BIOMARIN PHARMACEUTICAL INC
Form 10-Q
August 03, 2018

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-Q

(Mark One)

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

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to .

Commission File Number: 000-26727

BioMarin Pharmaceutical Inc.

(Exact name of registrant as specified in its charter)

Delaware	68-0397820
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
770 Lindaro Street, San Rafael, California	94901
(Address of principal executive offices)	(Zip Code)

(415) 506-6700

(Registrant's telephone number including area code)

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 No

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 (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

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 Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company) 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 is a shell company (as defined in Rule 12b-2 of the Exchange Act.) Yes No

Applicable only to corporate issuers:

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date: 177,590,376 shares of common stock, par value $0.001, outstanding as of July 23, 2018.

BIOMARIN PHARMACEUTICAL INC.

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Unless the context suggests otherwise, references in this Quarterly Report on Form 10-Q to "BioMarin," the "Company," "we," "us," and "our" refer to BioMarin Pharmaceutical Inc. and, where appropriate, its wholly owned subsidiaries.

Forward-Looking Statements

This Quarterly Report on Form 10-Q contains "forward-looking statements" as defined under securities laws. Many of these statements can be identified by the use of terminology such as "believes," "expects," "intends," "anticipates," "plans," "m "will," "could," would," "projects," "continues," "estimates," "potential," "opportunity" or the negative versions of these terms other similar expressions. Our actual results or experience could differ significantly from the forward-looking statements. Factors that could cause or contribute to these differences include those discussed in "Risk Factors," in Part II, Item 1A of this Quarterly Report on Form 10-Q as well as information provided elsewhere in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K for the year ended December 31, 2017, which was filed with the Securities and Exchange Commission (the SEC) on February 26, 2018. You should carefully consider that information before you make an investment decision.

You should not place undue reliance on these types of forward-looking statements, which speak only as of the date that they were made. These forward-looking statements are based on the beliefs and assumptions of the Company's management based on information currently available to management and should be considered in connection with any written or oral forward-looking statements that the Company may issue in the future as well as other cautionary statements the Company has made and may make. Except as required by law, the Company does not undertake any obligation to release publicly any revisions to these forward-looking statements after completion of the filing of this Quarterly Report on Form 10-Q to reflect later events or circumstances or the occurrence of unanticipated events.

The discussion of the Company's financial condition and results of operations should be read in conjunction with the Company's Condensed Consolidated Financial Statements and the related Notes thereto included in this Quarterly Report on Form 10-Q.

PART I. FINANCIAL INFORMATION

Item 1. Financial Statements

BIOMARIN PHARMACEUTICAL INC.

CONDENSED CONSOLIDATED BALANCE SHEETS

June 30, 2018 and December 31, 2017

(In thousands, except share and per share amounts)

	June 30, 2018	December 31, 2017(1)
ASSETS	(unaudited)	
Current assets:		
Cash and cash equivalents	$427,411	$598,028
Short-term investments	935,662	797,940
Accounts receivable, net	363,566	261,365
Inventory	473,356	475,775
Other current assets	80,072	74,036
Total current assets	2,280,067	2,207,144
Noncurrent assets:		
Long-term investments	279,988	385,785
Property, plant and equipment, net	900,480	896,700
Intangible assets, net	502,295	517,510
Goodwill	197,039	197,039
Deferred tax assets	425,380	399,095
Other assets	39,430	29,852
Total assets	$4,624,679	$4,633,125
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued liabilities	$358,732	$401,921
Short-term convertible debt, net	369,752	360,949
Short-term contingent acquisition consideration	76,466	53,648
Total current liabilities	804,950	816,518
Noncurrent liabilities:		
Long-term convertible debt, net	821,871	813,521
Long-term contingent acquisition consideration	57,674	135,318
Other long-term liabilities	55,080	59,105
Total liabilities	1,739,575	1,824,462
Stockholders' equity:		
Common stock, $0.001 par value: 500,000,000 shares authorized;	178	176

177,508,135 and 175,843,749 shares issued and outstanding, respectively.		
Additional paid-in capital	4,577,300	4,483,220
Company common stock held by Nonqualified Deferred Compensation Plan (the NQDC)	(13,390)	(14,224)
Accumulated other comprehensive loss	(1,129)	(22,961)
Accumulated deficit	(1,677,855)	(1,637,548)
Total stockholders' equity	2,885,104	2,808,663
Total liabilities and stockholders' equity	$4,624,679	$4,633,125

(1) December 31, 2017 balances were derived from the audited Consolidated Financial Statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2017, filed with the SEC on February 26, 2018.

The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

BIOMARIN PHARMACEUTICAL INC.

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

Three and Six Months Ended June 30, 2018 and 2017

(In thousands, except per share amounts)

(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
REVENUES:				
Net product revenues	$367,786	$315,926	$736,885	$618,116
Royalty and other revenues	5,059	1,522	9,407	3,077
Total revenues	372,845	317,448	746,292	621,193
OPERATING EXPENSES:				
Cost of sales	79,019	56,305	161,352	106,311
Research and development	175,582	143,039	359,530	288,042
Selling, general and administrative	153,280	143,505	291,616	263,524
Intangible asset amortization and contingent consideration	10,227	13,411	23,429	22,336
Gain on sale of intangible assets	(20,000)	—	(20,000)	—
Total operating expenses	398,108	356,260	815,927	680,213
LOSS FROM OPERATIONS	(25,263)	(38,812)	(69,635)	(59,020)
Equity in the loss of BioMarin/Genzyme LLC	(107)	(220)	(39)	(743)
Interest income	5,569	2,983	10,803	6,055
Interest expense	(12,225)	(10,040)	(23,787)	(20,159)
Other income, net	2,849	543	2,677	4,015
LOSS BEFORE INCOME TAXES	(29,177)	(45,546)	(79,981)	(69,852)
Benefit from income taxes	(12,385)	(8,713)	(19,040)	(16,729)
NET LOSS	$(16,792)	$(36,833)	$(60,941)	$(53,123)
NET LOSS PER SHARE, BASIC AND DILUTED	$(0.09)	$(0.21)	$(0.35)	$(0.31)
Weighted average common shares outstanding, basic and diluted	176,873	174,374	176,405	173,547
COMPREHENSIVE INCOME (LOSS)	$10,624	$(56,511)	$(38,523)	$(80,597)

The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

BIOMARIN PHARMACEUTICAL INC.

