BIOGEN INC.
Form 10-Q
July 24, 2018

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-Q

x QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended June 30, 2018
OR

o 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)

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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post 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:

Large accelerated filer x	Accelerated filer o
Non-accelerated filer o	Smaller reporting company o
(Do not check if a smaller reporting company)	Emerging growth company o

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. o

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

The number of shares of the issuer's Common Stock, $0.0005 par value, outstanding as of July 20, 2018, was 201,442,850 shares.

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For the Quarterly Period Ended June 30, 2018
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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," "intend," "may," "plan," "potential," "possible," "will" and other words a similar meaning. Reference is made in particular to forward-looking statements regarding:

- the anticipated amount, timing and accounting of revenues, contingent payments, milestone, royalty and other payments under licensing, collaboration or acquisition 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 expenses, 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 and launch of our marketed and pipeline products;
- our plans and investments in our core and emerging growth areas;
- the potential impact of increased product competition in the markets in which we compete;
- patent terms, patent term extensions, patent office actions and expected availability and period of regulatory exclusivity;
- the costs and timing of potential clinical trials, filings and approvals, and the potential therapeutic scope of the development and commercialization of our and our collaborators' pipeline products;
- the drivers for growing our business, including our plans and intent to commit resources relating to business development opportunities and research and development programs;
- the anticipated benefits and the potential costs and expenses related to our current or future initiatives to streamline our operations and reallocate resources;
- our manufacturing capacity, use of third-party contract manufacturing organizations and plans and timing relating to the expansion of our manufacturing capabilities, including anticipated investments and activities in new manufacturing facilities;
- the potential impact on our results of operations and liquidity of the United Kingdom's (U.K.) intent to voluntarily depart from the European Union (E.U.);
- the impact of the continued uncertainty of the credit and economic conditions in certain countries in Europe and our collection of accounts receivable in such countries;
- the potential impact of healthcare reform in the United States (U.S.) and measures being taken worldwide designed to reduce healthcare costs to limit the overall level of government expenditures, including the impact of pricing actions and reduced reimbursement for our 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;
- lease commitments, purchase obligations and the timing and satisfaction of other contractual obligations;
- our ability to finance our operations and business initiatives and obtain funding for such activities;
- adverse safety events involving our marketed products;
- the anticipated timing to complete certain business development transactions;
- the impact of new laws, including the Tax Cuts and Jobs Act of 2017, and accounting standards; and
- the anticipated costs and tax treatment of the spin-off of our hemophilia business.

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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;
- "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); and
- "ELOCTATE" refers to both ELOCTATE (the trade name for Antihemophilic Factor (recombinant), Fc Fusion Protein in the U.S., Canada and Japan) and ELOCTA (the trade name for Antihemophilic Factor (recombinant), Fc Fusion Protein in the E.U.).

NOTE REGARDING TRADEMARKS

AVONEX®, PLEGRIDY®, RITUXAN®, SPINRAZA®, TECFIDERA®, TYSABRI® and ZINBRYTA® are registered trademarks of Biogen. BENEPALI™, FLIXABI™, FUMADERM™ and IMRALDI™ are trademarks of Biogen. ALPROLIX®, ELOCTATE®, ENBREL®, FAMPYRA™, GAZYVA®, HUMIRA®, OCREVUS®, REMICADE® and other trademarks referenced in this report are the property of their respective owners.

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PART I FINANCIAL INFORMATION

BIOGEN INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF INCOME
(unaudited, in millions, except per share amounts)

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
	2018	2017	2018	2017
Revenues:				
Product, net	$2,757.5	$2,639.7	$5,281.0	$5,019.8
Revenues from anti-CD20 therapeutic programs	490.4	397.1	933.6	737.7
Other	108.6	41.6	273.0	131.6
Total revenues	3,356.5	3,078.4	6,487.6	5,889.1
Cost and expenses:				
Cost of sales, excluding amortization of acquired intangible assets	421.0	366.2	867.0	750.8
Research and development	981.0	796.2	1,477.7	1,219.6
Selling, general and administrative	516.2	429.8	1,017.5	928.5
Amortization of acquired intangible assets	107.4	117.5	211.3	566.0
Acquired in-process research and development	75.0	120.0	85.0	120.0
Collaboration profit (loss) sharing	39.2	26.5	81.7	47.3
Loss (gain) on fair value remeasurement of contingent consideration	1.9	21.2	(3.7)	31.2
Restructuring charges	1.6	—	3.2	—
Total cost and expenses	2,143.3	1,877.4	3,739.7	3,663.4
Income from operations	1,213.2	1,201.0	2,747.9	2,225.7
Other income (expense), net	(34.5)	(68.6)	(75.5)	(106.6)
Income before income tax expense and equity in loss of investee, net of tax	1,178.7	1,132.4	2,672.4	2,119.1
Income tax expense	263.7	269.6	586.2	508.8
Equity in loss of investee, net of tax	—	—	—	—
Net income	915.0	862.8	2,086.2	1,610.3
Net income (loss) attributable to noncontrolling interests, net of tax	48.4	—	46.7	(0.1)
Net income attributable to Biogen Inc.	$866.6	$862.8	$2,039.5	$1,610.4
Net income per share:				
Basic earnings per share attributable to Biogen Inc.	$4.18	$4.07	$9.75	$7.53
Diluted earnings per share attributable to Biogen Inc.	$4.18	$4.07	$9.73	$7.52
Weighted-average shares used in calculating:				
Basic earnings per share attributable to Biogen Inc.	207.1	211.9	209.2	213.7
Diluted earnings per share attributable to Biogen Inc.	207.3	212.2	209.5	214.0

See accompanying notes to these unaudited condensed consolidated financial statements.

