Collaboration Molecules and the Eisai Collaboration Products and in a manner designed to the extent possible to enable each Party to comply with its publication policies. The submitting Party shall provide the other Party a copy of the Publication at the time of the submission. Notwithstanding the foregoing, the JSC shall not have the right to authorize the publication of either Party's Confidential Information without such Party's consent, except that this restriction shall not restrict the JSC from authorizing any publication of any Clinical Study results. Each Party agrees to acknowledge the contributions of the other Party, and the employees of the other Party, in all publications as scientifically appropriate.

12.6. Publicity.

(a) On or after the Effective Date, the Parties shall issue a joint press release relating to this Agreement, in the mutually agreed upon form in **Exhibit 12.6(a)** or other form as mutually agreed by the Parties. Neither Party shall issue any other press release or make any other

public announcement concerning this Agreement, the terms hereof or the Collaboration without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed. The Party preparing any such other press release or public announcement shall provide the other Party with a draft thereof at least [***] Business Days prior to the date on which such Party would like to issue the press release or make the public announcement. Neither Party shall use the name, trademark, trade name, logo or image of the other Party or its Affiliates in any publicity, press release or other public announcement, including on any website or public forum, without the prior written consent of the other Party. In addition, if a Party enters into a sublicense or other agreement with any sublicensee, subcontractor or other Third Party, such Party shall not permit such sublicensee, subcontractor or other Third Party to use the name, trademark, trade name, logo or image of the other Party or its Affiliates in any publicity, press release or other public announcement, including on any website or public forum, without the prior written consent of the other Party.

(b) Notwithstanding the other provisions of this ARTICLE 12, each Party may make any disclosures required of it, including disclosure of the terms of this Agreement, to comply with any duty of disclosure it may have pursuant to Applicable Law or pursuant to the rules of any Governmental Authority (including the SEC) or any recognized stock exchange. In the event of a disclosure required by Applicable Law, Governmental Authority or the rules of any recognized stock exchange, the Parties shall coordinate with each other with respect to the timing, form and content of such required disclosure. If the Parties are unable to agree on the timing, form or content of any required disclosure, such disclosure shall be limited to the minimum required as reasonably determined by the disclosing Party in consultation with its legal counsel. Notwithstanding the foregoing, if so requested by the other Party, the Party subject to such requirement shall use Commercially Reasonable Efforts to obtain an order protecting to the maximum extent possible the confidentiality of the required disclosures, or such portion thereof as reasonably requested by the other Party, including any provisions of this Agreement requested by the other Party to be redacted from any filing with or by the SEC or other Governmental Authority or recognized stock exchange.

ARTICLE 13

TERM AND TERMINATION

13.1. Term. This Agreement shall become effective on the Effective Date and, unless earlier terminated pursuant to this ARTICLE 13, the term of this Agreement (the "Term") shall continue on an Eisai Collaboration Product-by-Eisai Collaboration Product and a country-by- country basis until the earlier of:

(a) the termination of this Agreement with respect to such Eisai Collaboration Product in such country; and

(b) the later of (i) twelve (12) years after the First Commercial Sale of such Eisai Collaboration Product in such country and (ii) the earlier of (1) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Eisai Collaboration Product in such country, (2) the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in such country, or (3) if such country is not a Major Market country or China, the First

Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in the earlier of a Major Market country or China, provided that if the First Commercial Sale of such Eisai Collaboration Product in such country does not occur prior to the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in a Major Market country or China, then there shall be no Term for such Eisai Collaboration Product in such country.

13.2. Termination by Either Party for Breach or Insolvency.

(a) Breach. Either Party (the "**Non-Breaching Party**") may, without prejudice to any other remedies available to it under Applicable Law or in equity, terminate this Agreement and any Commercialization Affiliate may terminate any Commercialization Agreement, in its entirety or with respect to one or more of the Eisai Collaboration Products in one or more of the countries in the Territory, if the other Party or its Commercialization Affiliate (the "**Breaching Party**") shall have materially breached (1) a representation or warranty made by such Party under this Agreement or (2) in the performance of its obligations under this Agreement or any Commercialization Agreement, and in the case of clause (2) such breach shall have continued for ninety (90) days (or, in the case of a payment breach, thirty (30) days) after written notice thereof was provided to the Breaching Party by the Non-Breaching Party, such notice describing the alleged breach. Subject to Section 13.2(b), any such termination of this Agreement under this Section 13.2(a) shall become effective at the end of such ninety (90) day (or thirty (30) day, as applicable) cure period, unless:

(i) the Breaching Party has cured such breach prior to the expiration of such cure period; or

(ii) such breach is not susceptible to cure within such cure period even with the use of Commercially Reasonable Efforts, in which event the Non-Breaching Party's right to termination shall be suspended only if and for so long as (A) the Breaching Party has provided to the Non-Breaching Party a written plan that is reasonably calculated to effect a cure of the applicable breach, (B) such plan is acceptable to the Non-Breaching Party as confirmed in writing, and (C) the Breaching Party commits to and does carry out such plan; provided that, unless otherwise mutually agreed by the Parties, in no event shall such suspension of the Non-Breaching Party's right to terminate extend beyond sixty (60) days after the original cure period.

The Parties acknowledge and agree that, without limiting any other assertion by a Party of a material breach of any representation, warranty or performance under this Agreement or any Commercialization Agreement, any breach of Section 14.3 shall constitute a material breach for purposes of Section 13.2(a); provided, however, that, for the avoidance of doubt, with respect to any such breach of Section 14.3, the breaching Party shall be afforded the opportunity to cure any such breach as provided under this Section 14.2(b)(i).

(b) Disagreement. If the Parties reasonably and in good faith disagree as to whether there has been a material breach, the Party that seeks to dispute that there has been a material breach may contest the allegation in accordance with Section 15.2. The cure period for any allegation made in good faith as to a material breach under this Agreement will, subject to Section 13.2(a) and Section 15.2, run from the date that written notice was first provided to the Breaching Party by the Non-Breaching Party; provided, that such cure period shall be stayed in

the event that during such cure period, the alleged Breaching Party shall have initiated dispute resolution in good faith in accordance with Section 15.2 with respect to the alleged breach, which stay shall last so long as such alleged Breaching Party diligently and in good faith cooperates in the prompt resolution of such dispute resolution proceedings.

(c) Insolvency. Either Eisai or Company may terminate this Agreement without notice if an Insolvency Event occurs in relation to the other Party. In any event, when a Party first becomes aware of the likely occurrence of any Insolvency Event in regard to that Party, such Party shall promptly so notify the other Party in sufficient time to give the other Party sufficient notice to protect such other Party's interests under this Agreement.

13.3. Termination by Either Party for Safety Reasons. Either Party shall have the right, exercisable at any time to terminate this Agreement with respect to an Eisai Collaboration Product if it in good faith believes that it is not advisable for the Parties to continue to Develop or Commercialize such Eisai Collaboration Product from a scientific, regulatory or ethical perspective as a result of a bona fide serious safety issue regarding the use of such Eisai Collaboration Product; provided, that prior to exercising such termination right, such issue and the applicable Party's desire to terminate this Agreement with respect to such Eisai Collaboration Product as a result of such issue shall have been discussed by both the applicable JDC and JSC.

13.4. Termination by either Party for Failure to meet Phase II/III Criteria.

(a) Eisai Collaboration Product containing Molecule BAN2401. Eisai shall provide to Company and the JSC the final BAN2401-201 Clinical Study report for Eisai Collaboration Product containing Molecule BAN2401 promptly after it becomes available. Subject to Sections 13.4(b) and Section 13.7, either Party shall have the right to terminate this Agreement with respect to Eisai Collaboration Product containing Molecule BAN2401 if the Phase II/III Criteria for such Eisai Collaboration Product as set forth on **Exhibit 13.4** have not been met, by providing written notice of termination to the other Party within thirty (30) days after such determination by the JSC or if the JSC cannot agree, such determination by the Phase II/III Criteria Panel pursuant to Section 15.4; provided that the Party's obligations under this Agreement shall continue during the pendency of any such determination pursuant to Section 15.4.

(b) Company Right to Negotiate to Continue. In the event that Eisai elects to terminate a BAN2401 Eisai Collaboration Product under Section 13.4(a), Company shall have a right of first negotiation with Eisai with respect to continuing the Development and Commercialization of such BAN2401 Eisai Collaboration Product on terms to be negotiated, as provided in this Section 13.4(b). Following receipt of notice of termination from Eisai with respect to a BAN2401 Eisai Collaboration Product under Section 13.4(a), Company shall notify Eisai in writing whether it is interested in discussing a potential transaction providing for the continued Development and Commercialization of such BAN2401 Eisai Collaboration Product. If Company fails to exercise such right within a thirty (30) day time period following such notice, this Agreement shall terminate with respect to such BAN2401 Eisai Collaboration Product. If, within such thirty (30) day period after such notice, Company gives Eisai notice of its interest in discussing a potential transaction providing for the continued Development and Commercialization of such BAN2401 Eisai Collaboration Product, the Parties shall enter into negotiations regarding a potential transaction relating to same. If, despite each Party's good faith

efforts, the Parties are not able to reach agreement on and do not execute a definitive agreement within ninety (90) days from the date Company exercises its right under this Section 13.4(b), or such longer periods of time as the Parties may agree in writing, then subject to Section 13.7, Eisai may terminate this Agreement with respect to such BAN2401 Eisai Collaboration Product immediately upon giving further notice of such termination under this Section 13.4(b), and thereafter for a period of nine (9) months Eisai shall not be permitted to enter into an agreement relating to the continued Development and Commercialization of such BAN2401 Eisai Collaboration Product with a Third Party on terms more favorable to such Third Party than the terms last offered by Company.

13.5. Termination by Company.

(a) Termination by Company after Phase III Clinical Study. Eisai shall deliver to Company and the JSC (i) the Final Clinical Study Report for the second Pivotal Clinical Study conducted for the Eisai Collaboration Product or this Agreement that is required for submission for Regulatory Approval for the Eisai Collaboration Product in the Primary Indication promptly after it becomes available, and (ii) written notice of the anticipated publication or presentation date, as applicable, of the publication described in (B) below no later than thirty (30) days prior to such anticipated publication or presentation date, as applicable, such notice affirmatively stating that such publication or presentation is being provided in connection with this Section 13.4(a), and is delivered in accordance with Section 16.3; provided that, if Eisai is in good faith unable to comply with the thirty (30) day notice requirement because the anticipated date of such publication or presentation is not reasonably available to Eisai until a time later than thirty
(30) days prior to such date, then, in such case, Eisai shall provide prompt written notice within three (3) Business Days of such date being available to Eisai. Company shall have the right to terminate this Agreement following the first to occur of (A) five (5) months after the delivery of the Final Clinical Study Report for the second Pivotal Clinical Study in accordance with this Section 13.4(a), or (B) the publication by Eisai of the results of such second Pivotal Clinical Study in a peer-reviewed scientific journal or at a scientific conference, such publication or presentation, as applicable, containing a full disclosure of the efficacy and safety data for such second Pivotal Clinical Study, in the case of (A) or (B) by delivery of a written notice to Eisai within thirty (30) days of such first to occur event that it is exercising such termination right. "**Final Clinical Study Report**" shall mean the final report prepared by Eisai for a Pivotal Clinical Study described in this Section 14.2(c)(ii) summarizing the key data, presented in a summary with tables, listings and figures, of the safety, pharmacokinetics and pharmacodynamics results.

(b) US Termination by Company. Company shall have the right to terminate this Agreement with respect to any or all Eisai Collaboration Products in the United States upon delivery of ninety (90) days' prior written notice if for any period of twelve (12) consecutive calendar months, after the Initial 3 Year Commercialization Period, Follow On 2 Year Commercialization Period or the Eisai Reversion Period, as applicable, or any Subsequent 12 Month Commercialization Period the Commercialization Entities (as defined in the United States Commercialization Agreement) in the United States, taken together, fail to achieve a Collaboration Operating Profit of at least One Dollar ($1.00) with respect to the Eisai Collaboration Product during such year twelve (12) month period**..**

13.6. Effects of Expiration or Termination.

(a) Accrued Obligations; Termination Not Sole Remedy. Except as otherwise expressly provided herein, the expiration or termination of this Agreement for any reason shall not release either Party from any liability or obligation that, at the time of such expiration or termination, has already accrued to the other Party or that is attributable to a period prior to such expiration or termination, nor will any termination of this Agreement preclude either Party from pursuing all rights and remedies it may have under this Agreement, or at law or in equity, with respect to breach of this Agreement prior to such expiration or termination.

(b) Expiration or Termination. Following expiration of the later to occur of the financial obligations of the Parties, on an Eisai Collaboration Product-by-Eisai Collaboration Product and country-by-country basis in the Territory, or the Term, and also upon the earlier termination of this Agreement in its entirety or with respect to one or more Eisai Collaboration Products pursuant to Section 14.2(b)(i), Section 14.2(c)(i) (subject to Section 13.7) Section 14.2(c)(ii) or Section 14.2(c)(iv)(A) throughout the Territory, then with respect to such Eisai Collaboration Products and countries, as applicable:

(i) Each license under Section 7.1 for such Eisai Collaboration Product(s) in such country(ies) in shall terminate;

(ii) Company shall cease its Commercialization activities and any Development activities related to such Eisai Collaboration Product(s) in such country(ies);

(iii) The Parties' rights and obligations under Section 14.3(a) with respect to the applicable type of such Eisai Collaboration Product(s) (*i.e.*, beta-secretase inhibitor and/or anti-amyloid beta antibody) shall terminate, except if a terminating Party terminates this Agreement in its entirety or with respect to one or more Eisai Collaboration Products pursuant to Section 14.2(b)(i), the non-terminating Party's obligations under Section 14.3(a) with respect to the applicable type of such Eisai Collaboration Product(s) shall not terminate;

(iv) No Milestone achieved with respect to such Eisai Collaboration Product(s) after the effective the date of termination for the applicable Eisai Collaboration Product shall give rise to any Milestone Payments by Company;

(v) Section 3.6 shall survive any expiration or termination of this Agreement until the later of the (A) expiration or (B) exercise and consummation of, Eisai's rights to each of the Option Products contemplated by Section 3.6, except if Company terminates this Agreement in its entirety or with respect to one or more Eisai Collaboration Products pursuant to Section 14.2(b)(i);

(vi) If Company terminates this Agreement pursuant to Section 13.2(a), then Company shall (a) sell to Eisai all of its right, title and interest in and to the Eisai Collaboration Products under this Agreement with the effects set forth in this Section 13.6 as the entire consideration for the obligation of Eisai to pay to Company the applicable contingent payment amounts set forth on **Exhibit 13.6(b)(vi)** after any such termination as set forth on **Exhibit 13.6(b)(vi)** and **(b)** for the avoidance of doubt, grant to Eisai such non-exclusive right after such termination as contemplated in Section 7.2.

(vii) Except as set forth in this Section 13.6 and Section 13.9, the rights and obligations of the Parties hereunder solely with respect to such Eisai Collaboration Product(s) in such country(ies)) shall terminate as of the date of such termination; provided that other than in the event of the termination of this Agreement in its entirety, the rights and obligations for any remaining Eisai Collaboration Products and countries under this Agreement shall continue pursuant to the terms of this Agreement.

13.7. Company's Surviving Rights in certain events of Termination. In the event this Agreement is terminated with respect to an Eisai Collaboration Product by Eisai pursuant to Section 14.2(c)(i), and Eisai subsequently elects to resume Clinical Studies, or Commercialization, as applicable, of such Eisai Collaboration Product, then Eisai shall provide Company notice of such resumption in writing, which notice shall include, as applicable, a proposed revised Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget specifying the steps Eisai intends to complete in order to overcome the bona fide serious safety issue (under Section 14.2(c)(i)) or failure to meet the Phase II/III Criteria (under Section 13.4(a)) that triggered the termination of this Agreement with respect to such Eisai Collaboration Product. Company may elect by written notification to Eisai within thirty (30) days from receiving such revised Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget to reinstate this Agreement with respect to the applicable Eisai Collaboration Product on the terms set forth in such modified Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget. If Company elects to reinstate this Agreement, then the Parties shall discuss the further Development or Commercialization of the Eisai Collaboration Product as set forth in such Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget, with the goal of adopting such Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget in a manner consistent with the terms set forth in this Agreement. If the Parties are able to agree upon such Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget (including in each case any modifications thereto as mutually agreed by the Parties) within ninety (90) days from the above written notice from Company to Eisai, this Agreement shall be reinstated with respect to the applicable Eisai Collaboration Product, and the Parties shall Develop and/or Commercialize, as applicable, such Eisai Collaboration Product pursuant to the terms of such Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget. If the Parties are unable to agree upon the Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget or Company otherwise elects not to reinstate this Agreement with respect to the applicable Eisai Collaboration Product, Eisai may proceed with Development or Commercialization of the applicable Eisai Collaboration Product on the terms set forth in the Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget last presented to Company under this Section 13.7. If, within the nine (9) months of when Eisai commences proceeding with such Development under such Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget pursuant to the preceding sentence, as applicable, Eisai desires to modify such Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget in a manner that materially changes the terms of the Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget last presented to Company under this Section 13.7, then Eisai will present such materially

changed Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget, as applicable, to Company and the Parties will discuss such materially changed Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget. Company may elect by written notification to Eisai within thirty (30) days from receiving such materially changed Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget to reinstate this Agreement with respect to the applicable Eisai Collaboration Product on the terms set forth in such materially changed Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget. If Company elects to reinstate this Agreement with respect to the applicable Eisai Collaboration Product, (1) the Parties shall resume joint Development or Commercialization of the applicable Eisai Collaboration Product pursuant to such materially changed Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget, (2) within forty-five (45) days following receipt of an invoice therefor, Company shall reimburse Eisai for Company's share of the Development Costs and/or Commercialization Costs incurred by Eisai in the Commercial Territory under the Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget after the applicable termination and prior to such reinstatement and (3) with respect to any Net Sales of the applicable Eisai Collaboration Product in the Commercial Territory during the period when Eisai was developing such Eisai Collaboration Product under the materially changed Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget after such modification but prior to the effective date of reinstatement of the Agreement with respect to such Eisai Collaboration Product (the "Interim Period"), Eisai shall pay to Company any amounts that Eisai otherwise would have paid to Company pursuant to Section 6.1 during the Interim Period with respect to such Eisai Collaboration Product in order to provide to Company the direct economic benefit it would have received from Eisai during the Interim Period in the Commercial Territory. If Company does not elect to reinstate this Agreement with respect to the applicable Eisai Collaboration Product pursuant to the immediately preceding sentence, Eisai shall thereafter have no obligation to Company with respect to such Eisai Collaboration Product and may Develop or cease Development or Commercialize or cease Commercialization of such Eisai Collaboration Product in its sole discretion with or without a Third Party (provided, however, that any such Development or Commercialization during the nine (9) month period described above will be conducted pursuant to the materially changed Development Plan and Established Overall Budget or Commercialization Plan and Commercialization Plan Budget, as applicable, last presented to Company).