CONDENSED CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY

Six Months Ended June 30, 2018

(In thousands)

(Unaudited)

	Common Stock		Additional Paid-in	Company Common Stock Held by the	Accumulated Other Comprehensive		Total Stockholders'
	Shares	Amount	Capital	NQDC	Income (Loss)	Accumulated Deficit	Equity
Balance at December 31, 2017	175,844	$ 176	$4,483,220	$(14,224)	$ (22,961)	$(1,637,548)	$2,808,663
Impact of change in accounting principle - ASC 606	—	—	—	—	—	20,048	20,048
Impact of change in accounting principle - ASU 2018-02	—	—	—	—	(586)	586	—
Adjusted balance at January 1, 2018	175,844	$ 176	$4,483,220	$(14,224)	$ (23,547)	$(1,616,914)	$2,828,711
Net loss	—	—	—	—	—	(60,941)	(60,941)
Other comprehensive income	—	—	—	—	22,418	—	22,418
Issuances under equity incentive plans, net of tax	1,664	2	16,310	—	—	—	16,312
Common stock held by the NQDC	—	—	—	834	—	—	834
Stock-based compensation	—	—	77,770	—	—	—	77,770
Balance at June 30, 2018	177,508	$ 178	$4,577,300	$(13,390)	$ (1,129)	$(1,677,855)	$2,885,104

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The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

BIOMARIN PHARMACEUTICAL INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

Six Months Ended June 30, 2018 and 2017

(In thousands)

(Unaudited)

	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	$(60,941)	$(53,123)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	44,610	38,497
Non-cash interest expense	17,300	15,601
Accretion of discount on investments	(41)	1,327
Stock-based compensation	75,214	70,775
Gain on sale of intangible assets	(20,000)	—
Gain on the sale of equity investments	—	(3,252)
Deferred income taxes	(29,681)	(22,770)
Unrealized foreign exchange gain	(5,693)	(4,870)
Non-cash changes in the fair value of contingent acquisition consideration	1,828	7,195
Other	1,772	3,806
Changes in operating assets and liabilities:		
Accounts receivable, net	(77,416)	(16,834)
Inventory	15,493	(60,369)
Other current assets	(2,037)	(3,710)
Other assets	(6,448)	(1,109)
Accounts payable and accrued liabilities	(32,989)	(36,286)
Other long-term liabilities	2,663	3,459
Net cash used in operating activities	(76,366)	(61,663)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property, plant and equipment	(52,682)	(116,847)
Maturities and sales of investments	311,969	234,617
Purchases of available-for-sale securities	(345,458)	(130,986)
Proceeds from sale of intangible asset	20,000	—
Other	(841)	(1,560)
Net cash used in investing activities	(67,012)	(14,776)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from exercises of awards under equity incentive plans	44,926	40,659
Taxes paid related to net share settlement of equity awards	(28,614)	(26,624)
Payment of contingent acquisition consideration	(43,108)	(1,894)
Other	—	(28)
Net cash (used in) provided by financing activities	(26,796)	12,113
Effect of exchange rate changes on cash	(443)	10,860
NET DECREASE IN CASH AND CASH EQUIVALENTS	(170,617)	(53,466)

Cash and cash equivalents:		
Beginning of period	$598,028	$408,330
End of period	$427,411	$354,864
SUPPLEMENTAL CASH FLOW DISCLOSURES:		
Cash paid for income taxes	$14,858	$16,341
Cash paid for interest, net of interest capitalized into fixed assets	5,831	4,519
SUPPLEMENTAL CASH FLOW DISCLOSURES FOR NON CASH INVESTING AND FINANCING ACTIVITIES:		
Decrease in accounts payable and accrued liabilities related to fixed assets	$(7,734)	$(29,300)
Conversion of convertible debt	—	22,477

The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

(1) NATURE OF OPERATIONS

BioMarin Pharmaceutical Inc. (the Company) is a global biotechnology company that develops and commercializes innovative therapies for people with serious and life-threatening rare diseases and medical conditions. The Company selects product candidates for diseases and conditions that represent a significant unmet medical need, have well-understood biology and provide an opportunity to be first-to-market or offer a significant benefit over existing products. The Company's therapy portfolio consists of seven commercial products and multiple clinical and pre-clinical product candidates. Palynziq (formerly known as pegvaliase) was granted marketing approval in the United States (U.S.) on May 24, 2018.

The Company expects to continue to finance future cash needs that exceed its operating activities primarily through its current cash, cash equivalents and investments and through proceeds from debt or equity offerings, commercial borrowing, or through collaborative agreements with corporate partners. If the Company elects to increase its spending on development programs significantly above current long-term plans or enters into potential licenses and other acquisitions of complementary technologies, products or companies, the Company may need additional capital.

(2) BASIS OF PRESENTATION

The accompanying Condensed Consolidated Financial Statements have been prepared pursuant to U.S. generally accepted accounting principles (U.S. GAAP) and the rules and regulations of the SEC for Quarterly Reports on Form 10-Q and do not include all of the information and note disclosures required by U.S. GAAP for complete financial statements, although the Company believes that the disclosures herein are adequate to ensure that the information presented is not misleading. The Condensed Consolidated Financial Statements should therefore be read in conjunction with the Consolidated Financial Statements and Notes thereto for the fiscal year ended December 31, 2017 included in the Company's Annual Report on Form 10-K.

Effective January 1, 2018, the Company adopted the requirements of Accounting Standards Codification 606, Revenue from Contracts with Customers (ASC 606), using the modified retrospective method as discussed in Note 3 - Significant Accounting Policies. The Company recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of Accumulated Deficit. The comparative information for the periods prior to 2018 have not been restated and continue to be reported under the accounting standards in effect for those periods.

U.S. GAAP requires management to make estimates and assumptions that affect amounts reported in the Condensed Consolidated Financial Statements and accompanying disclosures. Although these estimates are based on management's best knowledge of current events and actions that the Company may undertake in the future, actual results may be different from those estimates. The Condensed Consolidated Financial Statements reflect all adjustments of a normal, recurring nature that are, in the opinion of management, necessary for a fair presentation of results for these interim periods. The results of operations for the three and six months ended June 30, 2018 are not necessarily indicative of the results that may be expected for the fiscal year ending December 31, 2018 or any other period.

Management performed an evaluation of the Company's activities through the date of filing of this Quarterly Report on Form 10-Q, and has concluded that there were no subsequent events or transactions that occurred subsequent to the balance sheet date prior to filing this Quarterly Report on Form 10-Q that would require recognition or disclosure in the Condensed Consolidated Financial Statements.

(3) SIGNIFICANT ACCOUNTING POLICIES

Except as detailed below, there have been no material changes to the Company's significant accounting policies during the six months ended June 30, 2018, as compared to the significant accounting policies disclosed in Note 3 of the Consolidated Financial Statements in the Company's Annual Report on Form 10-K for the year ended December 31, 2017.

Effective January 1, 2018, the Company adopted the provisions of ASC 606 using the modified retrospective method for all contracts not completed as of the date of adoption. For contracts that were modified before the effective date, the Company reflected the aggregate effect of all modifications when identifying performance obligations and allocating transaction price in accordance with available practical expedients. The reported results for 2018 reflect the application of ASC 606 guidance, while the reported results for 2017 were prepared under the guidance of ASC 605, Revenue Recognition (ASC 605), which is also referred to herein as "previous guidance."

Under ASC 606, the Company recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that are within the scope of ASC 606, the Company performs the following five steps:

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

(i) identification of the promised goods or services in the contract;
(ii) determination of whether the promised goods or services are performance obligations including whether they are distinct in the context of the contract;
(iii) measurement of the transaction price, including the constraint on variable consideration;
(iv) allocation of the transaction price to the performance obligations based on estimated selling prices; and
(v) recognition of revenue when (or as) the Company satisfies each performance obligation. A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account in ASC 606.