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BIOGEN INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(unaudited, in millions)

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
	2018	2017	2018	2017
Net income attributable to Biogen Inc.	$866.6	$862.8	$2,039.5	$1,610.4
Other comprehensive income:				
Unrealized gains (losses) on securities available for sale, net of tax	0.6	7.2	(1.6)	5.6
Unrealized gains (losses) on cash flow hedges, net of tax	132.8	(103.0)	103.8	(126.8)
Unrealized gains (losses) on pension benefit obligation, net of tax	0.9	(0.6)	0.4	(0.5)
Currency translation adjustment, net of tax	(92.0)	82.8	(47.3)	102.8
Total other comprehensive income (loss), net of tax	42.3	(13.6)	55.3	(18.9)
Comprehensive income attributable to Biogen Inc.	908.9	849.2	2,094.8	1,591.5
Comprehensive income (loss) attributable to noncontrolling interests, net of tax	48.4	—	46.7	(0.1)
Comprehensive income	$957.3	$849.2	$2,141.5	$1,591.4

See accompanying notes to these unaudited condensed consolidated financial statements.

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BIOGEN INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(unaudited, in millions, except per share amounts)

	As of June 30, 2018	As of December 31, 2017
ASSETS		
Current assets:		
Cash and cash equivalents	$1,250.2	$1,573.8
Marketable securities	1,974.0	2,115.2
Accounts receivable, net	1,951.0	1,787.0
Due from anti-CD20 therapeutic programs	481.9	532.6
Inventory	931.7	902.7
Other current assets	843.3	962.0
Total current assets	7,432.1	7,873.3
Marketable securities	1,160.2	3,057.3
Property, plant and equipment, net	3,409.0	3,182.4
Intangible assets, net	3,661.3	3,879.6
Goodwill	5,170.3	4,632.5
Deferred tax assets	2,217.9	595.9
Investments and other assets	902.1	431.6
Total assets	$23,952.9	$23,652.6
LIABILITIES AND EQUITY		
Current liabilities:		
Current portion of notes payable	$—	$3.2
Taxes payable	223.0	68.2
Accounts payable	295.7	395.5
Accrued expenses and other	2,633.7	2,901.3
Total current liabilities	3,152.4	3,368.2
Notes payable	5,928.4	5,935.0
Deferred tax liabilities	1,160.8	122.6
Other long-term liabilities	1,457.6	1,628.7
Total liabilities	11,699.2	11,054.5
Commitments and contingencies		
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	—	97.8
Accumulated other comprehensive loss	(261.6)	(318.4)
Retained earnings	15,499.5	15,810.4
Treasury stock, at cost	(2,977.1)	(2,977.1)
Total Biogen Inc. shareholders’ equity	12,260.9	12,612.8
Noncontrolling interests	(7.2)	(14.7)
Total equity	12,253.7	12,598.1
Total liabilities and equity	$23,952.9	$23,652.6

See accompanying notes to these unaudited condensed consolidated financial statements.

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BIOGEN INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(unaudited, in millions)

	For the Six Months Ended June 30,	
	2018	2017
Cash flows from operating activities:		
Net income	$2,086.2	$1,610.3
Adjustments to reconcile net income to net cash flows from operating activities:		
Depreciation and amortization	340.4	694.6
Acquired in-process research and development	85.0	120.0
Share-based compensation	81.7	67.3
Deferred income taxes	(57.4)	(20.5)
Other	42.4	73.5
Changes in operating assets and liabilities, net:		
Accounts receivable	(187.2)	(301.2)
Inventory	(40.1)	(85.3)
Accrued expenses and other current liabilities	13.3	(452.3)
Income tax assets and liabilities	183.4	(114.7)
Other changes in operating assets and liabilities, net	8.7	(187.3)
Net cash flows provided by operating activities	2,556.4	1,404.4
Cash flows from investing activities:		
Proceeds from sales and maturities of marketable securities	6,802.7	3,584.5
Purchases of marketable securities	(4,774.3)	(2,536.0)
Contingent consideration paid related to Fumapharm AG acquisition	(900.0)	(600.0)
Purchases of property, plant and equipment	(381.5)	(407.7)
Acquired in-process research and development	(85.0)	(120.0)
Acquisitions of intangible assets	(3.0)	(860.3)
Purchase of Ionis Pharmaceuticals, Inc. stock	(463.7)	—
Other	2.9	(7.2)
Net cash flows provided by (used in) investing activities	198.1	(946.7)
Cash flows from financing activities:		
Purchases of treasury stock	(3,000.0)	(1,365.4)
Payments related to issuance of stock for share-based compensation arrangements, net	(14.3)	(17.8)
Repayment of borrowings	(3.2)	—
Net distribution to noncontrolling interest	(38.9)	—
Net cash contribution to Bioverativ Inc.	—	(302.7)
Other	(3.7)	33.5
Net cash flows used in financing activities	(3,060.1)	(1,652.4)
Net increase (decrease) in cash and cash equivalents	(305.6)	(1,194.7)
Effect of exchange rate changes on cash and cash equivalents	(18.0)	37.8
Cash and cash equivalents, beginning of the period	1,573.8	2,326.5
Cash and cash equivalents, end of the period	$1,250.2	$1,169.6

See accompanying notes to these unaudited condensed consolidated financial statements.