13.8. Rights in Bankruptcy.

(a) All licenses, Commercialization, Manufacturing and Development rights granted under or pursuant to this Agreement are, and will otherwise be deemed to be, for purposes of Section 365(n) of the United States Bankruptcy Code, 11 U.S.C. §§ 101 et seq. (the "**Code**") and any similar laws in any other country in the Territory, licenses of rights to "intellectual property" as defined under Section 101 of the Code. The Parties agree that Company, as licensee of such rights under this Agreement, will retain and may fully exercise all of its protections, rights and elections under the Code and any similar laws in any other country in the Territory. The Parties further agree that, in the event of the commencement of a bankruptcy proceeding by or against Eisai under the Code and any similar laws in any other country in the Territory, Company

will be entitled to a complete duplicate of (or complete access to, as appropriate) any such intellectual property and all embodiments of such intellectual property, and the same, if not already in its possession, will be promptly delivered to it (i) upon any such commencement of a bankruptcy proceeding upon its written request therefor, unless Eisai elects to continue to perform all of its obligations under this Agreement, or (ii) if not delivered under (i) above, upon written request therefor by Company following the rejection of this Agreement by or on behalf of Eisai.

(b) All rights, powers and remedies of Company provided for in this Section 13.8 are in addition to and not in substitution for any and all other rights, powers and remedies now or hereafter existing at law or in equity (including under the Code and any similar laws in any other country in the Territory). In the event of the bankruptcy of Eisai, Company, in addition to the rights, power and remedies expressly provided herein, shall be entitled to exercise all other such rights and powers and resort to all other such remedies as may now or hereafter exist at law or in equity (including under the Code and any similar laws in any other country in the Territory). The Parties agree that they intend the following Company rights to extend to the maximum extent permitted by law, including for purposes of the Code and any similar laws in any other country in the Territory: (i) the right of access to any intellectual property (including all embodiments thereof) of Eisai, or any Third Party with whom Eisai contracts to perform an obligation of Eisai under this Agreement which is necessary for the Development, Manufacture and/or Commercialization of Eisai Collaboration Products in the Territory; (ii) the right to contract directly with any Third Party described in (i) to complete the contracted work; and (iii) the right to cure any breach of or default under any such agreement with a Third Party and set off the costs thereof against amounts payable to Eisai under this Agreement.

13.9. Survival. Notwithstanding anything to the contrary, the following provisions shall survive and continue to apply after expiration or termination of this Agreement in its entirety: ARTICLE 1, Section 6.4, Section 7.2, Section 7.4, Section 8.2(b), Section 8.5, Section 8.6, Section 9.8, Section 9.1, Section 9.2, Section 9.3(a)(i), Section 9.3(b)(i), Section 9.3(c)(i), Section 9.4(b)(i), Section 9.4(b)(iii)(A), Section 9.4(b)(v)(C), Section 10.4, Section 10.1, Section 10.2, Section 11.3, Section 10.5, ARTICLE 11, ARTICLE 12, Section 13.6, Section 13.7, Section 13.8, Section 14.3(a) (to the extent provided in Section 13.6(b)(iii)), Section 15.1, Section 15.3, and ARTICLE 16.

ARTICLE 14

NON-COMPETITION; CHANGE OF CONTROL; STAND STILL

14.1. Non-Competition.

(a) Non-Competition. On an Eisai Collaboration Product-by-Eisai Collaboration Product and country-by-country basis, during the applicable Non-Compete Term, except pursuant to and subject to the provisions of this Agreement, neither Party nor any of their respective Affiliates shall promote, distribute, market or sell any Competing Product in the Territory. Upon the expiration of each Non-Compete Term, either Party may send written notice thereof to the other Party. If such other Party does not dispute or acknowledge in writing such expiration within fifteen (15) Business Days of receiving such written notice, such expiration shall be deemed to have occurred on the date of expiration set forth in the first Party's written notice.

Notwithstanding the foregoing in this Section 14.3(a), each Party shall have the right to Develop a Competing Product during the Non-Compete Term. The Parties shall establish an appropriate firewall to safeguard each Party's Confidential Information such that such Confidential Information is not used in the Development of any Competing Product, including by restricting employees that participate in the Development of a Competing Product from participating in the Development of the Eisai Collaboration Product.

(b) Acknowledgment. Each Party acknowledges that the restrictions contained in this Section 14.3 are reasonable and necessary to protect the legitimate interests of the other Party and constitute a material inducement to the other Party to enter into this Agreement and consummate the transactions contemplated hereby. Each Party acknowledges that any violation of this Section 14.3 will result in irreparable injury to the other Party and agrees that the other Party shall be entitled to specific performance of this Section 14.3 and consent to the entry thereof.

(c) Interpretation. If any provision contained in this Section 14.3 shall for any reason be held invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Section 14.3, but this Section 14.3 shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein. It is the intention of the Parties that if any of the restrictions or covenants contained herein is held to cover a geographic area or to be for a length of time which is not permitted by Applicable Law, or in any way construed to be too broad or to any extent invalid, such provision shall not be construed to be null, void and of no effect, but to the extent such provision would be valid or enforceable under Applicable Law, a court of competent jurisdiction shall construe and interpret or reform this Section 14.3 to provide for a covenant having the maximum enforceable geographic area, time period and other provisions (not greater than those contained herein) as shall be valid and enforceable under such Applicable Law.

(d) Acquisition in Breach of Non-Competition. In the event that a Party or any of its Affiliates enters into a definitive agreement to acquire a Third Party or business (whether by stock or asset acquisition, merger or otherwise), that directly, or indirectly through an Affiliate, is engaged in activities that would, upon consummation of such transaction, result in such Party (the "**Acquiring Party**") being in breach of Section 14.3(a), then such Acquiring Party shall promptly notify the other Party in writing of such event and, shall elect, as promptly as reasonably possible but in no event later than thirty (30) days after the closing date of such definitive agreement (such period, the "**Decision Period**"), to do one of the following within one hundred eighty (180) days after the expiry of the Decision Period (such period, the "**Restricted Period**"):

(i) include the acquired product(s) that are Competing Product(s) thereby causing the Acquiring Party to be in breach of Section 14.3(a) (the "**Restricted Product(s)**") as an "Eisai Collaboration Product(s)" for purposes of the Collaboration and this Agreement after obtaining the written consent of the other Party to so include the Restricted Product(s) as an Eisai Collaboration Product(s), pursuant to which, if the other Party has provided such consent, the Parties shall in good faith mutually agree to (x) a Development Plan and Established Overall Budget, in the case of a Restricted Product under Development at such time in addition to being Commercialized and/or (y) a Commercialization Plan and Commercialization Plan Budget, in each case of (x) and (y), which will govern the Parties' obligations to use

Commercially Reasonable Efforts to Develop and Commercialize such Restricted Product(s) being included as an Eisai Collaboration Product(s) under this Agreement; or

(ii) if the Acquiring Party so elects or the other Party does not provide its consent pursuant to Section 14.1(d)(i), Cease Commercializing such Restricted Product. For the avoidance of doubt, the development, manufacture, use or commercialization of such Restricted Product by the Acquiring Party during the Decision Period and the Restricted Period shall not constitute a breach of Section 14.3(a); provided, however, that during the Decision Period and the Restricted Period, the Acquiring Party shall, upon the request of the other Party, use Commercially Reasonable Efforts to implement "firewalls" and other reasonable measures requested by the other Party to protect the Confidential Information relating to the Eisai Collaboration Product(s) with respect to such Restricted Product that is a Competing Product from being accessed and/or used by Acquiring Party's employees and/or contractors who are engaged in the development, manufacture, use or commercialization of such Restricted Product.

14.2. Acquisition; Change of Control.

(a) Notice. In the event of a Change of Control of a Party (collectively such Party and such Party's Third Party acquirer, the "**Acquired Party**"), the Acquired Party shall notify the other Party (the "**Non-Acquired Party**") of such Change of Control in writing no later than five (5) Business Days after the effective date of such Change of Control (a "**Change of Control Notice**").

(b) Change of Control that is not a Competitive Change of Control.

(i) Election of Non-Acquired Party. In the event of a Change of Control that is **not** a Competitive Change of Control, the Non-Acquired Party may, at any time prior to the three (3)-month anniversary of the effective date of such Change of Control, provide written notice to the Acquired Party that it elects to effect an Operational Separation as defined and described on **Exhibit 14.2** (such notice, an "**Operational Separation Notice**"). An Operational Separation Notice under this Agreement shall also constitute an operational notice of an election to effect an operational separation (as such term is defined in and pursuant to any Option Products Agreements then in effect) with respect to the Option Products. A Non-Acquired Party may not elect to effect an Operational Separation pursuant to this Section 14.2(b)(i) without also electing to effect an operational separation pursuant to any Option Products Agreements then in effect. For the avoidance of doubt, if the Non-Acquired Party has not provided written notice to the Acquired Party that it elects to effect an Operational Separation in accordance with this Section 14.2(b)(i), then this Agreement shall continue in accordance with its terms.

(ii) Effect of Operational Separation Notice.

(A) Company is the Acquired Party. If Eisai has provided a timely Operational Separation Notice as the Non-Acquired Party in accordance with Section 14.2(b)(i), then the Parties shall effect an Operational Separation in accordance with **Exhibit 14.2.**

(B) Eisai is the Acquired Party. If Company has provided a timely Operational Separation Notice in accordance with Section 15.2(a), then, Company, shall, within thirty (30) days of delivery of such Operational Separation Notice, provide notice to Eisai

of its election to effect one of the options described in (i) and (ii) below; provided, that, if Company fails to provide such notice within such thirty (30)-day period, Company shall be deemed to have elected to effect the option described in clause (ii) below:

(1) Terminate this Agreement effective as of the six (6)- month anniversary of the date of the Operational Separation Notice (the "**Separation Date**"), with the effects described in Section 13.6(a) and Section 13.6(b), except that, notwithstanding Section 13.6(b)(vi), Section 3.6 shall not survive such termination; or

(2) Effect an Operational Separation in accordance with

(c) Change of Control that is a Competitive Change of Control.

(i) Election of Non-Acquired Party to Request that Acquired Party Cease Commercializing COC Competing Products. In the event of a Change of Control of a Party that is a Competitive Change of Control, the Non-Acquired Party shall, within thirty (30) days of receiving the Change of Control Notice with respect to such Competitive Change of Control, provide written notice to the Acquired Party of whether such Acquired Party must Cease Commercializing one or more COC Competing Products Controlled by the Acquired Party (such notice, a "**COC Competing Product Termination Notice**"); provided that if the Non-Acquired Party fails to provide such notice within such thirty (30)-day period, the Acquired Party shall have no obligation to Cease Commercializing any such COC Competing Products.

(ii) Election of Acquired Party to Cease Commercializing COC Competing Products. If the Non-Acquired Party has provided a timely COC Competing Product Termination Notice in accordance with Section 14.2(c)(i) that requests that the Acquired Party Cease Commercializing one or more COC Competing Products Controlled by the Acquired Party by the date that is nine (9) months following the applicable Competitive Change of Control (such date, the "**Transition Date**"), then the Acquired Party shall, on or before the thirtieth (30^{th}) day following receipt of such COC Competing Product Termination Notice (the "**Acquired Party Election Date**"), provide written notice to the Non-Acquired Party of whether or not such Acquired Party agrees to Cease Commercializing the applicable COC Competing Products specified in the COC Competing Product Termination Notice; provided that if the Acquired Party fails to provide any such notice by Acquired Party Election Date, the Acquired Party shall be deemed to have decided to continue Commercializing any such COC Competing Products and Section 15.3 shall thereafter apply.

(iii) Acquired Party Determination to Cease Commercializing COC Competing Products. If the Acquired Party provides notice that such Acquired Party shall Cease Commercializing the applicable COC Competing Products on or before the Transition Date pursuant to Section 14.2(c)(ii), then subject to Section 14.2(d), the provisions of Section 15.2(a) shall apply, except that the Non-Acquired Party may provide the Operational Separation Notice at any time within thirty (30) says from the Acquired Party Election Date; provided, however, that during the period prior to the Transition Date, the Acquired Party shall, upon the request of the Non-Acquired Party, use Commercially Reasonable Efforts to implement "firewalls" and other reasonable measures requested by the Non-Acquired Party to protect the Confidential Information

relating to the Eisai Collaboration Product(s) with respect to such COC Competing Products from being accessed and/or used by the Acquired Party's employees and/or contractors who are engaged in the development, manufacture, use or commercialization of such COC Competing Product(s).

(iv) Acquired Party Determination to Continue Commercializing COC Competing Products. If the Acquired Party provides notice that such Party will not Cease Commercializing the applicable COC Competing Products on or before the Transition Date or fails to provide a timely notice with respect thereto, in each case pursuant to Section 14.2(c)(ii), the Non-Acquired Party may elect to effect the options described in (A) and (B) below, as applicable:

(A) Eisai as Non-Acquired Party. If Eisai is the Non-Acquired Party, Eisai may elect, within thirty (30) days of the Acquired Party Election Date, to terminate this Agreement effective as of a date specified by Eisai, which date shall be no later than the six (6)-month anniversary of the date of the applicable Competitive Change of Control (such date, the "**Termination Date**"), with the effects described in Section 13.6(a) and Section 13.6(b);

(B) Company as Non-Acquired Party. If Company is the Non- Acquired Party, Company may elect, within thirty (30) days of the Acquired Party Election Date and upon written notice to Eisai, to effect the one of the options described in (i), (ii), (iii) and (iv) below:

(1) Continue as a Party to the Collaboration pursuant to the terms of this Agreement; or

(2) Terminate this Agreement effective as of a date specified by Company, which date shall be no later than the Termination Date, with the effects described in Section 13.6(a) and Section 13.6(b), except that, notwithstanding Section 13.6(b)(vi), Section 3.6 shall not survive such termination; or

(3) Effect an Operational Separation in accordance with **Exhibit 14.2**; or

(4) With respect to each applicable COC Competing Product, commence a buy/sell process with respect to the corresponding Eisai Buy/Sell Product(s) as described in Section 14.2(d).

(a) Buy/Sell Process. Within thirty (30) days of Company's delivery of a notice to Eisai pursuant to Section 14.2(c)(iv)(B) that Company is commencing a buy/sell process pursuant to Section14.2(c)(iv)(B)(4), Eisai shall provide Company with a single, upfront, non-contingent offer equal to the value of one half of the total value of the applicable Eisai Buy/Sell Product(s) (the "**Collaboration Product Value**"), which Collaboration Product Value shall constitute an irrevocable offer by Eisai to, at Company's election in accordance with this Section 14.2(d), (x) purchase Company's interest and rights in such Eisai Buy/Sell Product(s) from Company for a purchase price equal to the Collaboration Product Value (the "**Purchase Price**"), or (y) sell Eisai's interest and rights in such Eisai Buy/Sell Product(s) to Company for a purchase price equal to the Collaboration Product Value (the "**Sale Price**"), in each case of (x) and (y), in an all cash transaction to be consummated in accordance with this Section 14.2(d). Company shall notify Eisai of its election to either buy Eisai's interest and rights in such Eisai Buy/Sell Product(s)

or sell its interest and rights in such Eisai Buy/Sell Product(s) to Eisai, for the purchase/sale prices determined in accordance with the preceding sentence, within sixty (60) days of receipt of the Collaboration Product Value from Eisai. The closing of the purchase or sale of a Party's interest hereunder sale shall take place within sixty (60) days of Company's election pursuant to the preceding sentence and, at such closing upon the payment by Eisai to Company of the Purchase Price or by Company to Eisai of the Sale Price, in each case made no later than the end of such sixty-(60)-day period, the following shall occur, as applicable:

(i) If Company has elected to have Eisai purchase its interest in the applicable Eisai Buy/Sell Product(s) at the Sale Price, this Agreement shall be terminated as of such closing date solely with respect to such Eisai Buy/Sell Product(s), with the effects described in Section 13.6(a) and Section 13.6(b), except that, notwithstanding Section 13.6(b)(v), Section 3.6 shall not survive such termination.