Net Product Revenues

In the U.S., the Company's commercial products are generally sold to specialty pharmacies or end-users, such as hospitals, which act as retailers. Outside the U.S., the Company's commercial products are sold to its authorized distributors or directly to government purchasers or hospitals, which act as the end-users. Revenues from product sales are recognized when the customer obtains control of the Company's product, which occurs at a point in time, typically upon shipment to the customer. Amounts collected from customers and remitted to governmental authorities, which primarily consist of value-added taxes related to product sales in foreign jurisdictions, are presented on a net basis in the Company's Condensed Consolidated Statements of Comprehensive Income (Loss), in that taxes billed to customers are not included as a component of Net Product Revenues.

For Aldurazyme revenues, the Company receives a payment ranging from 39.5% to 50% on worldwide net Aldurazyme sales by Genzyme Corporation (Genzyme) depending on sales volume, which is included in Net Product Revenues in the Company's Condensed Consolidated Statements of Comprehensive Income (Loss). Under the previous guidance the Company only recognized a portion of this amount as product transfer revenue when the product was released to Genzyme because all of the Company's performance obligations were fulfilled at that point, the prices were substantially fixed or determinable and title to, and risk of loss for, the product had transferred to Genzyme. The product transfer revenue only represented the fixed amount per unit of Aldurazyme that Genzyme was required to pay the Company if the product was unsold by Genzyme. The amount of product transfer revenue was eventually deducted from the calculated royalty recognized when the product was subsequently sold by Genzyme. The Company recorded the Aldurazyme revenues based on net sales information provided by Genzyme and recorded product transfer revenues based on the fulfillment of Genzyme purchase orders in accordance with the terms of the related agreements with Genzyme.

Under ASC 606, the Company recognizes its best estimate of the entire revenue that it expects to receive when the product is released and control is transferred to Genzyme. The Company records Aldurazyme net product revenues based on the estimated variable consideration payable when the product is sold through by Genzyme. Actual amounts of consideration ultimately received may differ from the Company's estimates, however the Company does not expect any such difference to be material. If actual results in the future vary from the Company's estimates, the Company will make adjustments, which would affect Net Product Revenues and earnings in the period such variances become known.

Revenue Reserves

Revenues from product sales are recorded at the net sales price (transaction price), which includes estimates of variable consideration for which reserves are established and which result from government rebates, sales returns, and other incentives that are offered within contracts between the Company and its customers, as such specialty pharmacies, hospitals, authorized distributors and government purchasers. These reserves are based on 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 the customer) or a current liability (if the amount is payable to a party other than a customer). Where appropriate, these estimates take into consideration a range of possible outcomes which are probability-weighted for relevant factors such as the Company's historical experience, current contractual and statutory requirements, specific known market events and trends, industry data and forecasted customer buying and payment patterns. Overall, these reserves reflect the Company's best estimates of the amount of consideration to which it is entitled based on the terms of the contract. The amount of variable consideration that is included in the transaction price may be constrained, and is included in the net sales price only to the extent that it is probable that a significant reversal in the amount of the cumulative revenue recognized will not occur in a future period. Actual amounts of consideration ultimately received may differ from the Company's estimates. If actual results in the future vary from the Company's estimates, the Company will adjust its estimates, which would affect net product revenue and earnings in the period such variances become known.

Government Rebates: The Company records reserves for rebates payable under Medicaid and other government programs as a reduction of revenue at the time product revenues are recorded. The Company's reserve calculations require estimates, including estimates of customer mix, to determine which sales will be subject to rebates and the amount of such rebates. The Company updates its estimates and assumptions on a quarterly basis and records any necessary adjustments to its reserves.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

Sales Returns: The Company records allowances for product returns, if appropriate, as a reduction of revenue at the time product sales are recorded. Several factors are considered in determining whether an allowance for product returns is required, including market exclusivity of the products based on their orphan drug status, the patient population, the customers' limited return rights and the Company's historical experience with returns. Because of the pricing of the Company's commercial products, the limited number of patients and the customers' limited return rights, most customers and retailers carry a limited inventory. The Company relies on historical return rates to estimate returns. Based on these factors and the fact that the Company has not experienced significant product returns to date, management has concluded that product returns will be minimal. In the future, if any of these factors and/or the history of product returns change, an allowance for product returns may be required.

Other Incentives: Other incentives include fees paid to the Company's distributors, discounts for prompt payment and the estimated costs of the Company's patient co-payment assistance programs. Beginning in 2018, the Company also offers a branded co-pay assistance program for eligible patients with commercial insurance in the U.S. who are on Kuvan or Brineura therapy. The branded co-pay assistance programs assist commercially insured patients who have coverage for Kuvan or Brineura and are intended to reduce each participating patient's portion of the financial responsibility for Kuvan's or Brineura's purchase price up to a specified dollar amount of assistance. The Company records fees paid to distributors, cash discounts and amounts paid under the branded specific co-pay assistance program for each patient as a reduction of revenue.

Royalty and Other Revenues

Royalties: For arrangements that include the receipt of sales-based royalties, including milestone payments based on the level of sales when the license is deemed to be the predominant item to which the royalties relate, the Company recognizes revenue at the later of (a) when the related sales occur, or (b) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied).

Licenses of intellectual property: If the license to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenues from non-refundable, up-front fees allocated to the license when the license is transferred to the customer and the customer is able to use and benefit from the license. For licenses that are bundled with other promises, the Company utilizes judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, up-front fees. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition.

Milestone payments: At the inception of each arrangement that includes developmental, regulatory or commercial milestone payments, the Company evaluates whether achieving the milestones is considered probable and estimates the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the value of the associated milestone (such as a regulatory submission by the Company) is included in the transaction price. Milestone payments that are not within the control of the Company, such as approvals from regulators or where attainment of the specified event is dependent on the development activities of a third-party, are not considered probable of being achieved until those approvals are

received or the specified event occurs. Revenue is recognized from the satisfaction of performance obligations in the amount billable to the customer.

(4) RECENT ACCOUNTING PRONOUNCEMENTS

Except as described below, there have been no new accounting pronouncements or changes to accounting pronouncements during the six months ended June 30, 2018, as compared to the recent accounting pronouncements described in Note 4 of the Company's Annual Report on Form 10-K for the year ended December 31, 2017, that the Company believes are of significance or potential significance to the Company.

Accounting Pronouncements Not Yet Adopted

In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-02, Leases (ASU 2016-02). The amended guidance requires balance sheet recognition of lease right-of-use (ROU) assets and liabilities by lessees for leases classified as operating leases, with an option to not recognize lease ROU assets and lease liabilities for leases with a term of 12 months or less. The amendments also require new disclosures providing additional qualitative and quantitative information about the amounts recorded in the financial statements. Lessor accounting is largely unchanged. ASU 2016-02 is effective for the Company's fiscal year beginning January 1, 2019. Early adoption is permitted, but the Company has not made the election to do so. ASU 2016-02 will be effective for the Company's fiscal year beginning January 1, 2019. The amendments require a modified retrospective approach with optional practical expedients.

As of June 30, 2018, the Company's task force formed in connection with the adoption of ASU 2016-02 was in the process of analyzing the Company's lease contracts and the potential impact the standard may have on its Condensed Consolidated Financial Statements and related disclosures. After completing the analysis of the accounting for the Company's lease contracts under the standard, management will assess the required changes to the Company's accounting policies, systems and internal control over

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

financial reporting. Based on management's preliminary analysis, the Company anticipates the standard may have a material impact on the Company's Condensed Consolidated Balance Sheets due to the requirement to recognize lease ROU assets and corresponding liabilities related to leases on the Company's Condensed Consolidated Balance Sheets, however it is not anticipated to have a material impact on the Company's other Condensed Consolidated Financial Statements.