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BIOGEN INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(unaudited)

1. Summary of Significant Accounting Policies

Business Overview

Biogen is a global biopharmaceutical company focused on discovering, developing and delivering worldwide innovative therapies for people living with serious neurological and neurodegenerative diseases, including in our core growth areas of multiple sclerosis (MS) and neuroimmunology, Alzheimer's disease (AD) and dementia, movement disorders and neuromuscular disorders, including spinal muscular atrophy (SMA) and amyotrophic lateral sclerosis (ALS). We are also focused on discovering, developing and delivering worldwide innovative therapies in our emerging growth areas of pain, ophthalmology, neuropsychiatry and acute neurology. In addition, we are employing innovative technologies to discover potential treatments for rare and genetic disorders, including new ways of treating diseases through gene therapy in the previously mentioned areas. We also manufacture and commercialize biosimilars of advanced biologics.

Our marketed products include TECFIDERA, AVONEX, PLEGRIDY, TYSABRI and FAMPYRA for the treatment of MS, SPINRAZA for the treatment of SMA and FUMADERM for the treatment of severe plaque psoriasis. We also 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, GAZYVA for the treatment of CLL and follicular lymphoma, OCREVUS for the treatment of primary progressive MS (PPMS) and relapsing MS (RMS) and other potential anti-CD20 therapies under a collaboration agreement with Genentech, Inc. (Genentech), a wholly-owned member of the Roche Group. In March 2018 we and AbbVie Inc. (AbbVie) announced the voluntary worldwide withdrawal of ZINBRYTA for RMS. For additional information on the voluntary worldwide withdrawal of ZINBRYTA, please read Note 18, Collaborative and Other Relationships, to these unaudited condensed consolidated financial statements (condensed consolidated financial statements).

We support our drug discovery and development efforts through the commitment of significant resources to discovery, research and development programs and business development opportunities, particularly within our core and emerging growth areas. For nearly two decades we have led in the research and development of new therapies to treat MS, resulting in our leading portfolio of MS treatments. Now our research is focused on additional improvements in the treatment of MS, such as the development of next generation therapies for MS, with a goal to reverse or possibly repair damage caused by the disease. We are also applying our scientific expertise to solve some of the most challenging and complex diseases, including AD, progressive supranuclear palsy, a rare condition that affects movement, speech, vision and cognitive function, Parkinson's disease, ALS, pain, cognitive impairment associated with schizophrenia (CIAS) and stroke.

Our innovative drug development and commercialization activities are complemented by our biosimilar therapies that expand access to medicines and reduce the cost burden for healthcare systems. We are leveraging our manufacturing capabilities and know-how to develop, manufacture and market biosimilars through Samsung Bioepis Co., Ltd. (Samsung Bioepis), our joint venture with Samsung BioLogics Co. Ltd. (Samsung Biologics). Under our commercial agreement, we market and sell BENEPALI, an etanercept biosimilar referencing ENBREL, and FLIXABI, an infliximab biosimilar referencing REMICADE, in the European Union (E.U.).

Basis of Presentation

In the opinion of management, our condensed consolidated financial statements include all adjustments, consisting of normal recurring accruals, necessary for a fair presentation of our financial statements for interim periods in accordance with accounting principles generally accepted in the United States (U.S. GAAP). The information included in this quarterly report on Form 10-Q should be read in conjunction with our consolidated financial statements and the accompanying notes included in our Annual Report on Form 10-K for the year ended December 31, 2017 (2017 Form 10-K). Our accounting policies are described in the “Notes to Consolidated Financial Statements” in our 2017 Form 10-K and updated, as necessary, in this Form 10-Q. The year-end condensed consolidated balance sheet data presented for comparative purposes was derived from our audited financial

statements, but does not include all disclosures required by U.S. GAAP. The results of operations for the three and six months ended June 30, 2018, are not necessarily indicative of the operating results for the full year or for any other subsequent interim period.

We operate as one operating segment, focused on discovering, developing and delivering worldwide innovative therapies for people living with serious neurological and neurodegenerative diseases.

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BIOGEN INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(unaudited, continued)

Consolidation

Our condensed consolidated financial statements reflect our financial statements, those of our wholly-owned subsidiaries and those of certain variable interest entities where we are the primary beneficiary. For consolidated entities where we own or are exposed to less than 100% of the economics, we record net income (loss) attributable to noncontrolling interests in our condensed 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 an 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. These considerations impact the way we account for our existing collaborative relationships and other arrangements. 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 condensed consolidated financial statements requires us to make estimates, judgments and assumptions that may affect the reported amounts of assets, liabilities, equity, revenues and expenses and related disclosure of contingent assets and liabilities. On an on-going basis we evaluate our estimates, judgments and methodologies. 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 revenues and expenses. Actual results may differ from these estimates.

New Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board (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 condensed consolidated financial statements and disclosures.

Revenue Recognition

In May 2014 the FASB issued Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers (Topic 606), which supersedes all existing revenue recognition requirements, including most industry specific guidance. This new standard requires a company to recognize revenues when it transfers goods or services to customers in an amount that reflects the consideration that the company expects to receive for those goods or services. The FASB subsequently issued the following amendments to ASU No. 2014-09 that have the same effective date and transition date: ASU No. 2016-08, Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations; ASU No. 2016-10, Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing; ASU No. 2016-12, Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients; and ASU No. 2016-20, Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers. We adopted these amendments with ASU 2014-09 (collectively, the new revenue standards).

The new revenue standards became effective for us on January 1, 2018, and were adopted using the modified retrospective method. The adoption of the new revenue standards as of January 1, 2018, did not change our revenue recognition as the majority of our revenues continue to be recognized when the customer takes control of our product. As we did not identify any accounting changes that impacted the amount of reported revenues with respect to our product revenues, revenues from anti-CD20 therapeutic programs or other revenues, no adjustment to retained earnings was required upon adoption. However, the adoption of the new revenue standards may result in a change in the timing of revenue recognition related to certain of our contract manufacturing activities based upon the terms of the underlying agreements.