(ii) If Company has elected to purchase from Eisai its interest in the applicable Eisai Buy/Sell Product(s) at the Sale Price, then

(A) Eisai shall assign to Company all Eisai Patents that are Substantially Related to the applicable Eisai Buy/Sell Product(s) that are at such time owned by Eisai and Company shall grant to Eisai an exclusive, sublicensable license to such Eisai Patents for any and all purposes worldwide, except to Develop, Manufacture, have Manufactured, use, import, Commercialize and have Commercialized in the Field in the Territory such Eisai Buy/Sell Product(s) or any other product Controlled by Company;

(B) Eisai shall grant and be deemed to have granted to Company an exclusive, fully paid, royalty free, freely sublicensable (to the extent permitted by any applicable license of Eisai Technology by Eisai) license or sublicense, as applicable, under its right in all other Eisai Technology to Develop, Manufacture, have Manufactured, use, import, Commercialize and have Commercialized such Eisai Buy/Sell Product(s) in the Field in the Territory (except that Company shall be obligated to pay any amounts that Eisai is obligated to pay to Third Party licensors of the Eisai Technology arising out of Company's or its Affiliates' or sublicensees' practice of the Eisai Technology);

(C) the license under Section 7.2 for such Eisai Buy/Sell Product(s) shall terminate;

(D) Eisai shall cease its Commercialization activities and any Development activities related to such Eisai Buy/Sell Product(s); provided that: (1) in cases where Eisai is undertaking any Clinical Studies and any other Development activities relating to such Eisai Buy/Sell Product(s) that are in progress in any such country(ies) at such time, (x) Company may elect, in its sole discretion, to complete such Clinical Studies and/or other Development activities as it desires, in which event Eisai shall transfer to Company such Clinical Studies and other Development activities, at Company's expense, and (y) to the extent Company does not elect to complete such Clinical Studies and other Development activities, Eisai shall promptly discontinue and wind-down, at Eisai's expense, any such Clinical Studies and other Development activities, and forward all interim and final reports and underlying data from such activities to Company; and (2) to avoid a disruption in the supply of such Eisai Buy/Sell Product(s) to patients,

if such closing occurs after the First Commercial Sale of such Eisai Buy/Sell Product(s) in a country of the Territory, Eisai and its Affiliates, sublicensees and distributors shall continue to distribute (but, for the avoidance of doubt, shall not promote or market unless instructed by Company to do so) such Eisai Buy/Sell Product(s) in each such country in which it is being distributed by Eisai and its Affiliates, sublicensees and distributors prior to such termination, in accordance with the terms and conditions of this Agreement, until the date on which Company notifies Eisai in writing to cease such activities, or any portion thereof, in a given country upon thirty (30) days notice, but in no event for more than twelve (12) months after the effective date of such termination of this Agreement (the "**Wind-down Period**"), it being agreed that, during the Wind-down Period, Eisai's and its Affiliates', sublicensees' and distributors' rights with respect to such Eisai Buy/Sell Product(s) shall be non-exclusive and, without limiting the foregoing, Company shall have the right to engage one or more other distributor(s) and/or licensee(s) of such Eisai Buy/Sell Product(s) in any country(ies);

(E) to the extent Eisai owns any Regulatory Filings or Regulatory Approvals for such Eisai Buy/Sell Product(s), Eisai shall promptly transfer and assign to Company any and all such Regulatory Filings and Regulatory Approvals; provided, however, Eisai shall retain a right of reference to such Regulatory Filings and Regulatory Approvals (1) in Japan for the applicable Eisai Buy/Sell Product to the extent Japan is not included in the Territory under this Agreement and (2) with respect to any Backup Candidates and Backup Products not being transferred to Company under this Section 14.2(d);

(F) the Parties' rights and obligations under Section 14.3(a) with respect to the applicable type of such Eisai Buy/Sell Product(s) (*i.e.*, beta-secretase inhibitor and/or anti-amyloid beta antibody) shall terminate; and

(G) Eisai shall, at it own expense, take any other actions, including with respect to the transfer of Eisai Patents, Eisai Technology, Regulatory Filings and Regulatory Approvals, pursuant to clauses (A), (B) and (D) of this Section 14.2(d)(ii), as applicable, that may be reasonably requested by Company to put Company in ownership (except with respect to those rights licensed to Company as described above) and possession of all rights related to such Eisai Buy/Sell Product(s) being acquired pursuant to this Section 14.2(d). Notwithstanding the foregoing, if Japan is not included in the Territory under this Agreement at the time of the transaction described in this Section 14.2(d), then the provisions described in this paragraph shall not apply with respect to activities or assets of Eisai that are solely related to Japan.

(b) Acquired Party Fails to Cease Commercializing COC Competing Products. Notwithstanding anything to the contrary herein, if the Acquired Party has agreed to Cease Commercializing the applicable COC Competing Products specified in the COC Competing Product Termination Notice pursuant to Section 14.2(c)(iii) and fails to Cease Commercializing the applicable COC Competing Products by the Transition Date, the Non-Acquired Party may elect, as its non-exclusive remedy, to effect the option(s) described in Section 14.2(c)(iv)(A) or Section 14.2(c)(iv)(B) as applicable, in each case to the extent not already effected; provided that

(i) if such Non-Acquired Party elects to terminate this Agreement pursuant to Section 14.2(c)(iv)(A) or 14.2(c)(iv)(B)(2), any such termination shall be effective immediately upon written notice from the Non-Acquired Party to the Acquired Party; and

(ii) if the Non-Acquired Party is Company and Company elects to commence a buy/sell process pursuant to Section 14.2(c)(iv)(B)(4), then the Purchase Price shall be one hundred and twenty-five percent (125%) of the Collaboration Product Value and the Sale Price shall be seventy-five percent (75%) of the Collaboration Product Value.

14.3. Stand-Still.

(a) Certain Restrictions. During the Term, except with the written consent of a Party (the "**Target Party**") (which may be withheld by such Target Party at the sole discretion of its board of directors), neither the other Party nor any of its Affiliates shall: (i) make, effect, initiate, cause or participate in (A) any acquisition of beneficial ownership of any voting securities of the Target Party in excess of five percent (5%) of the total outstanding voting securities of the applicable Target Party at the time of any such acquisition, (B) any acquisition of any material assets of the Target Party's Entities or any material assets of any Affiliate of the Target Party's Entities, (C) any tender offer, exchange offer, merger, business combination, recapitalization, reorganization, restructuring, liquidation, dissolution, demerger (*Kaisha- bunkatsu*) or extraordinary transaction involving the Target Party's Entities or any Affiliate of the Target Party's Entities, or involving any securities of the Target Party's Entities or any securities of any Affiliate of the Target Party's Entities, or (D) any "solicitation" of "proxies" (as those terms are used in Regulation 14A of the Exchange Act) or consents with respect to any securities of the Target Party's Entities or any Affiliate of the Target Party's Entities; (ii) form, join or participate in a "group" (as defined in the Exchange Act and the rules promulgated thereunder) with respect to the beneficial ownership of any securities of the Target Party's Entities or any Affiliate of the Target Party's Entities in excess of the amounts permitted under subclause (i)(A); (iii) act, alone or in concert with others, to seek to control the management, board of directors or policies of the Target Party's Entities or any Affiliate of the Target Party's Entities; (iv) agree or offer to take, or knowingly encourage or propose (publicly or otherwise) the taking of, any action referred to in clause "(i)", "(ii)", or "(iii)" of this sentence; (v) induce or knowingly encourage any other person or entity to take any action of the type referred to in clause "(i)", "(ii)", "(iii)", or "(iv)" of this sentence; or (vi) publicly request or propose that a Target Party's Entities or any Affiliate of a Target Party's Entities amend, waive or consider the amendment or waiver of any provision set forth in this standstill provision.

(b) Exception to Standstill Provisions.

(i) The provisions of Section 14.3 shall cease to apply: (A) if the Target Party's Entities or any Affiliate of the Target Party's Entities publicly announces or otherwise engages in a process designed to solicit offers relating to transactions that, if consummated, would result in (1) a Third Party acquiring beneficial ownership of fifty percent (50%) or more of the outstanding securities of the Target Party's Entities or any Affiliate of the Target Party's Entities, as applicable, immediately after such transaction, (2) a sale of all or substantially all of the consolidated assets of the Target Party's Entities or any Affiliate of the Target Party's Entities, or
(1) a merger, consolidation, demerger (*Kaisha-bunkatsu*) or any similar extraordinary transaction involving the Target Party's Entities or any Affiliate of the Target Party's Entities pursuant to which all or substantially all of the consolidated assets of the Target Party's Entities or any Affiliate of the Target Party's Entities would, after the closing of such transaction, be under the control of a Person that did not, prior to such transaction, control the Target Party's Entities or any Affiliate

of the Target Party's Entities, in each case ((1), (2) and (3)) from the time of such announcement or the commencement of such process and continuing until such time, if any, as the board of directors of the Target Party's Entities or any Affiliate of the Target Party's Entities publicly announces that such process has terminated; or (B) if the board of directors of the Target Party's Entities or any Affiliate of the Target Party's Entities adopts a plan of liquidation or dissolution.

(ii) Notwithstanding Section 14.3(a), (A) in the event a Third Party makes a *bona fide* public offer or proposal that, if consummated, would result in such Third Party, together with its affiliates and other members of any group of which such Third Party is a member, beneficially owning fifty percent (50%) or more of the outstanding shares of the Target Party's Entities or any Affiliate of the Target Party's Entities or all or substantially all of the assets of the Target Party's Entities or any Affiliate of the Target Party's Entities, from the time such offer or proposal is made public and continuing until such offer or proposal expires or is publicly rescinded or (B) from and after the 10th day following the filing of a preliminary proxy statement by any Third Party with respect to the commencement of a *bona fide* proxy or consent solicitation subject to Section 14 of the Exchange Act to elect or remove more than one- half of the directors of the Target Party's Entities or any Affiliate of the Target Party's Entities, then either case ((A) or (B)) during the applicable time frame above the other Party or one of its Affiliates shall have the right to submit a confidential, non-public proposal to the board of directors of the Target Party's Entities or any Affiliate of the Target Party's Entities or any Executive Officer thereof with respect to any transaction of the type referred to in Section 14.3(a)(i), and in connection with such a proposal the other Party or ones of its Affiliates may consult on a confidential basis with Third Party advisors with respect to any such proposal.

(iii) Nothing in Section 14.3(a) shall prohibit the other Party or any of its Affiliates from acquiring beneficial ownership of securities of the Target Party's Entities or any Affiliate of the Target Party's Entities by or through (A) a diversified mutual or pension fund managed by an independent investment adviser or pension plan established for the benefit of the employees of the other Party, (B) any employee benefit plan of the other Party or (C) any stock portfolios not controlled by the other Party that invest in the Target Party's Entities or any Affiliate of the Target Party's Entities among other companies; provided, that the Target Party or any of its Affiliates does not, directly or indirectly, request the trustee or administrator or investment adviser of such fund, plan or portfolio to acquire beneficial ownership of such securities. Further, nothing herein shall prevent the other Party or any of its Affiliates from acquiring securities of another pharmaceutical or biotechnology company or other Person that beneficially owns any securities of the Target Party's Entities or any Affiliate of the Target Party's Entities; provided, that such Person beneficially does not own, at the time of the consummation of such acquisition of securities by the other Party, more than ten percent (10%) of any class of outstanding securities of the Target Party's Entities or any Affiliate of the Target Party's Entities.

ARTICLE 15

GOVERNING LAW; DISPUTE RESOLUTION

15.1. Governing Law. This Agreement shall be governed by and construed and enforced under the laws of Japan, without giving effect to any choice of law rules. The United Nations

Convention on Contracts for the International Sale of Goods (1980) shall not apply to the interpretation of this Agreement.

15.2. Dispute Resolution.

(a) Any dispute or controversy which may arise out of or in connection to this Agreement shall be submitted to the International Chamber of Commerce (the "**ICC**") for resolution by arbitration before three arbitrators (such arbitrators, collectively, the "**Arbitral Tribunal**") under the Arbitration Rules of the ICC in effect as of the date of this Agreement (the "**Arbitration Rules**"), as modified by this Section 15.2. Except as expressly limited by subsection (b)(ii) of this Section 15.2, the Arbitral Tribunal shall have the authority to grant any equitable and legal remedies that would be available in any judicial proceeding instituted to resolve a disputed matter under the substantive laws of Japan.

(b) The number of arbitrators shall be three (3), who shall be selected as follows: each of Eisai, on the one hand, and Company on the other hand, shall nominate one (1) arbitrator. The initiating Party shall nominate its arbitrator in the Request for Arbitration, and the other Party shall nominate its arbitrator in its Answer to the Request for Arbitration (provided, that if the other Party receives an extension of time to submit its Answer, it shall nonetheless nominate its arbitrator on the date its Answer otherwise would have been due under Article 5(1) of the Arbitration Rules), and those Party-nominated arbitrators shall unanimously nominate the third arbitrator, who will act as president of the Arbitral Tribunal (the "**President Arbitrator**"), within sixty (60) days of the appointment of the last Party-nominated arbitrator. Each of the three arbitrators shall be an attorney in good standing licensed to practice for at least fifteen (15) years and with substantial experience representing pharmaceutical companies in disputes or contract negotiations (the "**Qualifications**"); provided that if the Party-nominated arbitrators do not jointly nominate such a President Arbitrator within the sixty (60)-day period, then the ICC Court shall within thirty (30) days after the expiration of that sixty (60)-day period prepare and submit to each of the Party-nominated arbitrators (with copies sent to the Parties) a list of fifteen (15) candidates for nomination as President Arbitrator, each of which candidates shall have the Qualifications. The list shall be accompanied by copies of the candidates' curriculum vitae. Each Party-nominated arbitrator may object to any unacceptable candidates on the list, and shall rank each acceptable candidate in numerical order, with the candidate ranked number 1 being that Party-nominated arbitrator's most preferred candidate, and with any other acceptable candidates listed with ascending numerical ranking thereafter through the last acceptable candidate remaining on the list. The Party-nominated arbitrators may discuss the candidates on the list. Each Party-nominated arbitrator shall return the list to the ICC Court within thirty (30) days after receiving it, reflecting the objected-to candidates and the numerical ranking of the acceptable candidates. The Party- nominated arbitrators shall not exchange their returned lists with each other. The candidate ranked as acceptable on both returned lists with the lowest combined numerical ranking shall be deemed by the ICC Court to be nominated as the President Arbitrator by both Party-nominated arbitrators.

(i) If the two lists returned to the ICC Court by the Party-nominated arbitrators do not contain any candidates ranked as acceptable by both Party-nominated arbitrators, then the ICC Court shall within fourteen (14) days thereafter submit to each of the Party-nominated arbitrators (with copies sent to the Parties) a second list of fifteen (15) candidates for nomination as President Arbitrator, each of which candidates shall have the Qualifications. The list shall be

accompanied by copies of the candidates' curriculum vitae. Each Party-nominated arbitrator may object to any unacceptable candidates on the list, but not to all candidates on the list, and shall rank each acceptable candidate in numerical order, with the candidate ranked number 1 being that Party- nominated arbitrator's most preferred candidate, and with any other acceptable candidates listed in ascending numerical ranking thereafter through the last acceptable candidate remaining on the list. The Party-nominated arbitrators may discuss the candidates on the list. Each Party-nominated arbitrator shall return the list to the ICC Court within fourteen (14) days after receiving it, reflecting the objected-to candidates and the numerical ranking of the acceptable candidates. The Party- nominated arbitrators shall not exchange their returned lists with each other. The candidate ranked as acceptable on both returned lists with the lowest combined numerical ranking shall be deemed by the ICC Court to be nominated as the President Arbitrator by both Party-nominated arbitrators.

(ii) If the two lists returned to the ICC Court by the Party-nominated arbitrators again do not contain any candidates ranked as acceptable by both Party-nominated arbitrators, then the ICC Court shall within seven (7) days thereafter so advise both Party- nominated arbitrators and the Parties, and shall give the Party-nominated arbitrators a final period of ten (10) days within which to determine if they can agree upon a nominee for President Arbitrator, whether from either list submitted to them by the ICC Court, or otherwise. The two Party-nominated arbitrators will, at or before the expiration of that 10-day period, jointly advise the ICC Court either of the name of an agreed-upon nominee for President Arbitrator, or that they have been unable to agree. If they are unable to agree, then the ICC Court shall appoint the President Arbitrator pursuant to the Arbitration Rules, provided that the appointee must have the Qualifications.

(c) The place of arbitration shall be London, United Kingdom. All proceedings involving attendance by the Parties shall be conducted in London, England (unless another location is otherwise agreed to by the parties on one or more occasions), at a suitable venue to be agreed by the Parties and arbitrators. The proceedings shall be conducted in the English language.

(d) The decision and award of the Arbitral Tribunal shall be made by majority decision and shall be final, non-appealable and binding on the Parties hereto and their successors and assigns. The arbitral award shall be accompanied by a reasoned opinion.

(e) The arbitral award may include both pre-and post-award interest, at the per- annum rate of [***] over the then-current U.S. Prime Rate reported in *The Wall Street Journal* or the maximum rate allowable by Applicable Law, whichever is lower.

(f) Without limiting the authority of the Arbitral Tribunal with respect to non- monetary relief, the Arbitral Tribunal shall only have the power to award monetary relief consistent with Section 13.5(a).

(g) The Arbitral Tribunal's final award shall be rendered within the six (6)- month period specified in Article 30(1) of the Arbitration Rules, and any extension thereof pursuant to Article 30(2) of the Arbitration Rules. Notwithstanding any provision of the Arbitration Rules: (i) each Party shall be permitted to (A) serve ten (10), but no more than ten (10), interrogatories on the other Party, (B) take five (5), but no more than five (5), depositions, (C) obtain production of documents from the other Party pursuant to Article 3 of the International Bar

Association Rules on the Taking of Evidence in International Arbitration as current on the date of this Agreement, (D) appoint one (1) or more experts to testify at the hearing, each of whom the appointing Party shall identify to the other Party (by name, address and employer/professional affiliation) and for whom the appointing Party shall provide to the other Party a general statement of the subject matter and opinions to which such expert is expected to testify, and each of whom shall provide a written, dated and signed report, setting forth a complete statement of all opinions the expert will express and the bases and reasons for them, the facts or data considered by the expert in forming the opinions, and including any exhibits that will be used to summarize or support the opinions and a copy of such expert's then- current curriculum vitae, which report shall constitute the direct testimony of such expert at the hearing (it being agreed by the Parties that any such expert shall be made available for examination at the hearing by the other Party and the Arbitral Tribunal), and (E) exchange exhibits and information as provided for in the Arbitration Rules, all of the foregoing on dates and locations to be mutually agreed upon (or, failing such agreement, as the President Arbitrator shall select after hearing from the Parties); and (ii) neither Party shall be required to produce documents or provide information reflecting communications between the Party and its attorney(s) for the purpose of seeking or providing legal advice or prepared by the Party or its attorney(s) (or retained experts or consultants) in anticipation of litigation or arbitration. The Parties will make their respective employees available for depositions (subject to the above limitations) and hearing testimony as reasonably requested by the other Party. Judgment on any arbitral award issued by the Arbitral Tribunal may be entered in any court having competent jurisdiction.

(h) Except as required by Applicable Law, applicable stock exchange rules, or as necessary for recognition and enforcement of the arbitral decision and award, neither a Party nor any of its Affiliates nor an arbitrator may disclose the existence, content or results of any arbitration hereunder without the prior written consent of the Parties. Any documents submitted to or issued by the Arbitration Tribunal shall be kept confidential and shall not be disclosed, except that any such documents may be disclosed (i) as reasonably necessary in connection with any action to enforce or collect the award or (ii) to the extent discoverable or admissible in any action arising out of or in connection with this Agreement.

(i) The fees and expenses of the arbitrators, the Arbitral Tribunal, and the ICC administrative expenses, the fees and expenses of a court reporter, and any expenses for a hearing room, will be shared equally by the Parties. The Parties will otherwise bear their respective expenses (including their respective legal, expert and other fees, expenses and costs) of the arbitration.