Accounting Pronouncements Adopted

Effective January 1, 2018, the Company adopted ASC 606, which provides principles for recognizing revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those goods or services. The Company adopted ASC 606 on a modified retrospective basis through a cumulative adjustment to equity. See Note 3 – Significant Accounting Policies and Note 15 – Revenue, Credit Concentrations and Geographic Information for additional disclosures related to the adoption of ASC 606.

The cumulative effect of applying the new guidance of ASC 606 to all contracts with customers that were not completed as of January 1, 2018 was recorded as an adjustment to Accumulated Deficit as of the adoption date. As a result of applying the modified retrospective method to adopt the new revenue guidance, the following adjustments were made to accounts on the Condensed Consolidated Balance Sheet as of January 1, 2018:

	As Reported December 31, 2017	Aldurazyme (1)	Tax Provision (2)	Adjusted January 1, 2018
Balance Sheet				
Assets:				
Accounts receivable, net	$261,365	$ 26,012	$ —	$287,377
Deferred tax assets	$399,095	$ —	$ (5,964)	$393,131
Total assets	$4,633,125	$ 26,012	$ (5,964)	$4,653,173
Equity:				
Accumulated deficit	$(1,637,548)	$ 26,012	$ (5,964)	$(1,617,500)
Total liabilities and stockholders' equity	$4,633,125	$ 26,012	$ (5,964)	$4,653,173

(1) This adjustment represents management's estimate of the variable consideration to be earned on worldwide sales of Aldurazyme by Genzyme in excess of the product transfer revenue previously recognized for Genzyme's ending inventory at December 31, 2017. The product transfer revenue previously recognized as revenue represents the fixed amount per unit of Aldurazyme that Genzyme was required to pay the Company if the product was unsold by Genzyme.

(2) The adoption of ASC 606 primarily resulted in an acceleration of the variable consideration components of revenue as of December 31, 2017, which in turn generated additional deferred tax liabilities that ultimately reduced the Company's net deferred tax asset position. The tax provision amount has been calculated using the

Company's estimated statutory rate.

The impact of adoption on the Company's Condensed Consolidated Statements of Comprehensive Income (Loss) for the three and six months ended June 30, 2018 was as follows:

	Three Months Ended June 30, 2018		
	As Reported	Adjustments [1]	Balance without Adoption of ASC 606
Net product revenues	$367,786	$ 48	$367,834
Benefit from income taxes	$(12,385)	$ 11	$(12,374)
Net loss	$(16,792)	$ 37	$(16,755)

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

	Six Months Ended June 30, 2018		
	As Reported	Adjustments [1]	Balance without Adoption of ASC 606
Net product revenues	$736,885	$ (27,150)	$709,735
Benefit from income taxes	$(19,040)	$ (6,225)	$(25,265)
Net loss	$(60,941)	$ (20,925)	$(81,866)

(1) The adoption of ASC 606 resulted in additional revenues recognized in the first half of 2018, which in turn generated additional deferred tax liabilities that reduced the Company's benefit from income taxes. The Benefit from Income Taxes amount has been calculated using the Company's estimated statutory rate.

The impact of adoption on the Company's Condensed Consolidated Statement of Cash Flows for the six months ended June 30, 2018 was as follows:

	As Reported	Adjustments [1]	Balance without Adoption of ASC 606
Net loss	$(60,941)	$ (20,925)	$(81,866)
Deferred income taxes	$(29,681)	$ (6,225)	$(35,906)
Changes in operating assets and liabilities:			
Accounts receivable, net	$(77,416)	$ 27,150	$(50,266)
Net cash used in operating activities	$(76,366)	$ —	$(76,366)

(1) The adoption of ASC 606 resulted in decreased Net Loss and increased Accounts Receivable, Net due to additional revenues recognized in the first quarter of 2018, which in turn generated additional deferred tax liabilities that reduced the Company's net Deferred Tax Assets. The Deferred Income Taxes amount has been calculated using the Company's estimated statutory rate.

In February 2018, the FASB issued ASU No. 2018-02, Income Statement—Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income (ASU 2018-02). The amendments allow a reclassification from Accumulated Other Comprehensive Income (Loss) (AOCI) to Accumulated Deficit for stranded tax effects resulting from the change in the U.S. federal corporate income tax rate on the gross deferred tax amounts at the date of enactment of the Tax Cuts and Jobs Act of 2017 (the 2017 Tax Act). ASU 2018-02 is effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted. The Company elected to early adopt ASU 2018-02 using the modified retrospective approach on an aggregate portfolio basis on January 1, 2018. As a result of adoption ASU 2018-02, the Company reclassified $0.6 million from AOCI to Accumulated Deficit in the first quarter of 2018.

(5) NET LOSS PER COMMON SHARE

Potentially issuable shares of common stock include shares issuable upon the exercise of outstanding employee stock option awards, common stock issuable under the Company's Employee Stock Purchase Plan (ESPP), unvested restricted stock units (RSUs), common stock held by the NQDC and contingent issuances of common stock related to convertible debt.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

The table below presents potential shares of common stock that were excluded from the computation of basic and diluted earnings per common share as they were anti-dilutive using the if-converted or treasury stock method (in thousands of common shares):

	Three and Six Months Ended June 30,	
	2018	2017
Options to purchase common stock	7,829	8,440
Common stock issuable under the 2018 Notes	3,983	3,983
Common stock issuable under the 2020 Notes	3,983	3,983
Common stock issuable under the 2024 Notes	3,970	—
Unvested restricted stock units	3,544	3,041
Common stock potentially issuable for ESPP purchases	433	387
Common stock held by the NQDC	208	224
Total number of potentially issuable shares	23,950	20,058

In connection with the issuance of to the Company’s 0.75% senior subordinated convertible notes due in 2018 (the 2018 Notes) and the Company’s 1.50% senior subordinated convertible notes due in 2020 (the 2020 Notes), the Company entered into capped call transactions with respect to 50% of the principal amount of the 2018 Notes and 50% of the principal amount of the 2020 Notes with certain hedge counterparties with conversion price of $94.15 per share. Although the Company’s stock price on June 29, 2018 (the last trading day before June 30, 2018) exceeded the conversion price, the potential effect of the capped call transactions and potential shares issuable under the 2018 Notes and the 2020 Notes were excluded from the calculation of diluted loss per share in the three and six months ended June 30, 2018 as they were anti-dilutive using the if-converted method. The potential effect of the capped call transactions with respect to the 2018 Notes and the 2020 Notes was excluded from the diluted net loss per share in the three and six months ended June 30, 2017 as the Company’s closing stock price on June 30, 2017 did not exceed the conversion price.

(6) FINANCIAL INSTRUMENTS

All marketable securities were classified as available-for-sale at June 30, 2018 and December 31, 2017.