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BIOGEN INC. AND SUBSIDIARIES
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(unaudited, continued)

Under the new revenue standards, we recognize revenues 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 revenues following the five step model prescribed under ASU 2014-09: (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 revenues when (or as) we satisfy the performance obligation.

Product Revenues

In the United States (U.S.) we sell our products primarily to wholesale distributors and specialty pharmacy providers. 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.

Revenues from product sales are 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

Revenues from product sales are 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 revenues, 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 revenues 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.

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 revenues. To the extent we can demonstrate a separable benefit and fair value for these services we classify these payments in selling, general and administrative expenses.

For additional information on our revenues, please read Note 4, Revenues, to these condensed consolidated financial statements.

Revenues from Anti-CD20 Therapeutic Programs

Our collaboration with Genentech is within the scope of Accounting Standards Codification (ASC) 808, Collaborative Agreements, which provides guidance on the presentation and disclosure of collaborative arrangements. Our share of the pre-tax co-promotion profits on RITUXAN and GAZYVA and royalty revenues on the sale of OCREVUS resulted from an exchange of a license. As we do not have any future performance obligations under the license or

collaboration agreement, revenues are recognized as the underlying sales occur.

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BIOGEN INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(unaudited, continued)

Revenues from anti-CD20 therapeutic programs consist of:
(i) our share of pre-tax profits and losses in the U.S. for RITUXAN and GAZYVA; and
(ii) other revenues from anti-CD20 therapeutic programs, which primarily consist of our share of pre-tax co-promotion profits on RITUXAN in Canada and royalty revenues on sales of OCREVUS.

For additional information on our collaboration with Genentech, please read Note 20, Collaborative and Other Relationships, to our consolidated financial statements included in our 2017 Form 10-K.

Collaborative and Other Relationships

We have a number of significant collaborative and other third-party relationships for revenues, 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 revenues, cost of sales and operating expenses on a gross basis in their respective lines in our condensed consolidated statements of income. Where we are not the principal on sales transactions with third parties, we record our share of the revenues, cost of sales and operating expenses on a net basis in collaborative and other relationships included in other revenues in our condensed consolidated statements of income.

Our development and commercialization arrangements with AbbVie, Genentech 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. Therefore, revenues relating to royalties or profit sharing amounts received are recognized as the underlying sales occur.

For additional information on our collaborations with AbbVie, Genentech and Samsung Bioepis, please read Note 18, Collaborative and Other Relationships, to these condensed consolidated financial statements.

Royalty Revenues

We receive royalty revenues on sales by our licensees of other products covered under patents that we own. We do not have future performance obligations under these license arrangements. We record these revenues based on estimates of the sales that occurred during the relevant period as a component of other revenues. The relevant period estimates of sales are based on interim data provided by licensees and analysis of historical royalties that have been paid to us, adjusted for any changes in facts and circumstances, as appropriate. Differences between actual and estimated royalty revenues are adjusted for in the period in which they become known, typically the following quarter. Historically, adjustments have not been material when compared to actual amounts paid by licensees.

Other Corporate Revenues

We record other corporate revenues primarily from amounts earned under contract manufacturing agreements. Revenues under contract manufacturing agreements are 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.

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.

In countries where we have experienced a pattern of payments extending beyond our contractual payment term and we expect to collect receivables greater than one year from the time of sale, we have assessed whether the customer has a significant financing component and discounted our receivables and reduced related revenues over the period of time that we estimate those amounts will be paid using the country’s market-based borrowing rate for such period. The related receivables are classified at the time of sale as non-current assets. We accrete interest income on these receivables, which is recognized as a component of other income (expense), net in our condensed consolidated

statements of income.

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We provide reserves against trade receivables 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.

The adoption of the new revenue standards did not change our historical accounting methods for our accounts receivable.

Financial Instruments

In January 2016 the FASB issued ASU No. 2016-01, Financial Instruments - Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities. This new standard amends certain aspects of accounting and disclosure requirements for financial instruments, including the requirement that equity investments with readily determinable fair values are to be measured at fair value with any changes in fair value recognized in a company's results of operations. This new standard does not apply to investments accounted for under the equity method of accounting or those investments that result in consolidation of the investee. Equity investments that do not have readily determinable fair values may be measured at fair value or at cost minus impairment adjusted for changes in observable prices. A financial liability that is measured at fair value in accordance with the fair value option is required to be presented separately in other comprehensive income for the portion of the total change in the fair value resulting from change in the instrument-specific credit risk. In addition, a valuation allowance should be evaluated on deferred tax assets related to available-for-sale debt securities in combination with other deferred tax assets.

We adopted this new standard on January 1, 2018, using the modified retrospective method, and recognized a $1.3 million net adjustment to retained earnings reflecting the cumulative impact for the accounting changes made upon adoption. The adoption of this new standard resulted in a change in the income statement classification with respect to where we recognize changes in fair value related to certain equity security investments. Prior to the adoption of ASU 2016-01, we recognized changes in fair value in accumulated other comprehensive income (loss), net. Upon the adoption of ASU 2016-01, we recognize changes in fair value in other income (expense), net.