15.3. Injunctive Relief; Remedy for Breach of Exclusivity. Nothing in Section 3.1(b) shall limit or effect a Party's exercise of its rights under this Section 15.3. Nothing in this ARTICLE 15 will preclude either Party from applying to any court of competent jurisdiction at any time to (a) enforce the arbitration provisions in Section 15.2 of this Agreement (including with respect to maintaining the confidentiality of any arbitration proceedings and non-public information) or (b) seek equitable relief, including interim, provisional or similar relief (including a temporary restraining order or a preliminary injunction), in each case until the final arbitration award is rendered and any judicial proceedings with respect to such final award have finally been concluded or the matter giving rise to such application has otherwise finally been resolved between the Parties in writing.

15.4. Dispute Relating to Satisfaction of Phase II/III Criteria. If the Senior Officers are unable to mutually agree whether or not a BAN2401 Eisai Collaboration Product has met the applicable Phase II/III Criteria within fifteen (15) days after the JSC's submission of such dispute to such Senior Officers pursuant to Section 3.1(b), then either Party may submit the resolution of such dispute to the Phase II/III Criteria Panel for its conclusion pursuant to this Section 15.4; provided that, the Phase II/III Criteria Panel shall only have the authority to determine whether the Phase II/III Criteria described in paragraph 1) ("Primary endpoint efficacy") or 2) ("Safety") of Exhibit 13.4 have been met. Any such dispute shall be submitted to the applicable Phase II/III Criteria Panel by written notice to the members thereof by either Party, with a copy simultaneously to the other Party, which notice shall state only (without argument) that a dispute has arisen with respect to whether a particular BAN2401 Eisai Collaboration Product has met the applicable Phase II/III Criteria, and enclosing the final Phase II Clinical Study Report for such BAN2401 Eisai Collaboration Product. Each Party may submit a written statement of its respective position on such dispute to the Phase II/III Criteria Panel and to the other Party simultaneously within fifteen
(15) days after a dispute has been submitted to the Phase II/III Criteria Panel, which statement may include any scientific and technical information in support thereof. Each Party shall have five (5) Business Days after receipt of the other Party's submission to submit a written response thereto if it so chooses, which may include any scientific and technical information in support thereof. The Phase II/III Criteria Panel shall have the right to meet with the Parties together, as necessary to reach its conclusion; provided that the failure of either Party to participate in any such meeting shall not delay the Phase II/III Criteria in issuing its conclusion. The Phase II/III Criteria Panel shall base its conclusion upon the final Phase II Clinical Study Report for the applicable BAN2401 Eisai Collaboration Product and the written submissions of the Parties (if any) and meetings (if any) with both Parties pursuant to this Section 15.5. No later than thirty (30) days after the submission of the dispute to the Phase II/III Criteria Panel, or as otherwise agreed in writing by the Parties, the Phase II/III Criteria Panel shall issue its conclusion in writing delivered to both Parties stating whether or not the Phase II/III Criteria have been met with respect to the applicable BAN2401 Eisai Collaboration Product.

ARTICLE 16 MISCELLANEOUS

16.1. Entire Agreement; Amendment; Conflict with Commercialization Agreements. This Agreement, including the Exhibits hereto, and the Commercialization Agreements as forth the complete, final and exclusive agreement and all the covenants, promises, agreements, warranties, representations, conditions and understandings between the Parties with respect to the subject matter hereof and supersedes all prior agreements and understandings between the Parties existing as of the Effective Date with respect to the subject matter hereof, other than the Other Transaction Agreements. There are no covenants, promises, agreements, warranties, representations, conditions or understandings, either oral or written, between the Parties other than as are set forth herein and in the Other Transaction Agreements. No subsequent alteration, amendment, change or addition to this Agreement shall be binding upon the Parties unless reduced to writing and signed by an authorized officer of each Party. In the event of a conflict between this Agreement and any provision of a Commercialization Agreement or any Other Transaction Agreement, the provisions of this Agreement shall control and take precedence.

16.2. Force Majeure. In the event that either Party is prevented from performing its obligations under this Agreement as a result of any contingency beyond its reasonable control ("Force Majeure"), including any actions of Governmental Authorities or agencies, war, terrorism, hostilities between nations, civil commotions, riots, strikes, lockouts, sabotage, shortages in supplies (but only to the extent such shortages are not caused by the nonperforming Party), energy shortages, fire, floods and acts of nature such as typhoons, hurricanes, earthquakes, or tsunamis, the Party so affected shall not be responsible to the other Party for any delay or failure of performance of its obligations hereunder, for so long as Force Majeure prevents such performance. In the event of Force Majeure, the Party immediately affected thereby shall give prompt written notice to the other Party specifying the Force Majeure event complained of, and shall use Commercially Reasonable Efforts to resume performance of its obligations.

16.3. Notices. All notices, consents, waivers, and other communications under this Agreement must be in writing and will be deemed to have been duly given when: (a) delivered by hand (with written confirmation of receipt); (b) sent by fax (with written confirmation of receipt), provided that a copy is immediately sent by an internationally recognized overnight delivery service (receipt requested); or (c) when received by the addressee, if sent by an internationally recognized overnight delivery service (receipt requested), in each case to the appropriate addresses and fax numbers set forth below (or to such other addresses and fax numbers as a Party may designate by notice):

If to Eisai:

Eisai Co., Ltd. Koishikawa 4-6-10 Bunkyo-Ku
Tokyo 112-8088 Japan
Attention: Chief Product Creation Officer Telephone: [***]

Facsimile: [***] with copies to:

Eisai Co., Ltd. Koishikawa 4-6-10 Bunkyo-Ku
Tokyo 112-8088 Japan
Attention: General Counsel Telephone: [***] Facsimile: [***]

and

Eisai Inc.
100 Tice Blvd.

and

Woodcliff Lake, NJ 07677 Attention: CEO
General Counsel Telephone: [***] Facsimile: [***]

King & Spalding LLP 1180 Peachtree Street NE Atlanta, GA 30309 U.S.A.
Attention: John D. Capers, Jr., Esq. Telephone: [***]
Facsimile: [***]

If to Company:

Biogen MA, Inc.
225 Binney Street
Cambridge, MA 02142
Attention: Executive Vice President and General Counsel Facsimile: [***]

with copies to:

Biogen MA, Inc.
225 Binney Street
Cambridge, MA 02142
Attention: Executive Vice President of Corporate Development Facsimile: [***]

and

Cravath, Swaine & Moore LLP 825 Eighth Avenue
New York, NY 10019
Attention: David J. Kappos, Esq. Joel F. Herold, Esq.
Telephone: [***] Facsimile: [***]

16.4. No Construction Against the Drafter; Headings. This Agreement has been prepared jointly. Ambiguities, if any, in this Agreement shall not be construed against any Party, irrespective of which Party may be deemed to have authored the ambiguous provision. The headings of each Article and Section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning.

16.5. Assignment. Neither Party may assign its rights and obligations under this Agreement without the other Party's prior written consent, except that Company may, without Eisai's written consent (a) assign its rights and obligations under this Agreement or any part hereof to one or more of its Affiliates; or (b) assign this Agreement in its entirety to a successor to all or substantially all of its business or assets to which this Agreement relates. Any permitted assignee will assume all obligations of its assignor under this Agreement (or related to the assigned portion in case of a partial assignment). Any attempted assignment in contravention of the foregoing will be void. Subject to the terms of this Agreement, this Agreement will be binding upon and inure to the benefit of the Parties and their respective successors and permitted assigns.

16.6. Performance by Affiliates. Each Party may discharge any obligations and exercise any right hereunder through any of its Affiliates. Each Party hereby guarantees the performance by its Affiliates of such Party's obligations under this Agreement, and shall cause its Affiliates to comply with the provisions of this Agreement in connection with such performance. Any breach by a Party's Affiliate of any of such Party's obligations under this Agreement shall be deemed a breach by such Party, and the other Party may proceed directly against such Party without any obligation to first proceed against such Party's Affiliate. Each Party shall remain primarily liable for any acts or omissions of its Affiliates.

16.7. Further Assurances. Company and Eisai hereby covenant and agree without the necessity of any further consideration, to execute, acknowledge and deliver any and all such other documents and take any such other action as may be reasonably necessary to carry out the intent and purposes of this Agreement, including with respect to each Party's regulatory, Development and Commercialization obligations under this Agreement.

16.8. Compliance with Law. Each Party shall perform its obligations under this Agreement in accordance with all Applicable Law, including cooperation with tax filings as applicable. No Party shall, or shall be required to, undertake any activity under or in connection with this Agreement which violates, or which it believes, in good faith, may violate, any Applicable Law.

16.9. Severability. Subject to Section 14.1(c), should one or more of the provisions of this Agreement become void or unenforceable as a matter of law, then this Agreement shall be construed as if such provision were not contained herein and the remainder of this Agreement shall be in full force and effect, and the Parties will use their Commercially Reasonable Efforts to substitute for the invalid or unenforceable provision a valid and enforceable provision which conforms as nearly as possible with the original intent of the Parties, including, as nearly as possible, the same economic benefit to each Party.

16.10. No Waiver. Any delay in enforcing a Party's rights under this Agreement or any waiver as to a particular default or other matter shall not constitute a waiver of such Party's rights to the future enforcement of its rights under this Agreement, except with respect to an express written and signed waiver relating to a particular matter for a particular period of time.

16.11. Relationship of the Parties. Nothing in this Agreement shall be deemed to constitute a partnership, joint venture or legal entity of any type between Eisai and Company, or to constitute one as the agent of the other, provided, however, that the Parties intend, and hereby

agree, that solely for U.S. tax purposes, the Commercialization activities to be conducted in the Commercialization Territories by the Parties' respective Commercialization Affiliates, as contemplated under this Agreement and the Commercialization Agreements, shall constitute separate partnerships, one each with respect to each of the Commercial Territories. Each Party shall designate an Affiliate, as necessary and appropriate, to serve as a partner in each such partnership, provided, however, that the Party that designates an Affiliate to serve as a partner in such partnership hereby covenants and agrees to assign all of its rights and responsibilities under this Agreement with respect to Commercialization in the United States to such Affiliate and to make available to such Affiliate by transfer, sale, license, lease, or otherwise all assets, resources, capabilities or rights that such Affiliate may require from such Party to conduct such Commercialization in the United States. The Parties agree to cooperate, and to cause their respective Affiliates to cooperate, in good faith with respect to all tax matters that are reasonably necessary to carry out their intent as described in this Section 16.11. The Parties further agree that they do not intend that Development or Manufacturing as contemplated hereby be treated as partnership activities for U.S. federal tax purposes in any way. The Parties agree to cooperate, and to cause their respective Affiliates to cooperate, in good faith in the event of a tax audit or challenge to the Parties' mutual desired tax treatment of the various activities as described herein by any government authority. Nothing in this Agreement shall be construed to give any Party the power or authority to act for, bind, or commit the other. If the Parties are unable to reach agreement on any tax matter that is reasonably necessary to carry out their intent as described in this Section 16.11, then such matter shall be promptly referred to the Senior Officers of the Parties for resolution, but for clarity, no failure of the Parties to reach agreement on any such matter shall be subject to the decision making process described in Section 3.1.

16.12. No Third Party Beneficiary Rights. The provisions of this Agreement are for the sole benefit of the Parties and their successors and permitted assigns, and they shall not be construed as conferring any rights to any Third Party (including any Third Party beneficiary rights), except in the case of ARTICLE 11, Company Indemnitees and Eisai Indemnitees, as applicable.

16.13. English Language. This Agreement is written and executed in the English language. Any translation into any other language shall not be an official version of this Agreement and, in the event of any conflict in interpretation between the English version and such translation, the English version shall prevail.

16.14. Expenses. Except as otherwise expressly provided in this Agreement, each Party shall pay the fees and expenses of its respective lawyers and other experts and all other expenses and costs incurred by such Party incidental to the negotiation, preparation, execution and delivery of this Agreement.

16.15. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

16.16. Effect of This Agreement. This Agreement amends and restates in its entirety the Original Agreement. From and after the Effective Date, the Original Agreement shall have no further force or effect; provided, however, that this Agreement shall not operate to render invalid

or improper any action taken by a Party prior to the Effective Date pursuant to the Original Agreement.

16.17. Mutual Release. Company, on the one hand, and Eisai, on the other hand, on behalf of themselves and for all of their Affiliates, irrevocably and unconditionally release the other, from any and all causes of action or claims for breach of contract, whether known or unknown, which, as of the Effective Date, have arisen or could have arisen out of or relate in any manner to the Original Agreement (including as to Company, any right of termination based upon the Phase II/III Criteria for the E2609 Eisai Collaboration Product); provided, however, this release and waiver shall not release or waive claims to enforce the terms of this Agreement in connection with the Parties' actions from and after the Effective Date, and shall not release any causes of action or claims based on fraud or intentional misrepresentation.

IN WITNESS WHEREOF, the Parties have executed this Agreement in duplicate originals by their duly authorized officers as of the Effective Date.

EISAI CO., LTD.

By: /s/ Haruo Naito Name: Haruo Naito
Title: CEO

BIOGEN MA INC.

By: /s/ Michel Vounatsos Name: Michel Vounatsos
Title: Chief Executive Officer

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IN WITNESS WHEREOF, the Parties have executed this Agreement in duplicate originals by their duly authorized officers as of the Effective Date.

EISAI CO., LTD. **BIOGEN MA INC.**

By:	By:
Name:	Name:
Title:	Title:

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[***]

Exhibit 1(A) Molecule E2609

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[***]

Exhibit 1(B) Molecule BAN2401

Exhibit 1(C) Molecule Anti-Tau

[***]

Exhibit 1(D) Eisai Patents Molecule E2609

[***]

[***]

Exhibit 1(E) Company Patents

Exhibit 1(F) Commercial Territories

- **United States and its territories**
- **Japan**
- **Asia Territory**
- **European Territory**
- **Rest of World Territory**

1. [***]

Exhibit 1(G) Existing Third Party Licenses

Exhibit 1(H) Field

Eisai Collaboration Products containing Molecule E2609: Subject to the Santen Option Agreement solely with respect to the treatment and/or prevention of any ophthalmic disease, disorder or condition in humans, all human and veterinary therapeutic, diagnostic and prophylactic uses.

Eisai Collaboration Products containing Molecule BAN2401: (1) all human and veterinary therapeutic, diagnostic and prophylactic uses for the indication of Alzheimer Disease and (2) (a) any AD related Indications and (b) any Other Indications, in each case ((a) and (b)) solely to the extent any such other indications are added to the Field pursuant to Section 5.10; provided that upon the expiration of all Valid Claims under the [***] (as such term is defined in the [***]), the Field for Eisai Collaboration Products containing Molecule BAN2401 shall be all human and veterinary therapeutic, diagnostic and prophylactic uses.

[***]

Exhibit 1(I)

Form of Quarterly Forecast and Quarterly Report

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Exhibit 2.2(a)(ii)

Form of Development Information Format

Development information of the Company Collaboration Molecule to be shared for review at each scheduled JDC Meeting:

- The Development Plan including any updates
- The regulatory strategy for seeking Regulatory Approvals or health authority guidance including any updates
- Development Costs for the development Program including any updates
- Progress of all Development activities, including clinical and preclinical studies, and related budgets
- Safety reporting in line with pharmacovigilance agreement

Development information of the Company Collaboration Molecule to be shared for review at each scheduled JSC Meeting:

- The overall goals, strategy and progress of the development Plan
- Updates or amendments to THE DEVELOPMENT Plan
- The annual Development Plan Budget
- Regulatory matters relating to significant interactions with PMDA, FDA, EMA, or CFDA, and discussions in advance of any filing for Company Collaboration Molecules.

[***]

Exhibit 3.1(a)(i)

E2609 Eisai Collaboration Product Development Plan

[***]

Exhibit 3.1(a)(ii)

BAN2401 Eisai Collaboration Product Development Plan

[***]

Exhibit 3.1(b)(i)

E2609 Eisai Collaboration Product Established Overall Budget and Development Plan Budget

[***]

Exhibit 3.1(b)(ii)

BAN2401 Eisai Collaboration Product Established Overall Budget and lopment Plan Budget

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Exhibit 3.6(b)(ii)

Basic Terms and Conditions of the Definitive Anti-Tau Agreement for the Anti-Tau Option Product

Pursuant to Section 3.6(b)(ii), no later than three (3) months prior to the end of the Phase I Clinical Study with the Anti-Tau Option Product and the anticipated delivery of the Anti-Tau Updated Schedules, the Parties shall negotiate the terms of a definitive agreement for the co- Development and co-promotion of the Anti-Tau Option Product in accordance with the terms and conditions set forth below (such agreement, the "Definitive Anti-Tau Agreement") and other terms that will mirror the Amended and Restated Collaboration Agreement in all substantive respects with the substitution of the Parties ("Eisai" or "Company") and replacing all references to "Eisai Collaboration Product containing BAN2401" with "Anti-Tau Option Product" in the applicable paragraphs. If Eisai subsequently exercises the Anti-Tau Option during the

Anti-Tau Option Period, Eisai and Company shall enter into the Definitive Anti-Tau Agreement.

Anti-Tau Option Product:	Any pharmaceutical product using or containing Molecule Anti- Tau in any forms, presentations, doses and formulations in the Field
Field:	All human and veterinary therapeutic, diagnostic and prophylactic uses
Territory:	Same as Definitive BIIB037 Agreement
Term:	The term of the Definitive Anti-Tau Agreement will commence upon the execution of the Definitive Anti-Tau Agreement and shall remain in effect on an Anti-Tau Option Product-by-Anti-Tau Option Product and country-by-country basis until the earlier of: (a) the termination of the Definitive Anti-Tau Agreement with respect to such Anti-Tau Option Product in such country, and (b) the later of (i) twelve (12) years after the First Commercial Sale of such Anti-Tau Option Product in such country and (ii) the earlier of (1) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Anti-Tau Option Product in such country or (2) the First Commercial Sale of a Generic Product with respect to the Anti-Tau Option Product in such country or (3) if such country is not the US or a Major European Country, the First Commercial Sale of a Generic Product with respect to the Anti-Tau Option Product in the earlier of Major European Country or the US; provided that if the First Commercial Sale of such Anti-Tau Option Product in such country does not occur prior to the First Commercial Sale of a Generic Product with respect to the Anti- Tau Option Product in a Major European Country or the US, then there shall be no term for the Anti-Tau Option Product in such country.