The following tables show the Company’s cash, cash equivalents and available-for-sale securities by significant investment category as of June 30, 2018 and December 31, 2017, respectively:

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Cash and Cash Equivalents	Short-term Marketable Securities (1)	Long-term Marketable Securities (2)
Level 1:							
Cash	$209,062	$ —	$ —	$209,062	$ 209,062	$ —	$ —
Level 2:							
Money market instruments	177,882	—	—	177,882	177,882	—	—
Corporate debt securities	643,979	136	(3,452)	640,663	7,708	411,185	221,770
Commercial paper	51,818	1	—	51,819	18,947	32,871	—
U.S. government agency securities	532,066	4	(1,597)	530,473	11,312	461,143	58,019
Foreign and other	33,035	150	(23)	33,162	2,500	30,463	199
Subtotal	1,438,780	291	(5,072)	1,433,999	218,349	935,662	279,988
Total	$1,647,842	$ 291	$ (5,072)	$1,643,061	$ 427,411	$ 935,662	$ 279,988

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BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Cash and Cash Equivalents	Short-term Marketable Securities (1)	Long-term Marketable Securities (2)
Level 1:							
Cash	$340,253	$ —	$ —	$340,253	$ 340,253	$ —	$ —
Level 2:							
Money market instruments	215,441	—	—	215,441	215,441	—	—
Corporate debt securities	707,652	150	(2,553)	705,249	3,096	406,188	295,965
Commercial paper	24,566	—	—	24,566	2,751	21,815	—
U.S. government agency securities	472,593	—	(1,975)	470,618	35,497	345,501	89,620
Foreign and other	25,540	150	(64)	25,626	990	24,436	200
Subtotal	1,445,792	300	(4,592)	1,441,500	257,775	797,940	385,785
Total	$1,786,045	$ 300	$ (4,592)	$1,781,753	$ 598,028	$ 797,940	$ 385,785

(1) The Company’s short-term marketable securities mature in one year or less.

(2) The Company’s long-term marketable securities mature between one and five years.

The Company’s cash equivalents and marketable securities are classified within Level 2 in the fair value hierarchy because they are valued using third-party pricing sources and remeasured on a recurring basis. The pricing services utilize industry standard valuation models, including both income and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of and broker/dealer quotes on the same or similar securities, issuer credit spreads, benchmark securities, prepayment/default projections based on historical data and other observable inputs. The Company validates the prices provided by its third-party pricing services by understanding the models used, obtaining market values from other pricing sources, analyzing pricing data in certain instances and confirming those securities traded in active markets. See Note 12 to these Condensed Consolidated Financial Statements for additional information related to the Company’s fair value measurements.

Impairment assessments are made at the individual security level each reporting period. When the fair value of an investment is less than its cost at the balance sheet date, a determination is made as to whether the impairment is other-than-temporary and, if it is other-than-temporary, an impairment loss is recognized in earnings equal to the difference between the investment’s amortized cost and fair value at such date. As of June 30, 2018, the Company’s investments in an unrealized loss position were not significant and were considered to be temporary in nature. The Company has the ability and intent to hold all investments that have been in a continuous loss position until maturity or recovery, thus no other-than-temporary impairment is deemed to have occurred.

(7) INTANGIBLE ASSETS

Intangible assets consisted of the following:

	June 30, 2018	December 31, 2017
Intangible assets:		
Finite-lived intangible assets	$303,298	$ 303,298
Indefinite-lived intangible assets	326,359	326,359
Gross intangible assets:	629,657	629,657
Less: Accumulated amortization	(127,362)	(112,147)
Net carrying value	$502,295	$ 517,510

Indefinite-Lived Intangible Assets

Intangible assets related to in-process research and development (IPR&D) assets are considered to be indefinite-lived until the completion or abandonment of the associated research and development (R&D) efforts. During the second quarter of 2018, no amounts have been reclassified to definite-lived and no impairment charges were recorded.

During the second quarter of 2018, the Company received $20.0 million in milestone payments due to the achievement by a third party of regulatory milestones related to a previously sold intangible asset, which the Company recorded as a gain on the sale in the Condensed Consolidated Statements of Comprehensive Income (Loss).

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

(8) PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment, net consisted of the following:

	June 30, 2018	December 31, 2017
Building and improvements	$674,682	$ 663,347
Manufacturing and laboratory equipment	316,331	294,521
Computer hardware and software	152,010	144,268
Leasehold improvements	38,352	42,572
Furniture and equipment	30,833	31,515
Land improvements	5,977	5,331
Land	62,369	62,369
Construction-in-progress	60,582	59,511
	1,341,136	1,303,434
Accumulated depreciation	(440,656)	(406,734)
Total property, plant and equipment, net	$900,480	$ 896,700

The construction-in-process balance primarily includes costs related to the Company’s significant in-process projects at its facilities in Marin County, California, and in Shanbally, Ireland.

Depreciation expense for the three and six months ended June 30, 2018 was $20.1 million and $40.1 million, respectively, of which $6.6 million and $10.5 million, respectively, was capitalized into inventory. Depreciation expense for the three and six months ended June 30, 2017 was $17.9 million and $35.4 million, respectively, of which $6.2 million and $11.8 million, respectively, was capitalized into inventory. Capitalized interest related to the Company’s property, plant and equipment purchases for each of the three and six months ended June 30, 2018 and 2017 was insignificant.

(9) SUPPLEMENTAL BALANCE SHEET INFORMATION

Inventory consisted of the following:

June 30, 2018	December 31, 2017

Raw materials	$46,537	$ 49,877
Work-in-process	234,370	234,674
Finished goods	192,449	191,224
Total inventory	$473,356	$ 475,775

Accounts Payable and Accrued Liabilities consisted of the following:

	June 30, 2018	December 31, 2017
Accounts payable and accrued operating expenses	$166,416	$ 166,616
Accrued compensation expense	94,954	140,781
Accrued rebates payable	50,944	36,472
Accrued royalties payable	18,620	18,820
Value added taxes payable	9,191	9,740
Forward foreign currency exchange contracts	7,165	14,464
Accrued income taxes	2,658	5,528
Other	8,784	9,500
Total accounts payable and accrued liabilities	$358,732	$ 401,921

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

(10) DEBT

Convertible Notes

As of June 30, 2018, the Company had outstanding fixed-rate notes with varying maturities for an aggregate principal amount of $1.2 billion (collectively the Notes). The Notes are senior subordinated convertible obligations, and interest is payable in arrears, quarterly. The following table summarizes information regarding the Company's convertible debt:

	June 30, 2018	December 31, 2017
0.75% senior subordinated convertible notes due in October 2018	$374,980	$ 374,980
Unamortized discount	(4,659)	(12,488)
Unamortized deferred offering costs	(569)	(1,543)
Convertible Notes due in 2018, net	369,752	360,949
1.50% senior subordinated convertible notes due in October 2020	374,993	374,993
Unamortized discount	(33,531)	(40,287)
Unamortized deferred offering costs	(2,983)	(3,631)
Convertible Notes due in 2020, net	338,479	331,075
0.599% senior subordinated convertible notes due in August 2024	495,000	495,000
Unamortized discount	(8,651)	(9,355)
Unamortized deferred offering costs	(2,957)	(3,199)
Convertible Notes due in 2024, net	483,392	482,446
Total convertible debt, net	$1,191,623	$ 1,174,470
Fair value of fixed rate convertible debt		
Convertible Notes due in 2018 [1]	$398,874	$ 403,955
Convertible Notes due in 2020 [1]	442,240	446,470
Convertible Notes due in 2024 [1]	502,509	493,894
Total	$1,343,623	$ 1,344,319

(1) The fair value of the Company's fixed-rate convertible debt is based on open market trades and is classified as Level 1 in the fair value hierarchy. See Note 12 to these Condensed Consolidated Financial Statements for additional information related to the Company's fair value measurements.