Leasing

In February 2016 the FASB issued ASU No. 2016-02, Leases (Topic 842). This new standard establishes a right-of-use (ROU) model that requires all lessees to recognize ROU assets and liabilities on their balance sheet that arise from leases with terms longer than 12 months as well as provide disclosures with respect to certain qualitative and quantitative information related to their leasing arrangements. This new standard will become effective for us on January 1, 2019. A modified retrospective transition approach is required to be applied to leases existing as of, or entered into after, the beginning of the earliest comparative period presented in the financial statements, with certain practical expedients available.

We are in the process of cataloging our existing lease contracts and implementing changes to our systems and continue to evaluate the impact that this new standard may have on our consolidated results of operations, financial position and disclosures. We expect that the adoption of this new standard will materially affect the reported amount of our ROU assets and liabilities in our condensed consolidated balance sheets with no material impact to our condensed consolidated statements of income. We are unable to quantify the ultimate impact of adopting this new standard at this time as the actual impact will depend on the total amount of our lease commitments as of the adoption date. We plan to elect the practical expedients upon transition that will retain the lease classification and initial direct costs for any leases that existed prior to the adoption of this new standard. We will not reassess whether any contracts entered into prior to the adoption are leases.

Income Taxes

In October 2016 the FASB issued ASU No. 2016-16, Income Taxes (Topic 740): Intra-Entity Transfer of Assets Other Than Inventory. This new standard eliminates the deferral of the tax effects of intra-entity asset transfers other than inventory. As a result, the income tax consequences from the intra-entity transfer of an asset other than inventory and associated changes to deferred taxes will be recognized when the transfer occurs.

We adopted this new standard on January 1, 2018, using the modified retrospective method, through a cumulative-effect adjustment to retained earnings as of that date. Upon adoption, we recognized additional net

deferred tax assets of approximately $0.5 billion offset by a corresponding net increase to retained earnings of approximately $0.5 billion. We will recognize incremental deferred income tax expense thereafter as these deferred tax assets and liabilities are utilized.

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For additional information, please read Note 15, Income Taxes, to these condensed consolidated financial statements.

Net Periodic Pension Cost

In March 2017 the FASB issued ASU No. 2017-07, Compensation - Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost. This new standard requires that an employer disaggregate the service cost component from the other components of net benefit cost. This new standard also provides explicit guidance on how to present the service cost component and the other components of net benefit cost in the statements of income and allows only the service cost component of net benefit cost to be eligible for capitalization. The other components of the net periodic benefit cost must be presented separately from the line items that include service cost and outside of any subtotal of operating income on our condensed consolidated statements of income. We adopted this new standard on January 1, 2018, using the retrospective method.

As a result of the adoption of this new standard, the other components of the net periodic benefit cost, which we previously presented as a component of operating income, are now classified in other income (expense), net in our condensed consolidated statements of income. For the three and six months ended June 30, 2017, $0.4 million and $0.8 million, respectively, were reclassified from operating income to other income (expense), net in our condensed consolidated statements of income to conform to our current year presentation.

Debt Securities

In March 2017 the FASB issued ASU No. 2017-08, Receivables - Nonrefundable Fees and Other Costs (Subtopic 310-20): Premium Amortization on Purchased Callable Debt Securities. This new standard amends the amortization period for certain purchased callable debt securities held at a premium by shortening the amortization period for the premium to the earliest call date. This new standard will be effective for us on January 1, 2019. While we continue to evaluate this new standard, we are unable to quantify the ultimate impact of adopting this new standard at this time as the actual impact will depend on our marketable debt securities as of the adoption date.

Derivative Instruments and Hedging Activities

In August 2017 the FASB issued ASU No. 2017-12, Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities. This new standard provides guidance to better align an entity’s risk management activities and financial reporting for hedging relationships through changes to both the designation and measurement guidance for qualifying hedging relationships and the presentation of hedge results. This new standard expands and refines hedge accounting for both non-financial and financial risk components and aligns the recognition and presentation of the effects of the hedging instrument and the hedged item in the financial statements.

We adopted this new standard on January 1, 2018, using the modified retrospective method, which did not have an impact on our financial position or results of operations; however, the adoption of this new standard resulted in additional disclosures and a change in the income statement classification with respect to where we recognize ineffective hedge transaction gains and losses. Prior to the adoption of ASU 2017-12 on January 1, 2018, to the extent ineffective, hedge transaction gains and losses were reported in other income (expense), net. Effective January 1, 2018, we recognize all fair value changes of derivatives in earnings, including any ineffective portion, in the same line item in our condensed consolidated statements of income that has been impacted by the hedged item.

We recognize all derivative instruments as either assets or liabilities at fair value in our condensed 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 flows from these instruments in the same category as the cash flows from the hedged items. We do not hold or issue derivative instruments for trading or speculative purposes.

We assess at inception and on an on-going basis, whether the derivative instruments that are used in hedging transactions are highly effective in offsetting the changes in cash flows or fair values of the hedged items. We exclude the forward points portion of the derivative instrument used in a hedging transaction from the effectiveness test and record the fair value gain or loss related to this portion each period in the same line item as the underlying

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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.

For additional information on our derivative instruments and hedging activities, please read Note 9, Derivative Instruments, to these condensed consolidated financial statements.

2. Acquisitions

BIIB100 Acquisition

In January 2018 we acquired the Phase 1 ready investigational oral compound BIIB100 (formerly known as KPT-350) for the treatment of certain neurological and neurodegenerative conditions, primarily in ALS, from Karyopharm Therapeutics Inc. (Karyopharm). BIIB100 is a novel therapeutic candidate that works by inhibiting a protein known as XPO1, with the goal of reducing inflammation and neurotoxicity, along with increasing neuroprotective responses.