<table>
<tr><td>Competing Product:</td><td>For the avoidance of doubt, “Competing Product” shall not include any anti-tau product being developed or commercialized by one of the Parties as of the effective date of the Definitive Anti-Tau Agreement.</td></tr>
<tr><td>Intellectual Property:</td><td>Same as BIIB037 Collaboration Agreement entered into by the Parties contemporaneously with the Amended and Restated Collaboration Agreement (“BIIB037 Agreement”)</td></tr>
<tr><td>Governance and Decision Making:</td><td>Same as BIIB037 Agreement</td></tr>
<tr><td>Co-Development:</td><td>Same as BIIB037 Agreement</td></tr>
<tr><td>Development Expense:</td><td>Same as BIIB037 Agreement</td></tr>
<tr><td>Promotion and booking of the sales:</td><td>Same as BIIB037 Agreement</td></tr>
<tr><td>Regulatory Matters:</td><td>Same as BIIB037 Agreement</td></tr>
<tr><td>Manufacture and Supply of Product:</td><td>Same as BIIB037 Agreement</td></tr>
<tr><td>Commercialization:</td><td>Same as BIIB037 Agreement</td></tr>
<tr><td>Pricing:</td><td>Same as BIIB037 Agreement</td></tr>
<tr><td>Consideration</td><td>The consideration for the Anti-Tau Option Product shall be as follows:

Upfront Payment: [***]

Development Milestone Payments:
<table>
<tr><th>Row</th><th>Milestone</th><th>Payment (U.S. Dollars Millions)</th></tr>
<tr><td>1</td><td>[***]</td><td>[***]</td></tr>
<tr><td>2</td><td>[***]</td><td>[***]</td></tr>
<tr><td>3</td><td>[***]</td><td>[***]</td></tr>
<tr><td>4</td><td>[***]</td><td>[***]</td></tr>
<tr><td>5</td><td>[***]</td><td>[***]</td></tr>
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</table>

	6 | [***] | [***] **Collaboration Operating Profit/Loss** Parties to share Collaboration Operation Profit/Loss in accordance with the applicable percentage in the Commercial Territories as set forth in the BIIB037 Agreement
Profit Sharing:	50-50
Booking of Sales:	Same as BIIB037 Agreement
Trademarks:	Same as BIIB037 Agreement
Intellectual Property:	Same as BIIB037 Agreement
Governing Law:	Same as BIIB037 Agreement
Other Provisions:	Same as BIIB037 Agreement

Commercial Milestone Payments

In a given achievement of (i) aggregate Net Sales of Anti- Tau Option Products, in each case in the Territory in the Field, where such total sum first equals or exceeds:	**Payment (U.S. Dollars Millions)**
[***]	[***]
[***]	[***]
[***]	[***]

Exhibit 3.7(b)

Milestone Payments for Backup Products

The following Milestone Payments shall apply with respect to each Backup Product that is included in the definition of Eisai Collaboration Product pursuant to Section 3.7(b):

Milestone	Payment (U.S. Dollars Millions)
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]

Exhibit 3.7(d)

Milestone Payments for the first Backup Candidate that becomes a Backup Product

The following Milestone Payments shall apply with respect to a Backup Product that is included in the definition of Eisai Collaboration Product pursuant to Section 3.7(d):

Milestone	Payment (U.S. Dollars Millions)
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]

Commercial Milestone Payments: Biogen shall pay to Eisai any unpaid Commercial Sales Milestones set forth in Section 8.1(b) upon achievement in a given Calendar Year of the applicable Net Sales Milestone with respect to aggregate Net Sales of the applicable Backup Product instead of aggregate Net Sales of Eisai Collaboration Products containing Molecule E2609 in Section 8.2(b).

Exhibit 5.3

Global Branding Strategy

The Global Branding Strategy for each Eisai Collaboration Product shall include policies on at least the following elements:

- Brand Colors
- Logos
- Trademark/Tradename
- “Look and Feel”
- Similar Trade Dress
- typography (name)
- packaging design

Exhibit 7.7

Obligations under Existing Third Party Licenses

[***]

Exhibit 8.1(a)

Form of Commercialization Agreement

COMMERCIALIZATION AGREEMENT

This **COMMERCIALIZATION AGREEMENT** (this "**Agreement**") is entered into as of October 22, 2017 (the "**Effective Date**") by and between **EISAI CO., LTD.**, a Japanese corporation having its principal place of business at 4-6-10, Koishikwa, Bunkyo-ku Tokyo 112- 8088, Japan ("**Eisai Commercialization Entity**" or "**Eisai**") and **BIOGEN INTERNATIONAL GMBH**, a Swiss corporation having its principal place of business at Landis & Gyr-Strasse 3, 6300 Zug, Switzerland ("**Biogen Commercialization Entity**"). Eisai Commercialization Entity and Biogen Commercialization Entity are sometimes referred to herein individually as a "**Commercialization Entity**" and collectively as the "**Commercialization Entities**".

Capitalized terms used but not otherwise defined herein shall have the meaning ascribed to them in that certain Amended and Restated Collaboration Agreement (the "**Collaboration Agreement**"), dated as of October 22, 2017, by and between Eisai and BIOGEN MA INC., a Massachusetts corporation having its principal place of business at 225 Binney Street, Cambridge, MA 02142 ("**Biogen**").

WHEREAS, concurrently with the execution and delivery of this Agreement, Eisai and Biogen have entered into the Collaboration Agreement pursuant to which the Commercialization Entities shall enter into this Agreement to share the Collaboration Operating Profit/Loss in Japan (the "**Applicable Commercial Territory**");

NOW, THEREFORE, in consideration of the foregoing and the mutual promises, covenants and conditions contained in this Agreement, the Commercialization Entities agree as follows:

ARTICLE 1

FINANCIAL TERMS

1.1. Profit Sharing.

(a) The Commercialization Entities shall share the Collaboration Operating Profit/Loss in the Applicable Commercial Territory on an Eisai Collaboration Product-by-Eisai Collaboration Product basis as set forth below:

Commercial Territory	**Biogen Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**	**Eisai Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**
Japan	50%	50%

(b) Promptly, and in any event, no later than fifteen (15) days following the exchange of Quarterly Reports and any supporting documentation pursuant to Section 8.1(b) of the Collaboration Agreement, Eisai Commercialization Entity shall submit to Biogen Commercialization Entity a report in the form of Exhibit A hereto setting forth the calculation of

the net amount a Commercialization Entity shall pay to the other Commercialization Entity to result in the sharing of Collaboration Operating Profit/Loss in the Applicable Commercial Territory for the period commencing on the Effective Date and ending on the last day of the Calendar Quarter to which such Quarterly Reports relate with respect to each Eisai Collaboration Product, which calculation shall give effect to the proportions described in Section 1.1(a) (a "**Profit Sharing Calculation Report**"). Eisai Commercialization Entity shall then either (i) submit an invoice for any such net amount to Biogen Commercialization Entity if a payment is due to Eisai Commercialization Entity, and within forty-five (45) days after receipt of such invoice Biogen Commercialization Entity shall make such payment to Eisai Commercialization Entity or
(ii) within forty-five (45) days after delivery of a Profit Sharing Calculation Report make a payment to Biogen Commercialization Entity in the amount set forth in a Profit Sharing Calculation Report if a payment is due to Biogen Commercialization Entity. No Commercialization Entity shall reduce (by netting, set-off or otherwise) any amount payable by such Commercialization Entity in respect of the Applicable Commercial Territory pursuant to this Section 1.1(b) by any amount that may be payable to such Commercialization Entity pursuant to this Section 1.1(b) or otherwise pursuant to this Agreement.

1.2. Payment Terms.

(a) Form of Payment; Currency. All payments due hereunder shall be made by wire transfer in Japanese Yen in immediately available funds to the credit of such bank account as may be designated by the Commercialization Entity to which such payment is due in this Agreement or in writing due hereunder. Any payment which falls due on a date which is not a Business Day may be made on the next succeeding Business Day.

(b) Late Payments. If a Commercialization Entity does not receive payment of any sum due to it on or before the due date therefor, interest shall thereafter accrue on the sum due to the Commercialization Entity from the due date until the date of payment at the per annum rate equal to the lesser of (i) the rate announced by Bank of America (or its successor) as its prime rate in effect on the date that such payment would have been first due plus one percent (1%) or (ii) the maximum rate permissible under Applicable Law.

1.3. Accounting Principles; Calculations. All Commercialization Costs will be calculated based on the principles set forth on Exhibit 8.8 of the Collaboration Agreement.

ARTICLE 2 REPRESENTATIONS AND WARRANTIES

2.1. Mutual Representations and Warranties. Each Commercialization Entity hereby represents and warrants to the other Commercialization Entity as of the Effective Date as follows:

(a) Corporate Existence and Power. It is a corporation duly organized, validly existing, and in good standing under the laws of the jurisdiction in which it is incorporated, and has full corporate power and authority and the legal right to own and operate its property and assets and to carry on its business as it is now being conducted and as contemplated in this Agreement.

(b) Authority and Binding Agreement. (i) It has the corporate power and authority and the legal right to enter into this Agreement and perform its obligations hereunder;
(ii) it has taken all necessary corporate action on its part required to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder and (iii) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, and binding obligation of such Party that is enforceable against it in accordance with its terms.

(c) No Conflict. It is not a party to any agreement or commitment that would prevent it from granting the rights granted or intended to be granted to the other Party under this Agreement or performing its obligations under this Agreement.

(d) No Debarment. Neither such Commercialization Entity nor any Affiliate thereof is debarred, has been convicted, or is subject to debarment or conviction pursuant to Section 306 of the FD&C Act.

ARTICLE 3 GOVERNING LAW; MISCELLANEOUS

3.1. Governing Law. This Agreement shall be governed by and construed and enforced under the laws of the State of Delaware, without giving effect to any choice of law rules. The United Nations Convention on Contracts for the International Sale of Goods (1980) shall not apply to the interpretation of this Agreement.

3.2. Termination. This Agreement may be terminated by a Commercialization Entity to the extent permitted by Section 13.2 of the Collaboration Agreement. Unless earlier terminated, the term of this Agreement shall continue on an Eisai Collaboration Product-by-Eisai Collaboration Product and a country-by-country basis with respect to the Applicable Commercial Territory until the earlier of:

(a) the termination of this Agreement with respect to such Eisai Collaboration Product in such country;

(b) the later of (i) twelve (12) years after the First Commercial Sale of such Eisai Collaboration Product in such country and (ii) the earlier of (1) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Eisai Collaboration Product in such country,
(2) the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in such country, or (3) if such country is not a Major Market country or China, the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in the earlier of a Major Market country or China, provided that if the First Commercial Sale of such Eisai Collaboration Product in such country does not occur prior to the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in a Major Market country or China, then there shall be no Term for such Eisai Collaboration Product in such country; and

(c) the termination of the Collaboration Agreement in its entirety.

3.3. Incorporation of Miscellaneous Provisions. This Agreement shall be subject to the provisions set forth in Article 16 of the Collaboration Agreement (the provisions of which are hereby incorporated, *mutatis mutandis*).

[*Remainder of Page Left Intentionally Blank*]

IN WITNESS WHEREOF, the Commercialization Entities have executed this Agreement in duplicate originals by their duly authorized officers as of the Effective Date.

[●]	[●]
By:	By:
Name:	Name:
Title:	Title:

EXHIBIT A

Form of Profit Sharing Calculation Reports

[***]

COMMERCIALIZATION AGREEMENT

This **COMMERCIALIZATION AGREEMENT** (this "**Agreement**") is entered into as of October 22, 2017 (the "**Effective Date**") by and between **EISAI CO., LTD.**, a Japanese corporation having its principal place of business at 4-6-10, Koishikwa, Bunkyo-ku Tokyo 112- 8088, Japan ("**Eisai Commercialization Entity**" or "**Eisai**") and **BIOGEN INTERNATIONAL GMBH**, a Swiss corporation having its principal place of business at Landis & Gyr-Strasse 3, 6300 Zug, Switzerland ("**Biogen Commercialization Entity**"). Eisai Commercialization Entity and Biogen Commercialization Entity are sometimes referred to herein individually as a "**Commercialization Entity**" and collectively as the "**Commercialization Entities**".

Capitalized terms used but not otherwise defined herein shall have the meaning ascribed to them in that certain Amended and Restated Collaboration Agreement (the "**Collaboration Agreement**"), dated as of October 22, 2017, by and between Eisai and BIOGEN MA INC., a Massachusetts corporation having its principal place of business at 225 Binney Street, Cambridge, MA 02142 ("**Biogen**").

WHEREAS, concurrently with the execution and delivery of this Agreement, Eisai and Biogen have entered into the Collaboration Agreement pursuant to which the Commercialization Entities shall enter into this Agreement to share the Collaboration Operating Profit/Loss in the Asia Territory (the "**Applicable Commercial Territory**");

NOW, THEREFORE, in consideration of the foregoing and the mutual promises, covenants and conditions contained in this Agreement, the Commercialization Entities agree as follows:

ARTICLE 1

FINANCIAL TERMS

1.1. Profit Sharing.

(a) The Commercialization Entities shall share the Collaboration Operating Profit/Loss in the Applicable Commercial Territory on an Eisai Collaboration Product-by-Eisai Collaboration Product basis as set forth below:

Commercial Territory	**Biogen Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**	**Eisai Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**
Asia Territory	50%	50%

(b) Promptly, and in any event, no later than fifteen (15) days following the exchange of Quarterly Reports and any supporting documentation pursuant to Section 8.1(b) of the Collaboration Agreement, Eisai Commercialization Entity shall submit to Biogen Commercialization Entity a report in the form of Exhibit A hereto setting forth the calculation of

the net amount a Commercialization Entity shall pay to the other Commercialization Entity to result in the sharing of Collaboration Operating Profit/Loss in the Applicable Commercial Territory for the period commencing on the Effective Date and ending on the last day of the Calendar Quarter to which such Quarterly Reports relate with respect to each Eisai Collaboration Product, which calculation shall give effect to the proportions described in Section 1.1(a) (a "**Profit Sharing Calculation Report**"). Eisai Commercialization Entity shall then either (i) submit an invoice for any such net amount to Biogen Commercialization Entity if a payment is due to Eisai Commercialization Entity, and within forty-five (45) days after receipt of such invoice Biogen Commercialization Entity shall make such payment to Eisai Commercialization Entity or
(ii) within forty-five (45) days after delivery of a Profit Sharing Calculation Report make a payment to Biogen Commercialization Entity in the amount set forth in a Profit Sharing Calculation Report if a payment is due to Biogen Commercialization Entity. No Commercialization Entity shall reduce (by netting, set-off or otherwise) any amount payable by such Commercialization Entity in respect of the Applicable Commercial Territory pursuant to this Section 1.1(b) by any amount that may be payable to such Commercialization Entity pursuant to this Section 1.1(b) or otherwise pursuant to this Agreement.

1.2. Payment Terms.

(a) Form of Payment; Currency. All payments due hereunder shall be made by wire transfer in U.S. Dollars in immediately available funds to the credit of such bank account as may be designated by the Commercialization Entity to which such payment is due in this Agreement or in writing due hereunder. Any payment which falls due on a date which is not a Business Day may be made on the next succeeding Business Day.

(b) Late Payments. If a Commercialization Entity does not receive payment of any sum due to it on or before the due date therefor, interest shall thereafter accrue on the sum due to the Commercialization Entity from the due date until the date of payment at the per annum rate equal to the lesser of (i) the rate announced by Bank of America (or its successor) as its prime rate in effect on the date that such payment would have been first due plus one percent (1%) or (ii) the maximum rate permissible under Applicable Law.

1.3. Accounting Principles; Calculations. All Commercialization Costs will be calculated based on the principles set forth on Exhibit 8.8 of the Collaboration Agreement.

ARTICLE 2 REPRESENTATIONS AND WARRANTIES

2.1. Mutual Representations and Warranties. Each Commercialization Entity hereby represents and warrants to the other Commercialization Entity as of the Effective Date as follows:

(a) Corporate Existence and Power. It is a corporation duly organized, validly existing, and in good standing under the laws of the jurisdiction in which it is incorporated, and has full corporate power and authority and the legal right to own and operate its property and assets and to carry on its business as it is now being conducted and as contemplated in this Agreement.

(b) Authority and Binding Agreement. (i) It has the corporate power and authority and the legal right to enter into this Agreement and perform its obligations hereunder;
(ii) it has taken all necessary corporate action on its part required to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder and (iii) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, and binding obligation of such Party that is enforceable against it in accordance with its terms.

(c) No Conflict. It is not a party to any agreement or commitment that would prevent it from granting the rights granted or intended to be granted to the other Party under this Agreement or performing its obligations under this Agreement.

(d) No Debarment. Neither such Commercialization Entity nor any Affiliate thereof is debarred, has been convicted, or is subject to debarment or conviction pursuant to Section 306 of the FD&C Act.

ARTICLE 3 GOVERNING LAW; MISCELLANEOUS

3.1. Governing Law. This Agreement shall be governed by and construed and enforced under the laws of the State of Delaware, without giving effect to any choice of law rules. The United Nations Convention on Contracts for the International Sale of Goods (1980) shall not apply to the interpretation of this Agreement.

3.2. Termination. This Agreement may be terminated by a Commercialization Entity to the extent permitted by Section 13.2 of the Collaboration Agreement. Unless earlier terminated, the term of this Agreement shall continue on an Eisai Collaboration Product-by-Eisai Collaboration Product and a country-by-country basis with respect to the Applicable Commercial Territory until the earlier of:

(a) the termination of this Agreement with respect to such Eisai Collaboration Product in such country;

(b) the later of (i) twelve (12) years after the First Commercial Sale of such Eisai Collaboration Product in such country and (ii) the earlier of (1) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Eisai Collaboration Product in such country,
(2) the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in such country, or (3) if such country is not a Major Market country or China, the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in the earlier of a Major Market country or China, provided that if the First Commercial Sale of such Eisai Collaboration Product in such country does not occur prior to the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in a Major Market country or China, then there shall be no Term for such Eisai Collaboration Product in such country; and

(c) the termination of the Collaboration Agreement in its entirety.

3.3. Incorporation of Miscellaneous Provisions. This Agreement shall be subject to the provisions set forth in Article 16 of the Collaboration Agreement (the provisions of which are hereby incorporated, *mutatis mutandis*).

[*Remainder of Page Left Intentionally Blank*]

IN WITNESS WHEREOF, the Commercialization Entities have executed this Agreement in duplicate originals by their duly authorized officers as of the Effective Date.