Interest expense on the Company's convertible debt consisted of the following:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Coupon interest expense	$3,527	$2,194	$6,488	$4,558
Amortization of debt issuance costs	1,006	886	2,010	1,772
Accretion of discount on convertible notes	7,692	6,960	15,289	13,829
Total interest expense on convertible debt	$12,225	$10,040	$23,787	$20,159

See Note 13 to the Consolidated Financial Statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2017 for additional information related to the Company's convertible debt.

Revolving Credit Facility

The Company maintains a senior unsecured revolving credit facility (Credit Facility) that provides revolving credit of up to $100.0 million in revolving loans (the Revolving Credit Facility), a $10.0 million letter of credit subfacility and a $15.0 million swingline loan subfacility. The maturity date of the Revolving Credit Facility will occur on November 29, 2018. As of June 30, 2018 and December 31, 2017, there were no outstanding amounts due on nor any usage of the Credit Facility. As of June 30, 2018, the Company and certain of its subsidiaries that serve as guarantors were in compliance with all covenants.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

(11) DERIVATIVE INSTRUMENTS AND HEDGING STRATEGIES

The Company uses forward foreign currency exchange contracts to hedge certain operational exposures resulting from potential changes in foreign currency exchange rates. Such exposures result from portions of the Company's monetary assets and liabilities and forecasted revenues and operating expenses being denominated in currencies other than the U.S. Dollar (USD), primarily the Euro.

The Company designates certain of these forward foreign currency exchange contracts as cash flow hedges and expects them to be highly effective in offsetting fluctuations in operating expenses denominated in Euros and revenues denominated in currencies other than the USD related to changes in foreign currency exchange rates. The Company also enters into some forward foreign currency exchange contracts that are not designated as hedging instruments. Whether designated or undesignated, these forward foreign currency exchange contracts protect against the reduction in value of forecasted foreign currency cash flows resulting from product revenues, royalty revenues, operating expenses and asset or liability positions designated in currencies other than the USD. The fair values of forward foreign currency exchange contracts are estimated using current exchange rates and interest rates, and take into consideration the current creditworthiness of the counterparties or the Company, as applicable. Information regarding the specific instruments used by the Company to hedge its exposure to foreign currency exchange rate fluctuations is provided below.

The following table summarizes the Company's designated forward foreign currency exchange contracts outstanding as of June 30, 2018 (notional amounts in millions):

Foreign Exchange Contracts	Number of Contracts	Aggregate Notional Amount in Foreign Currency	Maturity
Brazilian Reais – Sell	2	143.8	Aug. 2018
Canadian Dollars – Sell	12	15.0	Jul. 2018 - Dec. 2018
Colombian Pesos – Sell	6	48,000.0	Jul. 2018 - Dec. 2018
Euros – Purchase	108	134.4	Jul. 2018 - Jun. 2021
Euros – Sell	394	488.2	Jul. 2018 - Jun. 2021
Total	522		

The maximum length of time over which the Company is hedging its exposure to the reduction in value of forecasted foreign currency revenues through forward foreign currency exchange contracts is through June 2021. Over the next twelve months, the Company expects to reclassify unrealized losses of $2.2 million from Accumulated Other Comprehensive Loss to earnings as the forecasted revenue and operating expense transactions occur.

The following table summarizes the Company's non-designated forward foreign currency exchange contracts outstanding as of June 30, 2018 (notional amounts in millions):

Foreign Exchange Contracts	Number of Contracts	Aggregate Notional Amount in Foreign Currency	Maturity
Brazilian Reais – Purchase	5	52.2	Aug. 2018
British Pounds – Sell	1	2.6	Jul. 2018
Colombian Pesos – Sell	1	34,000.0	Jul. 2018
Euros – Purchase	3	52.2	Jul. 2018
Total	10		

The fair value carrying amounts of the Company's derivative instruments, as classified within the fair value hierarchy, were as follows:

	Asset Derivatives June 30, 2018		Liability Derivatives June 30, 2018	
	Balance Sheet Location	Fair Value	Balance Sheet Location	Fair Value
Derivatives designated as hedging instruments:				
Level 2[(1)]				
Forward foreign currency exchange contracts	Other current assets	$ 8,599	Accounts payable and accrued liabilities	$ 6,608

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

Forward foreign currency exchange contracts	Other assets	5,852	Other long- term liabilities	4,571
Total		14,451		11,179
Derivatives not designated as hedging instruments:				
Level 2[1]				
Forward foreign currency exchange contracts	Other current assets	1,440	Accounts payable and accrued liabilities	557
Total		1,440		557
Total value of derivative contracts		$15,891		$11,736

	Asset Derivatives December 31, 2017		Liability Derivatives December 31, 2017	
	Balance Sheet Location	Fair Value	Balance Sheet Location	Fair Value
Derivatives designated as hedging instruments:				
Level 2[1]				
Forward foreign currency exchange contracts	Other current assets	$ 4,015	Accounts payable and accrued liabilities	$ 14,420
Forward foreign currency exchange contracts	Other assets	4,973	Other long- term liabilities	12,686
Total		8,988		27,106
Derivatives not designated as hedging instruments:				
Level 2[1]				
Forward foreign currency exchange contracts	Other current assets	675	Accounts payable and accrued liabilities	44
Total		675		44
Total value of derivative contracts		$ 9,663		$ 27,150

(1) See Note 12 to these Condensed Consolidated Financial Statements for additional information related to the Company's fair value measurements.

The effect of the Company's derivative instruments on the Condensed Consolidated Financial Statements for the three and six months ended June 30, 2018 and 2017 was as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Derivatives Designated as Hedging Instruments:				

Net gain (loss) recognized in accumulated other comprehensive loss [1]	$23,582	$(19,165)	$14,356	$(23,364)
Net gain (loss) reclassified from accumulated other comprehensive income (loss) into earnings [2]	(2,659)	695	(8,444)	3,211
Net gain recognized in net loss [3]	2,700	826	2,322	1,706
Derivatives Not Designated as Hedging Instruments:				
Net gain (loss) recognized in net loss [4]	(4,238)	5,373	2,985	5,631

(1) Net change in the fair value of the effective portion classified as accumulated other comprehensive loss.
(2) Effective portion classified as Net Product Revenues and Operating expenses.
(3) Ineffective portion and amount excluded from effectiveness testing classified as Operating expenses.
(4) Classified as Operating expenses.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

The Company is exposed to counterparty credit risk on all of its derivative financial instruments. The Company has established and maintains strict counterparty credit guidelines and enters into hedges only with financial institutions that are investment grade or better to minimize the Company's exposure to potential defaults. The Company does not require collateral to be pledged under these agreements.

(12) FAIR VALUE MEASUREMENTS

The Company measures certain financial assets and liabilities at fair value on a recurring basis. In addition to available-for-sale debt securities, debt and foreign currency derivatives, which are disclosed in Notes 6, 10 and 11, respectively, the following tables below present the classification within fair value hierarchy of financial assets and liabilities not disclosed elsewhere.