We accounted for this transaction as an asset acquisition as the value being acquired relates to a single asset. In connection with the closing of this transaction, we made an upfront payment of $10.0 million, which was recorded as acquired in-process research and development in our condensed consolidated statements of income as BIIB100 has not yet reached technological feasibility. We may also pay Karyopharm up to $207.0 million in additional milestone payments, as well as potential royalties in the mid-single digit to low-teen percentages.

BIIB104 Acquisition

In April 2018 we acquired BIIB104 (formerly known as PF-04958242), a first-in-class, AMPA receptor potentiator for CIAS, from Pfizer Inc. (Pfizer). AMPA receptors mediate fast excitatory synaptic transmission in the central nervous system, a process which can be disrupted in a number of neurological and psychiatric diseases, including schizophrenia.

We accounted for this transaction as an asset acquisition as the value being acquired primarily relates to a single asset. In connection with the closing of this transaction, we made an upfront payment of $75.0 million, which was recorded as acquired in-process research and development in our condensed consolidated statements of income as BIIB104 has not yet reached technological feasibility. We may also pay Pfizer up to $515.0 million in additional development and commercialization milestone payments, as well as potential tiered royalties in the low to mid-teen percentages. The next expected milestone would be $10.0 million upon the dosing of the first patient in the Phase 2b study, which will be recorded as research and development expense in our condensed consolidated statements of income.

TMS CO., LTD.

In June 2018 we entered into an exclusive option agreement with TMS Co., Ltd. (TMS) granting us the option to acquire TMS-007, a plasminogen activator with a novel mechanism of action (MOA) associated with breaking down blood clots, which is in Phase 2 development, and backup compounds for the treatment of stroke. In exchange for the purchase option, we made a $4.0 million upfront payment to TMS, which was recorded as research and development expense in our condensed consolidated statements of income as TMS-007 has not yet reached technological feasibility.

If we exercise the purchase option, we will make an additional payment of $18.0 million upon closing of the asset acquisition, which will be recorded as acquired in-process research and development expense in our condensed consolidated statements of income as TMS-007 will not have yet reached technological feasibility. In addition, under the option agreement we may pay TMS up to $335.0 million in additional development and commercialization milestone payments, as well as tiered royalties in the high-single digit to low-teen percentages. If we exercise the purchase option, consummation of the asset acquisition may be subject to the expiration of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 in the U.S.

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3. Restructuring

2017 Corporate Strategy

In October 2017, in connection with creating a leaner and simpler operating model, we approved a corporate restructuring program intended to streamline our operations and reallocate resources. We recognized restructuring charges of $0.9 million in our condensed consolidated statements of income during the fourth quarter of 2017. These restructuring charges were primarily related to severance.

For the three and six months ended June 30, 2018, we recognized restructuring charges of $1.6 million and $3.2 million, respectively, in our condensed consolidated statements of income. These restructuring charges were primarily related to severance.

Charges incurred under this program have been substantially paid as of June 30, 2018.

4. Revenues

Product Revenues

Revenues by product are summarized as follows:

	For the Three Months Ended June 30,					
(In millions)	2018			2017		
	United States	Rest of World	Total	United States	Rest of World	Total
Multiple Sclerosis:						
TECFIDERA	$825.8	$261.0	$1,086.8	$875.0	$235.6	$1,110.6
Interferon*	444.7	180.8	625.5	501.7	188.9	690.6
TYSABRI	265.5	201.7	467.2	289.4	206.6	496.0
FAMPYRA	—	23.0	23.0	—	22.6	22.6
ZINBRYTA	—	—	—	—	16.1	16.1
Spinal Muscular Atrophy:						
SPINRAZA	205.9	216.8	422.7	194.8	8.1	202.9
Other Product Revenues:						
FUMADERM	—	5.5	5.5	—	10.3	10.3
BENEPALI	—	115.6	115.6	—	88.7	88.7
FLIXABI	—	11.2	11.2	—	1.9	1.9
Total product revenues	$1,741.9	$1,015.6	$2,757.5	$1,860.9	$778.8	$2,639.7

*Interferon includes AVONEX and PLEGRIDY.

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(In millions)	For the Six Months Ended June 30, 2018			2017		
	United States	Rest of World	Total	United States	Rest of World	Total
Multiple Sclerosis:						
TECFIDERA	$1,554.7	$519.0	$2,073.7	$1,626.1	$442.7	$2,068.8
Interferon*	816.0	359.8	1,175.8	966.5	372.4	1,338.9
TYSABRI	515.2	414.1	929.3	594.9	446.1	1,041.0
FAMPYRA	—	47.4	47.4	—	43.1	43.1
ZINBRYTA	—	1.4	1.4	—	26.8	26.8
Spinal Muscular Atrophy:						
SPINRAZA	393.9	392.7	786.6	241.2	9.1	250.3
Hemophilia:						
ELOCTATE	—	—	—	42.2	6.2	48.4
ALPROLIX	—	—	—	21.0	5.0	26.0
Other Product Revenues:						
FUMADERM	—	12.5	12.5	—	20.0	20.0
BENEPALI	—	236.5	236.5	—	154.0	154.0
FLIXABI	—	17.8	17.8	—	2.5	2.5
Total product revenues	$3,279.8	$2,001.2	$5,281.0	$3,491.9	$1,527.9	$5,019.8

*Interferon includes AVONEX and PLEGRIDY.

We recognized revenues from two wholesalers accounting for 32.5% and 18.6% of gross product revenues for the three months ended June 30, 2018, and 33.2% and 17.3% of gross product revenues for the six months ended June 30, 2018.