[●]	[●]
By:	By:
Name:	Name:
Title:	Title:

EXHIBIT A

Form of Profit Sharing Calculation Reports

[***]

COMMERCIALIZATION AGREEMENT

This **COMMERCIALIZATION AGREEMENT** (this "**Agreement**") is entered into as of October 22, 2017 (the "**Effective Date**") by and between **EISAI CO., LTD.**, a Japanese corporation having its principal place of business at 4-6-10, Koishikwa, Bunkyo-ku Tokyo 112- 8088, Japan ("**Eisai Commercialization Entity**" or "**Eisai**") and **BIOGEN INTERNATIONAL GMBH**, a Swiss corporation having its principal place of business at Landis & Gyr-Strasse 3, 6300 Zug, Switzerland ("**Biogen Commercialization Entity**"). Eisai Commercialization Entity and Biogen Commercialization Entity are sometimes referred to herein individually as a "**Commercialization Entity**" and collectively as the "**Commercialization Entities**".

Capitalized terms used but not otherwise defined herein shall have the meaning ascribed to them in that certain Amended and Restated Collaboration Agreement (the "**Collaboration Agreement**"), dated as of October 22, 2017, by and between Eisai and BIOGEN MA INC., a Massachusetts corporation having its principal place of business at 225 Binney Street, Cambridge, MA 02142 ("**Biogen**").

WHEREAS, concurrently with the execution and delivery of this Agreement, Eisai and Biogen have entered into the Collaboration Agreement pursuant to which the Commercialization Entities shall enter into this Agreement to share the Collaboration Operating Profit/Loss in the Rest of World Territory (the "**Applicable Commercial Territory**");

NOW, THEREFORE, in consideration of the foregoing and the mutual promises, covenants and conditions contained in this Agreement, the Commercialization Entities agree as follows:

ARTICLE 1

FINANCIAL TERMS

1.1. Profit Sharing.

(a) The Commercialization Entities shall share the Collaboration Operating Profit/Loss in the Applicable Commercial Territory on an Eisai Collaboration Product-by-Eisai Collaboration Product basis as set forth below:

Commercial Territory	**Biogen Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**	**Eisai Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**
Rest of World Territory	50%	50%

(b) Promptly, and in any event, no later than fifteen (15) days following the exchange of Quarterly Reports and any supporting documentation pursuant to Section 8.1(b) of the Collaboration Agreement, Eisai Commercialization Entity shall submit to Biogen Commercialization Entity a report in the form of Exhibit A hereto setting forth the calculation of

the net amount a Commercialization Entity shall pay to the other Commercialization Entity to result in the sharing of Collaboration Operating Profit/Loss in the Applicable Commercial Territory for the period commencing on the Effective Date and ending on the last day of the Calendar Quarter to which such Quarterly Reports relate with respect to each Eisai Collaboration Product, which calculation shall give effect to the proportions described in Section 1.1(a) (a "**Profit Sharing Calculation Report**"). Eisai Commercialization Entity shall then either (i) submit an invoice for any such net amount to Biogen Commercialization Entity if a payment is due to Eisai Commercialization Entity, and within forty-five (45) days after receipt of such invoice Biogen Commercialization Entity shall make such payment to Eisai Commercialization Entity or
(ii) within forty-five (45) days after delivery of a Profit Sharing Calculation Report make a payment to Biogen Commercialization Entity in the amount set forth in a Profit Sharing Calculation Report if a payment is due to Biogen Commercialization Entity. No Commercialization Entity shall reduce (by netting, set-off or otherwise) any amount payable by such Commercialization Entity in respect of the Applicable Commercial Territory pursuant to this Section 1.1(b) by any amount that may be payable to such Commercialization Entity pursuant to this Section 1.1(b) or otherwise pursuant to this Agreement.

1.2. Payment Terms.

(a) Form of Payment; Currency. All payments due hereunder shall be made by wire transfer in U.S. Dollars in immediately available funds to the credit of such bank account as may be designated by the Commercialization Entity to which such payment is due in this Agreement or in writing due hereunder. Any payment which falls due on a date which is not a Business Day may be made on the next succeeding Business Day.

(b) Late Payments. If a Commercialization Entity does not receive payment of any sum due to it on or before the due date therefor, interest shall thereafter accrue on the sum due to the Commercialization Entity from the due date until the date of payment at the per annum rate equal to the lesser of (i) the rate announced by Bank of America (or its successor) as its prime rate in effect on the date that such payment would have been first due plus one percent (1%) or (ii) the maximum rate permissible under Applicable Law.

1.3. Accounting Principles; Calculations. All Commercialization Costs will be calculated based on the principles set forth on Exhibit 8.8 of the Collaboration Agreement.

ARTICLE 2 REPRESENTATIONS AND WARRANTIES

2.1. Mutual Representations and Warranties. Each Commercialization Entity hereby represents and warrants to the other Commercialization Entity as of the Effective Date as follows:

(a) Corporate Existence and Power. It is a corporation duly organized, validly existing, and in good standing under the laws of the jurisdiction in which it is incorporated, and has full corporate power and authority and the legal right to own and operate its property and assets and to carry on its business as it is now being conducted and as contemplated in this Agreement.

(b) Authority and Binding Agreement. (i) It has the corporate power and authority and the legal right to enter into this Agreement and perform its obligations hereunder;
(ii) it has taken all necessary corporate action on its part required to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder and (iii) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, and binding obligation of such Party that is enforceable against it in accordance with its terms.

(c) No Conflict. It is not a party to any agreement or commitment that would prevent it from granting the rights granted or intended to be granted to the other Party under this Agreement or performing its obligations under this Agreement.

(d) No Debarment. Neither such Commercialization Entity nor any Affiliate thereof is debarred, has been convicted, or is subject to debarment or conviction pursuant to Section 306 of the FD&C Act.

ARTICLE 3 GOVERNING LAW; MISCELLANEOUS

3.1. Governing Law. This Agreement shall be governed by and construed and enforced under the laws of the State of Delaware, without giving effect to any choice of law rules. The United Nations Convention on Contracts for the International Sale of Goods (1980) shall not apply to the interpretation of this Agreement.

3.2. Termination. This Agreement may be terminated by a Commercialization Entity to the extent permitted by Section 13.2 of the Collaboration Agreement. Unless earlier terminated, the term of this Agreement shall continue on an Eisai Collaboration Product-by-Eisai Collaboration Product and a country-by-country basis with respect to the Applicable Commercial Territory until the earlier of:

(a) the termination of this Agreement with respect to such Eisai Collaboration Product in such country;

(b) the later of (i) twelve (12) years after the First Commercial Sale of such Eisai Collaboration Product in such country and (ii) the earlier of (1) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Eisai Collaboration Product in such country,
(2) the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in such country, or (3) if such country is not a Major Market country or China, the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in the earlier of a Major Market country or China, provided that if the First Commercial Sale of such Eisai Collaboration Product in such country does not occur prior to the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in a Major Market country or China, then there shall be no Term for such Eisai Collaboration Product in such country; and

(c) the termination of the Collaboration Agreement in its entirety.

3.3. Incorporation of Miscellaneous Provisions. This Agreement shall be subject to the provisions set forth in Article 16 of the Collaboration Agreement (the provisions of which are hereby incorporated, *mutatis mutandis*).

[*Remainder of Page Left Intentionally Blank*]

IN WITNESS WHEREOF, the Commercialization Entities have executed this Agreement in duplicate originals by their duly authorized officers as of the Effective Date.

[●]	[●]
By:	By:
Name:	Name:
Title:	Title:

EXHIBIT A

Form of Profit Sharing Calculation Reports

[***]

COMMERCIALIZATION AGREEMENT

This **COMMERCIALIZATION AGREEMENT** (this "**Agreement**") is entered into as of October 22, 2017 (the "**Effective Date**") by and between EISAI EUROPEAN LIMITED, a company incorporated under the laws of England and Wales having its principal place of business at European Knowledge Centre, Mosquito Way, Hatfield, Hertfordshire AL10 9SN, U.K. ("**Eisai Commercialization Entity**") and **BIOGEN INTERNATIONAL GMBH**, a Swiss corporation having its principal place of business at Landis & Gyr-Strasse 3, 6300 Zug, Switzerland ("**Biogen Commercialization Entity**"). Eisai Commercialization Entity and Biogen Commercialization Entity are sometimes referred to herein individually as a "**Commercialization Entity**" and collectively as the "**Commercialization Entities**".

Capitalized terms used but not otherwise defined herein shall have the meaning ascribed to them in that certain Amended and Restated Collaboration Agreement (the "**Collaboration Agreement**"), dated as of October 22, 2017, by and between **EISAI CO., LTD.**, a Japanese corporation having its principal place of business at 4-6-10, Koishikwa, Bunkyo-ku Tokyo 112- 8088, Japan ("**Eisai**"), and BIOGEN MA INC., a Massachusetts corporation having its principal place of business at 225 Binney Street, Cambridge, MA 02142 ("**Biogen**").

WHEREAS, concurrently with the execution and delivery of this Agreement, Eisai and Biogen have entered into the Collaboration Agreement pursuant to which the Commercialization Entities shall enter into this Agreement to share the Collaboration Operating Profit/Loss in the European Territory (the "**Applicable Commercial Territory**");

NOW, THEREFORE, in consideration of the foregoing and the mutual promises, covenants and conditions contained in this Agreement, the Commercialization Entities agree as follows:

ARTICLE 1

FINANCIAL TERMS

1.1. Profit Sharing.

(a) The Commercialization Entities shall share the Collaboration Operating Profit/Loss in the Applicable Commercial Territory on an Eisai Collaboration Product-by-Eisai Collaboration Product basis as set forth below:

Commercial Territory	**Biogen Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**	**Eisai Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**
European Territory	50%	50%

(b) Promptly, and in any event, no later than fifteen (15) days following the exchange of Quarterly Reports and any supporting documentation pursuant to Section 8.1(b) of

the Collaboration Agreement, Eisai Commercialization Entity shall submit to Biogen Commercialization Entity a report in the form of Exhibit A hereto setting forth the calculation of the net amount a Commercialization Entity shall pay to the other Commercialization Entity to result in the sharing of Collaboration Operating Profit/Loss in the Applicable Commercial Territory for the period commencing on the Effective Date and ending on the last day of the Calendar Quarter to which such Quarterly Reports relate with respect to each Eisai Collaboration Product, which calculation shall give effect to the proportions described in Section 1.1(a) (a "**Profit Sharing Calculation Report**"). Eisai Commercialization Entity shall then either (i) submit an invoice for any such net amount to Biogen Commercialization Entity if a payment is due to Eisai Commercialization Entity, and within forty-five (45) days after receipt of such invoice Biogen Commercialization Entity shall make such payment to Eisai Commercialization Entity or (ii) within forty-five (45) days after delivery of a Profit Sharing Calculation Report make a payment to Biogen Commercialization Entity in the amount set forth in a Profit Sharing Calculation Report if a payment is due to Biogen Commercialization Entity. No Commercialization Entity shall reduce (by netting, set-off or otherwise) any amount payable by such Commercialization Entity in respect of the Applicable Commercial Territory pursuant to this Section 1.1(b) by any amount that may be payable to such Commercialization Entity pursuant to this Section 1.1(b) or otherwise pursuant to this Agreement.

1.2. Payment Terms.

(a) Form of Payment; Currency. All payments due hereunder shall be made by wire transfer in U.S. Dollars in immediately available funds to the credit of such bank account as may be designated by the Commercialization Entity to which such payment is due in this Agreement or in writing due hereunder. Any payment which falls due on a date which is not a Business Day may be made on the next succeeding Business Day.

(b) Late Payments. If a Commercialization Entity does not receive payment of any sum due to it on or before the due date therefor, interest shall thereafter accrue on the sum due to the Commercialization Entity from the due date until the date of payment at the per annum rate equal to the lesser of (i) the rate announced by Bank of America (or its successor) as its prime rate in effect on the date that such payment would have been first due plus one percent (1%) or (ii) the maximum rate permissible under Applicable Law.

1.3. Accounting Principles; Calculations. All Commercialization Costs will be calculated based on the principles set forth on Exhibit 8.8 of the Collaboration Agreement.

ARTICLE 2 REPRESENTATIONS AND WARRANTIES

2.1. Mutual Representations and Warranties. Each Commercialization Entity hereby represents and warrants to the other Commercialization Entity as of the Effective Date as follows:

(a) Corporate Existence and Power. It is a corporation duly organized, validly existing, and in good standing under the laws of the jurisdiction in which it is incorporated, and

has full corporate power and authority and the legal right to own and operate its property and assets and to carry on its business as it is now being conducted and as contemplated in this Agreement.

(b) Authority and Binding Agreement. (i) It has the corporate power and authority and the legal right to enter into this Agreement and perform its obligations hereunder;
(ii) it has taken all necessary corporate action on its part required to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder and (iii) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, and binding obligation of such Party that is enforceable against it in accordance with its terms.

(c) No Conflict. It is not a party to any agreement or commitment that would prevent it from granting the rights granted or intended to be granted to the other Party under this Agreement or performing its obligations under this Agreement.

(d) No Debarment. Neither such Commercialization Entity nor any Affiliate thereof is debarred, has been convicted, or is subject to debarment or conviction pursuant to Section 306 of the FD&C Act.

ARTICLE 3 GOVERNING LAW; MISCELLANEOUS

3.1. Governing Law. This Agreement shall be governed by and construed and enforced under the laws of the State of Delaware, without giving effect to any choice of law rules. The United Nations Convention on Contracts for the International Sale of Goods (1980) shall not apply to the interpretation of this Agreement.

3.2. Termination. This Agreement may be terminated by a Commercialization Entity to the extent permitted by Section 13.2 of the Collaboration Agreement. Unless earlier terminated, the term of this Agreement shall continue on an Eisai Collaboration Product-by-Eisai Collaboration Product and a country-by-country basis with respect to the Applicable Commercial Territory until the earlier of:

(a) the termination of this Agreement with respect to such Eisai Collaboration Product in such country;

(b) the later of (i) twelve (12) years after the First Commercial Sale of such Eisai Collaboration Product in such country and (ii) the earlier of (1) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Eisai Collaboration Product in such country,
(2) the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in such country, or (3) if such country is not a Major Market country or China, the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in the earlier of a Major Market country or China, provided that if the First Commercial Sale of such Eisai Collaboration Product in such country does not occur prior to the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in a Major Market country or China, then there shall be no Term for such Eisai Collaboration Product in such country; and

(c) the termination of the Collaboration Agreement in its entirety.

3.3. Incorporation of Miscellaneous Provisions. This Agreement shall be subject to the provisions set forth in Article 16 of the Collaboration Agreement (the provisions of which are hereby incorporated, *mutatis mutandis*).

[*Remainder of Page Left Intentionally Blank*]

IN WITNESS WHEREOF, the Commercialization Entities have executed this Agreement in duplicate originals by their duly authorized officers as of the Effective Date.

[●]	[●]
By:	By:
Name:	Name:
Title:	Title:

EXHIBIT A

Form of Profit Sharing Calculation Reports

COMMERCIALIZATION AGREEMENT

This **COMMERCIALIZATION AGREEMENT** (this "**Agreement**") is entered into as of October 22, 2017 (the "**Effective Date**") by and between EISAI INC., a Delaware corporation having its principal place of business at 100 Tice Blvd., Woodcliff Lake, New Jersey 07677 ("**Eisai Commercialization Entity**") and BIOGEN MA INC., a Massachusetts corporation having its principal place of business at 225 Binney Street, Cambridge, MA 02142 ("**Biogen Commercialization Entity**" or "**Biogen**"). Eisai Commercialization Entity and Biogen Commercialization Entity are sometimes referred to herein individually as a "**Commercialization Entity**" and collectively as the "**Commercialization Entities**".

Capitalized terms used but not otherwise defined herein shall have the meaning ascribed to them in that certain Amended and Restated Collaboration Agreement (the "**Collaboration Agreement**"), dated as of October 22, 2017, by and between **EISAI CO., LTD.**, a Japanese corporation having its principal place of business at 4-6-10, Koishikwa, Bunkyo-ku Tokyo 112- 8088, Japan ("**Eisai**"), and Biogen.

WHEREAS, concurrently with the execution and delivery of this Agreement, Eisai and Biogen have entered into the Collaboration Agreement pursuant to which the Commercialization Entities shall enter into this Agreement to share the Collaboration Operating Profit/Loss in the United States and its territories (the "**Applicable Commercial Territory**");

NOW, THEREFORE, in consideration of the foregoing and the mutual promises, covenants and conditions contained in this Agreement, the Commercialization Entities agree as follows:

ARTICLE 1

FINANCIAL TERMS

1.1. Profit Sharing.

(a) The Commercialization Entities shall share the Collaboration Operating Profit/Loss in the Applicable Commercial Territory on an Eisai Collaboration Product-by-Eisai Collaboration Product basis as set forth below:

Commercial Territory	**Biogen Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**	**Eisai Commercialization Entity's Percentage Share of Collaboration Operating Profit/Loss**
United States and its territories	50%	50%

(b) Promptly, and in any event, no later than fifteen (15) days following the exchange of Quarterly Reports and any supporting documentation pursuant to Section 8.1(b) of the Collaboration Agreement, Eisai Commercialization Entity shall submit to Biogen

Commercialization Entity a report in the form of Exhibit A hereto setting forth the calculation of the net amount a Commercialization Entity shall pay to the other Commercialization Entity to result in the sharing of Collaboration Operating Profit/Loss in the Applicable Commercial Territory for the period commencing on the Effective Date and ending on the last day of the Calendar Quarter to which such Quarterly Reports relate with respect to each Eisai Collaboration Product, which calculation shall give effect to the proportions described in Section 1.1(a) (a "**Profit Sharing Calculation Report**"). Eisai Commercialization Entity shall then either (i) submit an invoice for any such net amount to Biogen Commercialization Entity if a payment is due to Eisai Commercialization Entity, and within forty-five (45) days after receipt of such invoice Biogen Commercialization Entity shall make such payment to Eisai Commercialization Entity or
(ii) within forty-five (45) days after delivery of a Profit Sharing Calculation Report make a payment to Biogen Commercialization Entity in the amount set forth in a Profit Sharing Calculation Report if a payment is due to Biogen Commercialization Entity. No Commercialization Entity shall reduce (by netting, set-off or otherwise) any amount payable by such Commercialization Entity in respect of the Applicable Commercial Territory pursuant to this Section 1.1(b) by any amount that may be payable to such Commercialization Entity pursuant to this Section 1.1(b) or otherwise pursuant to this Agreement.

1.2. Payment Terms.

(a) Form of Payment; Currency. All payments due hereunder shall be made by wire transfer in U.S. Dollars in immediately available funds to the credit of such bank account as may be designated by the Commercialization Entity to which such payment is due in this Agreement or in writing due hereunder. Any payment which falls due on a date which is not a Business Day may be made on the next succeeding Business Day.