	Fair Value Measurements at June 30, 2018			
	Quoted Price in Active Markets For Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Assets:				
Other current assets:				
NQDC Plan assets	$—	$ 1,018	$ —	$1,018
Restricted investments [1]	—	7,721	—	7,721
Total other current assets	—	8,739	—	8,739
Other assets:				
NQDC Plan assets	—	12,832	—	12,832
Restricted investments [1]	—	6,889	—	6,889
Strategic investments [2]	1,616	—	—	1,616
Total other assets	1,616	19,721	—	21,337
Total assets	$1,616	$ 28,460	$ —	$30,076
Liabilities:				
Current liabilities:				
NQDC Plan liability	$1,050	$ 1,018	$ —	$2,068

Contingent acquisition consideration	—	—	76,466	76,466
Total current liabilities	1,050	1,018	76,466	78,534
Other long-term liabilities:				
NQDC Plan liability	$18,588	$ 12,832	—	31,420
Contingent acquisition consideration	—	—	57,674	57,674
Total other long-term liabilities	18,588	12,832	57,674	89,094
Total liabilities	$19,638	$ 13,850	$ 134,140	$167,628

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

	Fair Value Measurements at December 31, 2017			
	Quoted Price in Active Markets For Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Assets:				
Other current assets:				
NQDC Plan assets	$—	$ 967	$ —	$967
Restricted investments [1]	—	15,647	—	15,647
Total other current assets	—	16,614	—	16,614
Other assets:				
NQDC Plan assets	—	11,859	—	11,859
Total other assets	—	11,859	—	11,859
Total assets	$—	$ 28,473	$ —	$28,473
Liabilities:				
Current liabilities:				
NQDC Plan liability	$1,356	$ 967	$ —	$2,323
Contingent acquisition consideration	—	—	53,648	53,648
Total current liabilities	1,356	967	53,648	55,971
Other long-term liabilities:				
NQDC Plan liability	18,272	11,859	—	30,131
Contingent acquisition consideration	—	—	135,318	135,318
Total other long-term liabilities	18,272	11,859	135,318	165,449
Total liabilities	$19,628	$ 12,826	$ 188,966	$221,420

(1) The restricted investments at June 30, 2018 and December 31, 2017 secure the Company's irrevocable standby letters of credit obtained in connection with certain commercial agreements.

(2) The Company has investments in marketable equity securities measured using quoted prices in an active market that are considered strategic investments and included in other assets on the Company's Consolidated Balance Sheets.

There were no transfers between levels during the three and six months ended June 30, 2018.

The Company's Level 2 instruments are valued using third-party pricing sources. The pricing services utilize industry standard valuation models, including both income and market-based approaches, for which all significant inputs are

observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of and broker/dealer quotes on the same or similar securities, issuer credit spreads, benchmark securities, prepayment/default projections based on historical data and other observable inputs. The Company validates the prices provided by its third-party pricing services by understanding the models used, obtaining market values from other pricing sources, analyzing pricing data in certain instances and confirming those securities traded in active markets.

Liabilities measured at fair value using Level 3 inputs consisted of contingent acquisition consideration and asset retirement obligations. The following tables represent a roll-forward of contingent acquisition consideration.

Contingent acquisition consideration at December 31, 2017	$188,966
Changes in the fair value of other contingent acquisition consideration	8,284
Milestone payments to Ares Trading S.A. (Merck Serono)	(61,607)
Foreign exchange remeasurement of Euro denominated contingent acquisition consideration	(1,503)
Contingent acquisition consideration at June 30, 2018	$134,140

Under certain of the Company’s lease agreements, the Company is contractually obligated to return leased space to its original condition upon termination of the lease agreement. The Company records an asset retirement obligation liability and a corresponding capital asset in an amount equal to the estimated fair value of the obligation, when estimable. In subsequent periods, for each such lease, the Company records interest expense to accrete the asset retirement obligation liability to full value and depreciates each capitalized asset retirement obligation asset, both over the term of the associated lease agreement. As of June 30, 2018 and December 31, 2017, the balance of the asset retirement obligation liability was $4.2 million at each period.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

The Company acquired intangible assets as a result of various business acquisitions. The estimated fair value of these long-lived assets was measured using Level 3 inputs as of the acquisition date. Refer to Note 3 – Significant Accounting Policies in the Company's Annual Report on Form 10-K for the year ended December 31, 2017 for details on valuation.

(13) STOCK-BASED COMPENSATION

Compensation expense included in the Company's Condensed Consolidated Statements of Comprehensive Income (Loss) for all stock-based compensation arrangements was as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Cost of sales	$3,246	$2,510	$6,386	$4,796
R&D	15,573	14,647	28,842	26,141
Selling, general and administrative	19,787	22,944	39,986	39,838
Total stock-based compensation expense	$38,606	$40,101	$75,214	$70,775

Stock-based compensation expense of $5.4 million and $9.0 million was capitalized into inventory for the three and six months ended June 30, 2018, respectively, compared to stock-based compensation expense of $4.4 million and $7.6 million that was capitalized into inventory for the three and six months ended June 30, 2017, respectively. Capitalized stock-based compensation is recognized as cost of sales when the related product is sold.

Equity Awards with Service-Based Vesting Conditions

The assumptions used to estimate the per share fair value of stock options granted under the Company's 2017 Equity Incentive Plan and the Company's Amended and Restated 2006 Share Incentive Plan were as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Expected volatility	38.4%	37.8 – 39.6%	37.8 – 38.4%	37.6 – 39.7%
Dividend yield	0.0%	0.0%	0.0%	0.0%
Expected life	5.7 years	5.0 – 6.6 years	4.6 – 5.7 years	5.0 – 6.6 years
Risk-free interest rate	2.7%	1.8 – 1.9%	2.3 – 2.7%	1.8 – 2.2%

During the six months ended June 30, 2018, the Company granted options to purchase 775,380 shares of common stock with a weighted-average fair value of $33.34 per share.

The Company issued new stock purchase rights under the ESPP during the three and six months ended June 30, 2018, using the following assumptions to estimate the per share fair value:

	Three and Six Months Ended June 30,	
	2018	2017
Expected volatility	29.7 - 33.3%	30.7 - 42.3%
Dividend yield	0.0%	0.0%
Expected life	6-24 months	6-24 months
Risk-free interest rate	1.2 - 2.5%	1.0 - 1.3%

During the six months ended June 30, 2018, the Company granted 1,519,780 RSUs with service-based vesting conditions with a weighted-average fair value of $84.19 per share.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

Restricted Stock Unit Awards with Performance Conditions

The Compensation Committee of the Board (with respect to awards to certain executive officers other than the Chief Executive Officer) and the Board (with respect to awards to the Chief Executive Officer) may grant RSUs with performance-based vesting conditions to certain executive officers. In March 2018, the Compensation Committee and Board approved the grant of 129,680 RSUs (base RSUs) with performance-based vesting conditions. This award is contingent upon the achievement of a 2018 revenue target and the awarded RSUs, if any, vest ratably over a three-year service period. The number of shares that may be earned range between 50% and 200% of the base RSUs, dependent on the percentage of 2018 “managed revenues” (defined as the Company’s net product revenues, excluding net revenues attributable to Aldurazyme, and determined using fixed foreign currency exchange rates) achieved against the target managed revenues, with a threshold achievement level of 70% of target and a ceiling achievement level of 125% of target. RSUs with performance-based vesting conditions with similar performance conditions were granted in 2017, 2016 and 2015. The following table details the base RSUs granted, RSUs earned and expected to vest and the performance multiplier achieved for the RSUs with performance-based vesting conditions for the years ended December 31, 2017, 2016 and 2015, respectively, as well as the base RSUs granted in March 2018:

Date of Grant	Base RSUs Granted	Grant Date Fair Value per RSU	Multiplier Achieved	RSUs Earned
March 2018	129,680	$83.57	(a)	(a)
March 2017	133,250	$87.42	1.03	132,548
March 2016	130,310	$83.43	1.03	134,219
March 2015	58,300	$108.36	1.11	64,713

(a) The Company’s Compensation Committee is expected to approve the multiplier and total earned RSUs in the first quarter of 2019 based on the Company’s performance against the 2018 managed revenue target. The Company evaluated the 2018 revenue target in the context of its current 2018 revenue forecast, and related confidence level in the forecast, and determined that attainment of the revenue target was probable for accounting purposes commencing in the first quarter of 2018.