We recognized revenues from two wholesalers accounting for 34.3% and 22.8% of gross product revenues for the three months ended June 30, 2017, and 35.5% and 21.1% of gross product revenues for the six months ended June 30, 2017.

An analysis of the change in reserves for discounts and allowances is summarized as follows:

(In millions)	Discounts	Contractual Adjustments	Returns	Total
Balance, as of December 31, 2017	$ 109.6	$ 606.0	$ 46.0	$761.6
Current provisions relating to sales in current year	333.2	1,288.0	11.4	1,632.6
Adjustments relating to prior years	(0.3)	7.4	2.6	9.7
Payments/credits relating to sales in current year	(222.3)	(731.9)	—	(954.2)
Payments/credits relating to sales in prior years	(101.0)	(469.6)	(13.5)	(584.1)
Balance, as of June 30, 2018	$ 119.2	$ 699.9	$ 46.5	$865.6

The total reserves above, which are included in our condensed consolidated balance sheets, are summarized as follows:

(In millions)	As of June 30, 2018	As of December 31, 2017
Reduction of accounts receivable	$162.8	$ 189.6
Component of accrued expenses and other	702.8	572.0
Total reserves	$865.6	$ 761.6

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Revenues from Anti-CD20 Therapeutic Programs
Revenues from anti-CD20 therapeutic programs are summarized as follows:

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
(In millions)	2018	2017	2018	2017
Biogen's share of pre-tax profits in the U.S. for RITUXAN and GAZYVA	$359.0	$347.5	$708.6	$671.0
Other revenues from anti-CD20 therapeutic programs	131.4	49.6	225.0	66.7
Total revenues from anti-CD20 therapeutic programs	$490.4	$397.1	$933.6	$737.7

For additional information on our collaboration with Genentech, please read Note 20, Collaborative and Other Relationships, to our consolidated financial statements included in our 2017 Form 10-K.
Other Revenues
Other revenues are summarized as follows:

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
(In millions)	2018	2017	2018	2017
Revenues from collaborative and other relationships:				
AbbVie	$(2.5)	$(3.9)	$(7.2)	$(9.8)
Samsung Bioepis and other	14.7	12.9	32.6	25.1
Other royalty and corporate revenues:				
Royalty	17.3	11.8	27.9	37.3
Other corporate	79.1	20.8	219.7	79.0
Total other revenues	$108.6	$41.6	$273.0	$131.6

For additional information related to our collaborations with AbbVie and Samsung Bioepis, please read Note 18, Collaborative and Other Relationships, to these condensed consolidated financial statements.

5. Inventory

The components of inventory are summarized as follows:

(In millions)	As of June 30, 2018	As of December 31, 2017
Raw materials	$176.1	$ 162.4
Work in process	610.0	605.7
Finished goods	158.5	157.4
Total inventory	$944.6	$ 925.5

Balance Sheet Classification:		
Inventory	$931.7	$ 902.7
Investments and other assets	12.9	22.8
Total inventory	$944.6	$ 925.5

Long-term inventory, which primarily consists of work in process, is included in investments and other assets in our condensed consolidated balance sheets.

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6. Intangible Assets and Goodwill

Intangible Assets

Intangible assets, net of accumulated amortization, impairment charges and adjustments, are summarized as follows:

		As of June 30, 2018			As of December 31, 2017		
(In millions)	Estimated Life	Cost	Accumulated Amortization	Net	Cost	Accumulated Amortization	Net
Out-licensed patents	13-23 years	$543.3	$ (539.9)	$3.4	$543.3	$ (535.6)	$7.7
Developed technology	15-23 years	3,005.3	(2,713.1)	292.2	3,005.3	(2,689.0)	316.3
In-process research and development	Indefinite until commercialization	670.5	—	670.5	680.6	—	680.6
Trademarks and tradenames	Indefinite	64.0	—	64.0	64.0	—	64.0
Acquired and in-licensed rights and patents	4-18 years	3,974.2	(1,343.0)	2,631.2	3,971.4	(1,160.4)	2,811.0
Total intangible assets		$8,257.3	$ (4,596.0)	$3,661.3	$8,264.6	$ (4,385.0)	$3,879.6

For the three and six months ended June 30, 2018, amortization of acquired intangible assets totaled $107.4 million and $211.3 million, respectively, compared to $117.5 million and $566.0 million, respectively, in the prior year comparative periods. For the six months ended June 30, 2018, compared to the same period in 2017, the decrease in amortization of acquired intangible assets was primarily due to the prior year impairment charge related to our U.S. and rest of world licenses to Forward Pharma A/S's (Forward Pharma) intellectual property, including Forward Pharma's intellectual property related to TECFIDERA, as discussed below.

Developed Technology

Developed technology primarily relates to our AVONEX product, which was recorded in connection with the merger of Biogen, Inc. and IDEC Pharmaceuticals Corporation in 2003. The net book value of this asset as of June 30, 2018, was $285.8 million.

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 from Elan Corporation plc and our U.S. and rest of world licenses to Forward Pharma's intellectual property, including Forward Pharma's intellectual property related to TECFIDERA. The net book values of the TYSABRI and TECFIDERA assets as of June 30, 2018, were $2,120.8 million and $291.4 million, respectively.

TECFIDERA License Rights

In January 2017 we entered into a settlement and license agreement among Biogen Swiss Manufacturing GmbH, Biogen International Holding Ltd., Forward Pharma and certain related parties, which was effective as of February 1, 2017. Pursuant to this agreement, we obtained U.S. and rest of world licenses to Forward Pharma's intellectual property, including Forward Pharma's intellectual property related to TECFIDERA. In exchange, we paid Forward Pharma $1.25 billion in cash.