(b) Late Payments. If a Commercialization Entity does not receive payment of any sum due to it on or before the due date therefor, interest shall thereafter accrue on the sum due to the Commercialization Entity from the due date until the date of payment at the per annum rate equal to the lesser of (i) the rate announced by Bank of America (or its successor) as its prime rate in effect on the date that such payment would have been first due plus one percent (1%) or (ii) the maximum rate permissible under Applicable Law.

1.3. Accounting Principles; Calculations. All Commercialization Costs will be calculated based on the principles set forth on Exhibit 8.8 of the Collaboration Agreement.

ARTICLE 2 REPRESENTATIONS AND WARRANTIES

2.1. Mutual Representations and Warranties. Each Commercialization Entity hereby represents and warrants to the other Commercialization Entity as of the Effective Date as follows:

(a) Corporate Existence and Power. It is a corporation duly organized, validly existing, and in good standing under the laws of the jurisdiction in which it is incorporated, and has full corporate power and authority and the legal right to own and operate its property and assets and to carry on its business as it is now being conducted and as contemplated in this Agreement.

(b) Authority and Binding Agreement. (i) It has the corporate power and authority and the legal right to enter into this Agreement and perform its obligations hereunder;
(ii) it has taken all necessary corporate action on its part required to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder and (iii) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, and binding obligation of such Party that is enforceable against it in accordance with its terms.

(c) No Conflict. It is not a party to any agreement or commitment that would prevent it from granting the rights granted or intended to be granted to the other Party under this Agreement or performing its obligations under this Agreement.

(d) No Debarment. Neither such Commercialization Entity nor any Affiliate thereof is debarred, has been convicted, or is subject to debarment or conviction pursuant to Section 306 of the FD&C Act.

ARTICLE 3 GOVERNING LAW; MISCELLANEOUS

3.1. Governing Law. This Agreement shall be governed by and construed and enforced under the laws of the State of Delaware, without giving effect to any choice of law rules. The United Nations Convention on Contracts for the International Sale of Goods (1980) shall not apply to the interpretation of this Agreement.

3.2. Termination. This Agreement may be terminated by a Commercialization Entity to the extent permitted by Section 13.2 of the Collaboration Agreement. Unless earlier terminated, the term of this Agreement shall continue on an Eisai Collaboration Product-by-Eisai Collaboration Product and a country-by-country basis with respect to the Applicable Commercial Territory until the earlier of:

(a) the termination of this Agreement with respect to such Eisai Collaboration Product in such country;

(b) the later of (i) twelve (12) years after the First Commercial Sale of such Eisai Collaboration Product in such country and (ii) the earlier of (1) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Eisai Collaboration Product in such country,
(2) the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in such country, or (3) if such country is not a Major Market country or China, the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in the earlier of a Major Market country or China, provided that if the First Commercial Sale of such Eisai Collaboration Product in such country does not occur prior to the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in a Major Market country or China, then there shall be no Term for such Eisai Collaboration Product in such country; and

(c) the termination of the Collaboration Agreement in its entirety.

3.3. Incorporation of Miscellaneous Provisions. This Agreement shall be subject to the provisions set forth in Article 16 of the Collaboration Agreement (the provisions of which are hereby incorporated, *mutatis mutandis*).

[*Remainder of Page Left Intentionally Blank*]

IN WITNESS WHEREOF, the Commercialization Entities have executed this Agreement in duplicate originals by their duly authorized officers as of the Effective Date.

[●]	[●]
By:	By:
Name:	Name:
Title:	Title:

EXHIBIT A

Form of Profit Sharing Calculation Reports

[***]

Exhibit 8.6

Accounting Principles; Calculations

1. Accounting for Development Costs and Commercialization Costs

Collaboration Operating Profit/Loss and all Development Costs and Commercialization Costs will be calculated based on the definitions of such terms and the other defined terms set forth in the Agreement.

The calculation of any item included in Collaboration Operating Profit/Loss or Development Costs and Commercial Costs shall be made in accordance with the Accounting Standards, including applicable revenue and expense recognition provisions, applicable to the Party generating such Collaboration Operating Profit/Loss and incurring such Development Costs and Commercialization Costs.

Terms of an accounting or financial nature used and not defined in the Agreement shall be construed in accordance with the applicable Accounting Standards.

2. Calculations to be Made without Duplication

With respect to the calculation of Collaboration Operating Profit/Loss and Development Costs any items included in such calculations shall be included without duplication. For clarity, for any one-time payments made to Third Parties that are treated as a Commercialization Cost in full at the time of such payment for the purpose of Profit Sharing Calculation Report used in connection with the applicable Commercialization Agreement, the Party making such one-time payment shall not include the amortization expense for such one-time payment as Commercialization Cost for the purpose of Profit Sharing Calculation Report to avoid double counting.

3. Foreign Exchange

The functional currency for accounting for Collaboration Operating Profit/Loss and Development Costs and Commercialization Costs and the components thereof will be U.S. Dollars.

All financial reporting by a Party shall be translated into U.S. Dollars using such Party’s then- current standard exchange rate methodology as applied in such Party’s external reporting in accordance with such Party’s Accounting Standards.

4. Guidelines for Charging Costs

The following guidelines shall be used in determining costs and expenses chargeable to Company Collaboration Products or Commercial Territories, subject to the relevant definitions set forth in the Agreement:

A. If a cost or expense is specifically and exclusively (i.e., for no other product) used for the Development of a Company Collaboration Product or for Commercialization in a single Commercial Territory, then 100% of that cost or expense will be charged to such

Commercial Territory. Notwithstanding the foregoing, Development Costs shall in all cases be shared between the Parties equally.

B. If a cost or expense is specifically and exclusively (i.e., for no other product) used for Commercialization in more than one Commercial Territory, then the following shall apply:

1. If the portion of that cost or expense used for Commercialization can be objectively determined through specific means (e.g., man hours of effort, amounts consumed, etc.), then the amount so used will be charged to the applicable Commercial Territory.

2. If the portion of that cost or expense used for Commercialization cannot be objectively determined through specific means, then the Party that incurred such cost or expense shall allocate such cost or expense to the applicable Commercial Territories using its reasonable discretion based on equitable and fairness principles and consistent with the terms of this Agreement to reflect the actual or intended benefits of such costs or expenses.

C. If a cost or expense within a Commercial Territory is not specifically and exclusively (i.e., for other products in addition to a Company Collaboration Products) used for Commercialization, then the following shall apply:

1. If the portion of that cost or expense used for Commercialization can be objectively determined through specific means (e.g., man hours of effort, amounts consumed, etc.), then the amount so used will be charged to the applicable Company Collaboration Product.

2. If the portion of that cost or expense used for Commercialization can be objectively determined through specific means, then the Party that incurred such cost or expense shall allocate such cost or expense to the applicable Company Collaboration Product using its reasonable discretion based on equitable and fairness principles and consistent with the terms of this Agreement to reflect the actual or intended benefits of such costs or expenses.

Exhibit 10.2(b)

License, Assignment, Distribution and Other Agreements relating to Eisai Patents and Eisai Know-How

[***]

[***].

Exhibit 10.3(b)(ii)

Form of Authorized Representative Certificate

This certificate (this "Certificate"), dated as of [●], is delivered pursuant to the Amended and Restated Collaboration Agreement by and between Eisai Co., Ltd., a Japanese corporation having its principal place of business at 4-6-10, Koishikwa, Bunkyo-ku Tokyo 112-8088, Japan ("Eisai"), and [BIOGEN IDEC MA INC.], a [] having its principal place of business at [_] ("Company") (the "A/R Collaboration Agreement"). Capitalized terms used in this Certificate and not defined herein shall have the meanings assigned to them in the A/R Collaboration Agreement.

The undersigned, being a duly authorized representative of Company hereby certifies that the representations and warranties of Company set forth in Section 10.3(a) of the A/R Collaboration Agreement, as updated by the [Anti-Tau] Updated Schedules, were true and correct as of the [Anti-Tau] Updated Schedules Date, except, in each case, for those certain representations and warranties that by their terms were not made on such a date, which representations and warranties were true and correct in all material respects as of the date made and provided that each reference to the "Effective Date" in Section 10.3(a) of the Collaboration Agreement instead referred to the [Anti-Tau] Updated Schedules Date.

IN WITNESS HEREOF, the undersigned has executed this Certificate as of the date first set above.

By:__ Name:__

Exhibit 12.6(a)

Forms of Company and Eisai Press Releases (Please see attached.)

FOR IMMEDIATE RELEASE

October 23, 2017

Biogen Inc. Eisai Co., Ltd.

BIOGEN AND EISAI EXPAND EXISTING COLLABORATION AGREEMENT TO DEVELOP AND COMMERCIALIZE INVESTIGATIONAL ALZHEIMER'S DISEASE TREATMENTS INCLUDING PHASE 3 ADUCANUMAB

- *Eisai has exercised its option to jointly develop and commercialize aducanumab, with Biogen continuing as development lead*
- *The expanded collaboration agreement leverages each company's respective geographic strengths for commercialization and adjusts the respective share of potential profits from potential sales of aducanumab*
- *Biogen and Eisai will now co-promote Biogen's multiple sclerosis (MS) treatments, AVONEX ® (interferon beta 1a), TYSABRI ® (natalizumab), and TECFIDERA ® (dimethyl fumarate) in Japan to accounts that Biogen currently does not call upon*

Eisai Co., Ltd. (Headquarters: Tokyo, CEO: Haruo Naito, "Eisai") and Biogen Inc. (NASDAQ: BIIB) (Headquarters: Cambridge, Massachusetts, United States, CEO: Michel Vounatsos, "Biogen") announced today that the companies have expanded their existing agreement to jointly develop and commercialize investigational Alzheimer's disease treatments.

Under the terms of the agreement Eisai has exercised its option to co-develop and co- promote aducanumab, Biogen's investigational anti-amyloid beta (Aβ) antibody for patients with Alzheimer's disease ("AD").

The expanded agreement leverages each company's respective geographic strengths for commercialization and adjusts the respective share of profits from potential sales of aducanumab. Biogen will receive 55 percent of the potential profits in the United States and

68.5 percent of the potential profits in Europe. Eisai will receive 80 percent of the potential profits in Japan and Asia (excluding China and South Korea). The companies will have a 50:50 co-promotion split of potential profits in the rest of the world. Further, Biogen will book sales in the United States, Europe, and rest of world markets while Eisai will book sales in Japan and Asia (excluding China, South Korea).

Biogen will continue to lead the ongoing Phase 3 development of aducanumab and will remain solely responsible for all development costs for aducanumab until April 2018. Eisai will then reimburse Biogen for 15 percent of expenses from April 2018 through December 2018, and 45 percent from January 2019 onwards.

Neither party is making any upfront payments associated with the exercise of the aducanumab option. Furthermore, Eisai's and Biogen's respective milestone payments under the original agreement for aducanumab and BAN2401, an anti-Aβ protofibril antibody, have been eliminated.

The companies will continue to jointly develop elenbecestat* (E2609), a beta amyloid cleaving enzyme (BACE) inhibitor, and BAN2401. The financial terms for elenbecestat and BAN2401 remain unchanged, other than the eliminated BAN2401 milestone payments.

Additionally, Eisai and Biogen have agreed to co-promote Biogen's multiple sclerosis (MS) treatments, AVONEX (interferon beta-1a), TYSABRI (natalizumab) and TECFIDERA (dimethyl fumarate) in Japan to those accounts that Biogen currently does not call upon.

Eisai will also distribute and book sales for AVONEX, TYSABRI, TECFIDERA and PLEGRIDY® (peginterferon beta-1a) in India and other Asia-Pacific markets (excluding China).

"Through this new agreement, we believe we have improved our ability to maximize the value of aducanumab and expand the potential reach of our industry-leading multiple sclerosis portfolio," said Michel Vounatsos, Chief Executive Officer of Biogen. "The ongoing collaboration between Biogen and Eisai leverages our respective expertise and strengths in our efforts to bring new treatments to patients and families affected by Alzheimer's disease."

Eisai CEO Haruo Naito commented, "Genetic epidemiological studies such as the Icelandic genetic research as well as the knowledge recently gained from various clinical studies such as the aducanumab Phase 1b trial have deepened our conviction in the amyloid hypothesis. We hope to establish a new treatment paradigm for fighting dementia by expanding the strategic collaboration between Biogen, a company that leverages its cutting-edge bio-technology to develop innovative therapies for people living with serious neurological and neurodegenerative diseases, and Eisai, a company which possesses a rich pipeline based on holistic approaches. In accordance with this new paradigm, we plan to further co-develop the collaboration products and hope to advance the world's potentially first new treatment for Alzheimer's disease based on the amyloid hypothesis. Through the collaboration and by leveraging each company's respective strengths in each region, we hope to maximize the benefits for patients and their families."

* The generic name is not yet fixed at this time.

Biogen Safe Harbor Statement

This press release contains forward-looking statements, including statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 relating to the anticipated benefits and potential of Biogen's collaboration arrangements with Eisai, risks and uncertainties associated with drug development and commercialization, the potential benefits,

safety and efficacy of investigational drugs including aducanumab, elenbecestat, and BAN2401, the timing and status of current regulatory filings and the potential of Biogen's commercial business and pipeline programs, including aducanumab, elenbecestat, and BAN2401. These forward-looking statements may be accompanied by words such as "aim," "anticipate," "believe," "could," "estimate," "expect," "forecast,"

"intend," "may," "plan," "potential," "possible," "will," and other words and terms of similar meaning. Drug development and commercialization involve a high degree of risk, and only a small number of research and development programs result in commercialization of a product. Results in early stage clinical trials may not be indicative of full results or results from later stage or larger scale clinical trials and do not ensure regulatory approval. You should not place undue reliance on these statements or scientific data presented.

These statements involve risks and uncertainties that could cause actual results to differ materially from those reflected in such statements, including without limitation, uncertainty as to whether the anticipated benefits and potential of Biogen's collaboration arrangement with Eisai can be achieved; risks of unexpected costs or delays; uncertainty of success in the development and potential commercialization of aducanumab, elenbecestat and/or BAN2401, which may be impacted by, among other things, unexpected concerns that may arise from additional data or analysis, the occurrence of adverse safety events, failure to obtain regulatory approvals in certain jurisdictions, failure to protect and enforce Biogen's data, intellectual property, and other proprietary rights and uncertainties relating to intellectual property claims and challenges; and third party collaboration risks. The foregoing sets forth many, but not all, of the factors that could cause actual results to differ from Biogen's expectations in any forward-looking statement. Investors should consider this cautionary statement, as well as the risk factors identified in in Biogen's most recent annual or quarterly report and in other reports Biogen has filed with the Securities and Exchange Commission. These statements are based on Biogen's current beliefs and expectations and speak only as of the date of this press release. Biogen does not undertake any obligation to publicly update any forward-looking statements, whether as a result of new information, future developments or otherwise.

Media Inquiries	
Eisai Co., Ltd. Public Relations Department TEL: +81-(0)3-3817-5120	Biogen Inc. Public Affairs TEL: +1-781-464-3260

<Notes to editors>

1. About aducanumab (BIIB037)

Aducanumab (BIIB037) is an investigational drug being developed for the treatment of AD. Aducanumab is a human recombinant monoclonal antibody (mAb) derived from a de- identified library of B cells collected from healthy elderly subjects with no signs of cognitive impairment or cognitively impaired elderly subjects with unusually slow cognitive decline using Neurimmune's technology platform called Reverse Translational Medicine (RTM). Biogen licensed aducanumab from Neurimmune under a collaborative development and license agreement.

Aducanumab is thought to target aggregated forms of beta amyloid including soluble oligomers and insoluble fibrils which can form into amyloid plaque in the brain of AD patients. Based on pre-clinical and Phase 1b data to date, treatment with aducanumab has been shown to reduce amyloid plaque levels.

In August 2016 aducanumab was accepted into the European Medicines Agency's PRIME program. In September 2016 the U.S. Food and Drug Administration accepted aducanumab into its Fast Track program and in April 2017 aducanumab was accepted into the Japanese Ministry of Health, Labour and Welfare's (MHLW) SAKIGAKE* Designation System.

* SAKIGAKE aims at shortening premarket review period for innovative new medical products that satisfy certain criteria, such as severity of intended indication, by designating such products during the early stages of development, and providing prioritized consultation services and premarket pharmaceutical affairs review. The target review period for the designated products may be reduced to as short as 6 months, half the standard review period of 12 months for typical new pharmaceutical products.

2. Collaboration for multiple sclerosis treatments in Japan and Asia

Eisai and Biogen will enter into a sales collaboration to further expand contributions to patients in Japan and Asia (excluding China) through Biogen's MS treatments. In Japan, Eisai will co- promote AVONEX, TYSABRI, and TECIFIDERA, MS treatments for which Biogen holds the rights, to accounts that Biogen currently does not call upon. In Asia (excluding China), Eisai now has sole promotion rights for the above three products as well as PLEGRIDY.

3. About Biogen

At Biogen, our mission is clear: we are pioneers in neuroscience. Biogen discovers, develops and delivers worldwide innovative therapies for people living with serious neurological and neurodegenerative diseases. Founded in 1978 as one of the world's first global biotechnology companies by Charles Weissman and Nobel Prize winners Walter Gilbert and Phillip Sharp, today Biogen has the leading portfolio of medicines to treat multiple sclerosis; has introduced the first and only approved treatment for spinal muscular atrophy; and is focused on advancing neuroscience research programs in Alzheimer's disease and dementia, neuroimmunology, movement disorders, neuromuscular disorders, pain, ophthalmology, neuropsychiatry, and acute neurology. Biogen also manufactures and commercializes biosimilars of advanced biologics.

We routinely post information that may be important to investors on our website at website at www.biogen.com. To learn more, please visit www.biogen.com and follow us on social media – Twitter, LinkedIn, Facebook, YouTube.

3. About Eisai

Eisai Co., Ltd. is a leading global research and development-based pharmaceutical company headquartered in Japan. We define our corporate mission as “giving first thought to patients and their families and to increasing the benefits health care provides,” which we call our human health care (*hhc*) philosophy. With approximately 10,000 employees working across our global network of R&D facilities, manufacturing sites and marketing subsidiaries, we strive to realize our hhc philosophy by delivering innovative products to address unmet medical needs, with a particular focus in our strategic areas of Oncology and Neurology.