We have two intellectual property disputes with Forward Pharma, one in the U.S. and one in the E.U., concerning intellectual property related to TECFIDERA.

In March 2017 the U.S. intellectual property dispute was decided in our favor. Forward Pharma appealed to the U.S. Court of Appeals for the Federal Circuit and the appeal is pending. We evaluated the recoverability of the U.S. asset acquired from Forward Pharma and recorded an impairment charge in the first quarter of 2017 to adjust the carrying value of the acquired U.S. asset to fair value reflecting the impact of the developments in the U.S. legal dispute.

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In March 2018 the European Patent Office (EPO) issued its decision revoking Forward Pharma's European Patent No. 2 801 355. Forward Pharma has filed an appeal to the Technical Board of Appeal of the EPO and the appeal is pending.

Based upon our assessment of these rulings, we continue to amortize the remaining net book value of the U.S. and rest of world intangible assets in our condensed consolidated statements of income utilizing an economic consumption model.

For additional information on these disputes, please read Note 21, Litigation, to our consolidated financial statements included in our 2017 Form 10-K.

Estimated Future Amortization of Intangible Assets

Our amortization expense is based on the economic consumption and impairment of intangible assets. Our most significant intangible assets are related to our TECFIDERA, AVONEX and TYSABRI products. Annually, during our long-range planning cycle, we perform an analysis of anticipated lifetime revenues of our TECFIDERA, AVONEX and TYSABRI products. This analysis is also updated whenever events or changes in circumstances would significantly affect the anticipated lifetime revenues of any of these products.

Our most recent long-range planning cycle was completed in the third quarter of 2017. Based upon this analysis, the estimated future amortization of acquired intangible assets for the next five years is expected to be as follows:

(In millions)	As of June 30, 2018
2018 (remaining six months)	$215.8
2019	402.6
2020	380.9
2021	255.0
2022	242.3
2023	211.2

Goodwill

The following table provides a roll forward of the changes in our goodwill balance:

(In millions)	As of June 30, 2018
Goodwill, beginning of period	$4,632.5
Increase to goodwill	540.9
Other	(3.1)
Goodwill, end of period	$5,170.3

The increase in goodwill during the six months ended June 30, 2018, was related to $600.0 million in contingent milestones achieved (exclusive of $59.1 million in tax benefits) and payable to the former shareholders of Fumapharm AG or holders of their rights.

For additional information on future contingent payments to the former shareholders of Fumapharm AG or holders of their rights, please read Note 22, Commitments and Contingencies, to our consolidated financial statements included in our 2017 Form 10-K.

Other includes changes in foreign currency exchange rate fluctuations. As of June 30, 2018, we had no accumulated impairment losses related to goodwill.

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7. 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 June 30, 2018 (In millions)	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents	$732.2	$ —	$ 732.2	$ —
Marketable debt securities:				
Corporate debt securities	2,045.5	—	2,045.5	—
Government securities	828.7	—	828.7	—
Mortgage and other asset backed securities	260.0	—	260.0	—
Marketable equity securities	489.7	70.1	419.6	—
Derivative contracts	40.0	—	40.0	—
Plan assets for deferred compensation	28.2	—	28.2	—
Total	$4,424.3	$ 70.1	$ 4,354.2	$ —
Liabilities:				
Derivative contracts	$43.5	$ —	$ 43.5	$ —
Contingent consideration obligations	499.9	—	—	499.9
Total	$543.4	$ —	$ 43.5	$ 499.9

As of December 31, 2017 (In millions)	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents	$1,229.4	$ —	$ 1,229.4	$ —
Marketable debt securities:				
Corporate debt securities	2,609.8	—	2,609.8	—
Government securities	1,919.3	—	1,919.3	—
Mortgage and other asset backed securities	643.4	—	643.4	—
Marketable equity securities	11.8	11.8	—	—
Derivative contracts	2.7	—	2.7	—
Plan assets for deferred compensation	28.5	—	28.5	—
Total	$6,444.9	$ 11.8	$ 6,433.1	$ —
Liabilities:				
Derivative contracts	$111.3	$ —	$ 111.3	$ —
Contingent consideration obligations	523.6	—	—	523.6
Total	$634.9	$ —	$ 111.3	$ 523.6

There have been no impairments of our assets measured and carried at fair value during the three and six months ended June 30, 2018. In addition, there were no changes in valuation techniques or inputs utilized or transfers between fair value measurement levels during the three and six months ended June 30, 2018. The fair values of Level 2 instruments classified as cash equivalents, marketable debt securities and our marketable equity security investment in Ionis Pharmaceuticals, Inc. (Ionis) were determined through third-party pricing services. For additional information on our collaboration agreement with Ionis, please read Note 18, Collaborative and Other Relationships, to these

condensed consolidated financial statements. For a description of our validation procedures

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related to prices provided by third-party pricing services, please read Note 1, Summary of Significant Accounting Policies: Fair Value Measurements, to our consolidated financial statements included in our 2017 Form 10-K.

Debt Instruments

The fair and carrying values of our debt instruments, which are Level 2 liabilities, are summarized as follows:

	As of June 30, 2018		As of December 31, 2017	
(In millions)	Fair Value	Carrying Value	Fair Value	Carrying Value
Notes payable to Fumedica AG	$ —	$ —	$ 3.2	$ 3.2
2.900% Senior Notes due September 15, 2020	1,491.4	1,474.3	1,517.7	1,482.4
3.625% Senior Notes due September 15, 2022	999.6	994.9	1,032.9	994.3
4.050% Senior Notes due September 15, 2025				