Leveraging the experience gained from the development and marketing of Aricept®, a treatment for Alzheimer’s disease and dementia with Lewy bodies, Eisai has been working to establish a social environment that involves patients in each community in cooperation with various stakeholders including the government, healthcare professionals and care workers, and is estimated to have held over ten thousand dementia awareness events worldwide. As a pioneer in the field of dementia treatment, Eisai is striving to not only develop next generation treatments but also to develop diagnosis methods and provide solutions.

For more information about Eisai Co., Ltd., please visit www.eisai.com.

Exhibit 13.4(b)

Phase II/III Criteria for BAN2401 Eisai Collaboration Product

[***]

Exhibit 13.4(b)(1)

BAN2401-201 Clinical Study Protocol, Amendment 01

[***]

Exhibit 13.6(b)(vi)

Amounts Payable by Eisai upon Termination by Company for Eisai's Breach

Table A

Status of applicable Eisai Collaboration Product on the effective date of termination	Amount Payable by Eisai to Company with respect to such Eisai Collaboration Product in the Territory during the Post Collaboration Term
Prior to or during Phase II Clinical Studies	[***]
Prior to or during Phase III Clinical Studies	[***]
Completed Phase III Clinical Studies	Lesser of (a) twenty five percent (25%) of Net Sales and (b) fifty percent (50%) of Collaboration Operating Profit

The determination of which amount is lesser, Net Sales or Collaboration Operating Profit, shall be made with respect to each Calendar Quarter, and Eisai shall pay to Company the applicable amounts in Table A on a Calendar Quarter basis within thirty (30) days after each Calendar Quarter. Eisai shall calculate Collaboration Operating Profit for the applicable Eisai Collaboration Product in accordance with the applicable Accounting Standards and the accounting principles set forth in Exhibit 8.9, and consistent with the provisions of any applicable Commercialization Agreement.

In the event the amount payable by Eisai to Company set forth in Table A is a percentage based on Net Sales, then during the applicable Post Collaboration Term on an Eisai Collaboration Product-by-Eisai Collaboration Product and Commercial Territory-by- Commercial Territory basis within the Territory, Eisai shall make payments to Company based on those percentages of Net Sales as set forth above in Table A, which shall be payable only once with respect to the same unit of Eisai Collaboration Product.

In the event the amount payable by Eisai to Company set forth in Table A is a percentage based on Collaboration Operating Profit, then during the applicable Post Collaboration Term on an Eisai Collaboration Product-by-Eisai Collaboration Product and Commercial Territory-by- Commercial Territory basis within the Territory, Eisai shall pay the percentage of Collaboration Operating Profit as set forth above in Table A.

Furthermore Section 8.5 (Taxes) and Section 8.6 (Records and Audit Rights) shall apply to the payment amounts described in this Exhibit 13.6(b)(vi).

Certain Definitions used in this Exhibit 13.6(b)(vi)

"**Post Collaboration Term**" means, on an Eisai Collaboration Product-by-Eisai Collaboration Product and country-by-country basis, the period starting on the effective date of the termination with respect to an Eisai Collaboration Product in a given country and ending on the later of (i) twelve (12) years after the First Commercial Sale of such Eisai Collaboration Product in a given country and (ii) the earlier of (1) the date of expiration, lapse, or invalidation of the last Valid Claim Covering such Eisai Collaboration Product in such country, (2) the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in such country or (3) if such country is not a Major Market country or China, the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in the earlier of a Major Market country or China; provided that if the First Commercial Sale of such Eisai Collaboration Product in such country does not occur prior to the First Commercial Sale of a Generic Product with respect to such Eisai Collaboration Product in a Major Market country or China, then there shall be no Post Collaboration Term for such Eisai Collaboration Product in such country.

Exhibit 14.2 Operational Separation

In the event that a Party elects, after delivery of an Operational Separation Notice in accordance with Section 14.2(b)(i) or 14.2(c)(iv)(B)(iii), the A/R Collaboration Agreement shall not be terminated in its entirety but shall be maintained in effect in accordance with its terms, except for the changes to the terms of this Agreement and effects described below (such changes and effects, an "Operational Separation"):

(A) Company shall cease to conduct any and all Development, Manufacturing and Commercialization activities with respect to Eisai Collaboration Products and Eisai Collaboration Molecules under this Agreement on and following the Separation Date and shall provide all assistance reasonably requested by Eisai to effect a timely transition of such activities to Eisai, which transition shall be conducted in a business-like fashion, with the expenses of such assistance being considered Development Costs or Commercialization Costs, as applicable based on the stage of the applicable Eisai Collaboration Product. Each Development Plan and Commercialization Plan in effect on the Separation Date shall automatically be deemed amended so that all references therein to activities to be conducted by Company shall thereafter be conducted by Eisai.

(B) Following a Change of Control, if the first NDA or MAA for BAN2401 Eisai Collaboration Product is filed before (i) the six (6)-month anniversary of such Change of Control and (ii) the Separation Date, then Company's obligations with respect to (A) Development Costs relating to such BAN2401 Eisai Collaboration Product pursuant to Sections 3.2(a)(i), 3.2(a)(iii), 3.2(a)(iv) and 3.2(a)(v) and (B) Commercialization Costs pursuant to Section 5.3 and the Commercialization Agreements shall, in each case of (A) and (B), be reduced to an amount equal to eighty percent (80%) of the amount that would have been required prior to the Separation Date; provided that for purposes of this reduction, any royalties or one-time, extraordinary amounts payable (including any third party milestone amounts) shall not be deemed Commercialization Costs. For the avoidance of doubt, unless the requirements of (i) and (ii) in the preceding sentence are satisfied, Eisai's obligations under the above provisions shall remain unchanged.

(C) Following a Change of Control, if the first NDA or MAA for E2609 Eisai Collaboration Product or any Backup Product is filed before (i) the six (6)- month anniversary of such Change of Control and (ii) the Separation Date, then Company's obligations with respect to (A) Development Costs relating to such E2609 Eisai Collaboration Product or Backup Product pursuant to Sections 3.2(b)(i), 3.2(b)(iii), 3.2(b)(iv) and 3.2(b)(v) and (B) Commercialization Costs pursuant to Section 5.3 and the Commercialization Agreements shall, in each case of (A) and (B), be reduced to an amount equal to eighty percent (80%) of the amount that would have been required prior to the Separation Date; provided that for purposes of this reduction, any royalties or one-time, extraordinary amounts payable (including any third party milestone amounts) shall not be deemed Commercialization Costs. For the avoidance of doubt, unless the requirements of (i) and (ii) in the preceding sentence are satisfied, Eisai's obligations under the above provisions shall remain unchanged.

(D) The following Sections of this Agreement shall be terminated as of the Separation Date: Section 2.6 (Alliance Managers), Section 3.5 (Development Subcontractors), Section 3.6 (Option Products; Option Exercise), Section 4.3(b)(i) except for the first sentence of such Section (Regulatory Responsibilities), Section 4.4 (Eisai Collaboration Product Withdrawals and Recalls), Section 4.5 (Pharmacovigilance Agreement), Section 5.1 (Overview), Section 5.2 (Global Branding Strategy), Section 5.5 (Commercialization Standards of Conduct) to the extent such Section refers to activities and obligations of Company, Section 5.6 (Commercialization Subcontractors), Article 6 (Manufacturing and Supply), Section 7.7 (Compliance with Third Party Agreements) and Section 7.8 (Limited Disclosure of Know- How). Any Section of this Agreement not explicitly set forth in the immediately preceding sentence shall survive and continue to apply on and after the Separation Date.

FIRST AMENDMENT TO AMENDED AND RESTATED COLLABORATION AGREEMENT

This First Amendment to the Amended and Restated Collaboration Agreement (this "**Amendment**") is entered into as of March 13, 2022 (the "**Amendment Effective Date**"), by and between Eisai Co., Ltd., a Japanese corporation, with a place of business at 4-6-10, Koishikawa, Bunkyo-ku Tokyo 112-8088, Japan ("**Eisai**") and Biogen MA Inc., a Massachusetts corporation, with a place of business at 225 Binney Street, Cambridge, MA 02142 ("**Biogen**"). Eisai and Biogen may each be referred to herein as a "**Party**", and together as the "**Parties**".

WHEREAS, Eisai and Biogen are parties to that certain Amended and Restated Collaboration Agreement dated as of October 22, 2017 (the "**BAN2401 Collaboration Agreement**") pursuant to which they are collaborating on the Development of certain Eisai Collaboration Products, including the BAN2401 Eisai Collaboration Product;

WHEREAS, Eisai and Biogen have entered into that certain Termination and License Agreement, dated as of March 13, 2022 (the "**Termination and License Agreement**"), pursuant to which, among other things, Eisai and Biogen terminated various agreements relating to the development, manufacture and commercialization of products containing BIIB037, including Aducanumab;

WHEREAS, concurrently with the execution and delivery of the Termination and License Agreement, the Parties wish to amend and modify the BAN2401 Collaboration Agreement as set forth herein.

NOW, THEREFORE, in consideration of the mutual promises herein contained and other good and valuable consideration, the receipt and sufficiency of which is hereby
acknowledged by the Parties, the Parties agree as follows:

ARTICLE I
DEFINITIONS AND CONSTRUCTION

Definitions. Capitalized terms used but not otherwise defined herein shall have the meaning ascribed to them in the BAN2401 Collaboration Agreement.

Construction. Unless the context of this Amendment otherwise requires: (a) words of any gender include each other gender; (b) words using the singular or plural number also include the plural or, singular number, respectively; (c) the terms "hereof," "herein," "hereby" and derivative or similar words refer to this entire Amendment; (d) the terms "Article", "Section", "clause", and "Exhibit" refer to the specified Article, Section, clause, or Exhibit of this Amendment; (e) the term "or" has, except where otherwise indicated, the inclusive meaning represented by the phrase "and/or"; and (f) the terms "including" and "includes" mean "including without limitation" and "includes without limitation," respectively. Whenever this Amendment refers to a number of days, such number shall refer to calendar days unless business days are specified. The headings in this Amendment are for reference only and shall not affect the interpretation of this Amendment.

AMENDMENTS

Amendments to BAN2401 Collaboration Agreement

. Pursuant to Section 16.1 of the BAN2401 Collaboration Agreement, the Parties hereto agree that:

The definition of "Competing Product" in Section 1.75 shall be hereby deleted and replaced in its entirety with the following:

> "**Competing Product**" means an antibody pharmaceutical product (including any Combination Product or Co-Administered product) that includes an antibody the primary mechanism of action of which is the binding to and reduction of soluble and insoluble forms of amyloid beta; provided that (i) with respect to Eisai, any antibody pharmaceutical product (including any Combination Product or Co-Administered product) containing Molecule BAN2401 shall not be a Competing Product and (ii) with respect to Biogen, any antibody pharmaceutical product (including any Combination Product or Co-Administered product) containing Molecule BIIB037 or Molecule BAN2401 shall not be a Competing Product."

The definition of "COC Competing Product" in Section 1.44 shall be hereby deleted and replaced in its entirety with the following:

> "**COC Competing Product**" means either of (a) Competing Product, as defined in Section 1.75, or (b) any product which has received Regulatory Approval in one or more countries of the Territory for the treatment, prevention, or amelioration of cognitive decline in Alzheimer's disease with a primary mode of action which targets soluble and insoluble forms of amyloid beta."

Section 3.6(b) shall be hereby deleted in its entirety.

Section 10.4(a)(ii) shall be hereby deleted in its entirety.

Section 14.1 shall be hereby amended to add the following subsection 14.1(e):

> "Notwithstanding anything to the contrary in this Agreement, the Parties acknowledge and agree that nothing in this Agreement is intended to restrict either Party's right to Develop, promote, distribute, market, sell or Commercialize any pharmaceutical product that is not a Competing Product."

MISCELLANEOUS

Miscellaneous. Other than as expressly identified and modified by this Amendment, all terms, provisions and other conditions of the BAN2401 Collaboration Agreement shall remain in full force and effect. This Amendment may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Amendment may be executed by facsimile or electronically transmitted signatures and such signatures shall be deemed to bind each Party hereto as if there were original signatures.

Incorporation. This Amendment shall be subject to the provisions set forth in Section 15.1, Section 16.1, Section 16.5 and Section 16.9 of the BAN2401 Collaboration Agreement (the provisions of which are hereby incorporated, *mutatis* mutandis).

[Signature Page Follows]

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed as of the first date set forth above.

Biogen MA:	**Eisai**:
BIOGEN MA INC.	EISAI CO., LTD.
By:	
/s/ Robin Kramer	/s/ Haruo Naito
Name: Robin Kramer	Name: Haruo Naito
Title Chief Accounting Officer	Title: CEO

Exhibit 21

BIOGEN INC.

The following is a list of subsidiaries of Biogen Inc. as of December 31, 2022, omitting some subsidiaries which, considered in the aggregate, would not constitute a significant subsidiary.

SUBSIDIARY	STATE OR OTHER JURISDICTION OF INCORPORATION OR ORGANIZATION
Biogen Foundation Inc.	Massachusetts
Biogen MA Inc.	Massachusetts
Biogen Realty Corporation	Massachusetts
Biogen Realty Limited Partnership	Massachusetts
Biogen U.S. Corporation	Massachusetts
Biogen U.S. Limited Partnership	Massachusetts
BDH U.S. Holdco Inc.	Delaware
Biogen (RTP) Realty LLC	Delaware
Biogen Chesapeake LLC	Delaware
Biogen Digital Health Inc.	Delaware
Biogen Digital Health Global LLC	Delaware
Biogen Holding I LLC	Delaware
Biogen Holding II LLC	Delaware
Biogen OUS Holding Inc.	Delaware
Biogen Manufacturing Holding LLC	Delaware
Biogen New Ventures Inc.	Delaware
Biogen SRO Inc.	Delaware
Biogen Therapeutics Inc.	Delaware
Biogen U.S. Pacific LLC	Delaware
Biogen U.S. West Corporation	Delaware
Conforma Therapeutics Corporation	Delaware
Stromedix, Inc.	Delaware
Nightstar, Inc.	Delaware
Biogen (Argentina) SRL	Argentina
Biogen Australia PTY Ltd	Australia
Biogen Austria GmbH	Austria
Biogen Belgium N.V./S.A.	Belgium
Biogen International Holding Limited	Bermuda
Biogen (Bermuda) Technologies Ltd.	Bermuda
Biogen Brasil Produtos Farmaceuticos LTDA	Brazil
Biogen Canada Inc.	Canada
Biogen Chile SpA	Chile
Biogen Biotechnology (Shanghai) Co., Ltd	China
BIIB Colombia S.A.S.	Colombia
Biogen Pharma d.o.o.	Croatia
Biogen (Czech Republic) s.r.o.	Czech Republic
Biogen (Denmark) A/S	Denmark
Biogen Estonia OU	Estonia
Biogen Finland OY	Finland
Biogen France S.A.S.	France
Biogen GmbH	Germany

Biogen Hong Kong Limited	Hong Kong
Biogen Hungary KFT	Hungary
Biogen Idec Biotech India Pvt. Ltd.	India
Biogen Idec (Ireland) Ltd.	Ireland
Nightstar Europa Limited	Ireland
Biogen Italia S.R.L.	Italy
Biogen Japan Ltd.	Japan
Biogen Korea LLC	Korea
Biogen Latvia SIA	Latvia
Biogen Lithuania UAB	Lithuania
Biogen Luxembourg Holding S.a.r.l.	Luxembourg
Biogen Mexico S. de R.L. de C.V.	Mexico
Biogen NZ Biopharma Ltd.	New Zealand
Biogen Norway AS	Norway
Biogen Poland Sp. z.o.o.	Poland
Biogen Portugal Sociedade Farmaceutica, Unipessoal Lda.	Portugal
Biogen Slovakia s.r.o.	Slovak Republic
Biogen Pharma, farmacevtska in biotehnoloska druzba, d.o.o.	Slovenia
Biogen Spain, S.L.	Spain
Biogen Sweden AB	Sweden
Biogen International GmbH	Switzerland
Biogen International Neuroscience GmbH	Switzerland
Biogen Management Services GmbH	Switzerland
Biogen Swiss Investments GmbH	Switzerland
Biogen Swiss Manufacturing GmbH	Switzerland
Biogen Switzerland AG	Switzerland
Biogen Switzerland Holdings GmbH	Switzerland
Eidetica Biopharma GmbH	Switzerland
Biogen Taiwan Limited	Taiwan
Biogen Turkey Ilac Ticaret Limited Sirketi	Turkey
Biogen B.V.	The Netherlands
Biogen Netherlands B.V.	The Netherlands
Biogen Idec Limited	United Kingdom
Biogen Idec Research Ltd.	United Kingdom
Convergence Pharmaceuticals Limited	United Kingdom
Convergence Pharmaceuticals Holdings Ltd.	United Kingdom
Old Convergence Pharmaceuticals Limited	United Kingdom
Silver Acquisition Co. Ltd.	United Kingdom
Nightstar Therapeutics Limited	United Kingdom
NightstaRx Limited	United Kingdom
Tungsten Bidco Limited	United Kingdom
Biogen Idec Uruguay SA	Uruguay

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-237819) and Form S-8 (Nos. 333-218799, 333-205254, 333-128339, 333-152456, 333-140817 and 333-170133) of Biogen Inc. of our report dated February 15, 2023 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
February 15, 2023

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Christopher A. Viehbacher, certify that:

1. I have reviewed this annual report of Biogen Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a–15(e) and 15d–15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a–15(f) and 15d–15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 15, 2023

/s/ Christopher A. Viehbacher
Christopher A. Viehbacher
President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Michael R. McDonnell, certify that:

1. I have reviewed this annual report of Biogen Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a–15(e) and 15d–15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a–15(f) and 15d–15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 15, 2023

/s/ Michael R. McDonnell
Michael R. McDonnell
Executive Vice President and
Chief Financial Officer

Exhibit 32.1

CERTIFICATION
PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of section 1350, chapter 63 of title 18, United States Code), each of the undersigned officers of Biogen Inc., a Delaware corporation (the "Company"), does hereby certify, to such officer's knowledge, that:

The Annual Report on Form 10-K for the year ended December 31, 2022 (the "Form 10-K") of the Company fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 15, 2023

/s/ Christopher A. Viehbacher
Christopher A. Viehbacher
President and Chief Executive Officer
[principal executive officer]

Date: February 15, 2023

/s/ Michael R. McDonnell
Michael R. McDonnell
Executive Vice President and
Chief Financial Officer
[principal financial officer]

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.