(14) ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

The following table summarizes amounts reclassified out of AOCI and their effect on the Company’s Condensed Consolidated Statements of Comprehensive Income (Loss) for the three and six months ended June 30, 2018 and 2017.

Details about AOCI Components	Three Months Ended June 30, 2018	2017	Six Months Ended June 30, 2018	2017	Condensed Consolidated Statement of Comprehensive Loss Classification
Gains (losses) on cash flow hedges:					
Forward foreign currency exchange contracts	$(4,062)	$1,119	$(11,708)	$4,661	Net product revenues
Forward foreign currency exchange contracts	1,403	(424)	3,264	(1,450)	Operating expenses
Total gain (loss) on cash flow hedges	(2,659)	695	(8,444)	3,211	
Gain on sale of available-for-sale debt securities	—	—	—	3,252	Other income
Income tax effect of the above	—	—	—	(1,181)	Benefit from income taxes
Total gain on available-for-sale debt securities	—	—	—	2,071	
	$(2,659)	$695	$(8,444)	$5,282	Net loss

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

The following tables summarize changes in the accumulated balances for each component of AOCI, including current period other comprehensive income (loss) and reclassifications out of AOCI for the three and six months ended June 30, 2018 and 2017.

	Three Months Ended June 30, 2018			
	Unrealized Gains (Losses) on Cash Flow Hedges	Unrealized Gains (Losses) on Available-for-Sale Debt Securities	Foreign Currency Items	Total
AOCI balance at March 31, 2018	$(23,673)	$ (4,866)	$ (6)	$(28,545)
Other comprehensive income (loss) before reclassifications	23,582	1,531	(5)	25,108
Less: net loss reclassified from AOCI	(2,659)	—	—	(2,659)
Tax effect	—	(351)	—	(351)
Net current-period other comprehensive income (loss)	26,241	1,180	(5)	27,416
AOCI balance at June 30, 2018	$2,568	$ (3,686)	$ (11)	$(1,129)

	Three Months Ended June 30, 2017			
	Unrealized Gains (Losses) on Cash Flow Hedges	Unrealized Gains (Losses) on Available-for-Sale Debt Securities	Foreign Currency Items	Total
AOCI balance at March 31, 2017	$6,291	$ (1,258)	$ (13)	$5,020
Other comprehensive income (loss) before reclassifications	(19,165)	267	4	(18,894)
Less: gain reclassified from AOCI	695	—	—	695
Tax effect	—	(89)	—	(89)
Net current-period other comprehensive income (loss)	(19,860)	178	4	(19,678)
AOCI balance at June 30, 2017	$(13,569)	$ (1,080)	$ (9)	$(14,658)

Six Months Ended June 30, 2018

	Unrealized Gains (Losses) on Cash Flow Hedges	Unrealized Gains (Losses) on Available-for-Sale Securities	Foreign Currency Items	Total
AOCI balance at December 31, 2017	$(20,232)	$ (2,722)	$ (7)	$(22,961)
Impact of change in accounting principle [1]	—	$ (586)	—	$(586)
AOCI balance at January 1, 2018	$(20,232)	$ (3,308)	$ (7)	$(23,547)
Other comprehensive income (loss) before reclassifications	14,356	(490)	(4)	13,862
Less: loss reclassified from AOCI	(8,444)	—	—	(8,444)
Tax effect	—	112	—	112
Net current-period other comprehensive income (loss)	22,800	(378)	(4)	22,418
AOCI balance at June 30, 2018	$2,568	$ (3,686)	$ (11)	$(1,129)

(1) As of January 1, 2018, the Company early adopted the requirements of ASU 2018-02. The amount represents the reclassification from Accumulated Other Comprehensive Income (Loss) to Accumulated Deficit in the first quarter of 2018 related to the adoption of ASU 2018-02. See Note 4 for additional discussion.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

	Six Months Ended June 30, 2017			
	Unrealized Gains (Losses) on Cash Flow Hedges	Unrealized Gains (Losses) on Available-for-Sale Securities	Foreign Currency Items	Total
AOCI balance at December 31, 2016	$13,006	$ (178)	$ (12)	$12,816
Other comprehensive income (loss) before reclassifications	(23,364)	1,834	3	(21,527)
Less: gain reclassified from AOCI	3,211	3,252	—	6,463
Tax effect	—	516	—	516
Net current-period other comprehensive income (loss)	(26,575)	(902)	3	(27,474)
AOCI balance at June 30, 2017	$(13,569)	$ (1,080)	$ (9)	$(14,658)

(15) REVENUE, CREDIT CONCENTRATIONS AND GEOGRAPHIC INFORMATION

The Company operates in one business segment, which primarily focuses on the development and commercialization of innovative therapies for people with serious and life threatening rare diseases and medical conditions. The Company considers there to be revenue concentration risks for regions where net product revenues exceed 10% of consolidated net product revenues. The concentration of the Company’s net product revenues within the regions below may have a material adverse effect on the Company’s revenues and results of operations if sales in the respective regions experience difficulties.

The Company adopted the requirements of ASC 606 on January 1, 2018 using the modified retrospective method, therefore there is a lack of comparability to the prior periods presented. See Note 4 – Recent Accounting Pronouncements for additional discussion.

The following table disaggregates Total Revenues from external customers and collaborative partners by geographic region. Net product revenues by geographic region are based on patient location for the Company’s commercial products, except for Aldurazyme. Although Genzyme sells Aldurazyme worldwide, the revenues earned by the Company based on Genzyme’s net sales are included in the U.S. region, as the transactions are with Genzyme whose headquarters is located in the U.S.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017

Total revenues by geographic region:				
United States	$162,788	$141,611	$353,360	$274,095
Europe	107,221	87,672	212,871	171,577
Latin America	58,158	66,739	96,633	112,035
Rest of world	44,678	21,426	83,428	63,486
Total revenues	$372,845	$317,448	$746,292	$621,193

The following table disaggregates total Net Product Revenues from external customers by product.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Net product revenues by product:				
Aldurazyme	$24,003	$19,985	$90,059	$39,340
Brineura	10,890	254	17,807	254
Firdapse	5,177	4,855	10,103	8,965
Kuvan	109,045	101,944	208,160	194,290
Naglazyme	91,086	85,751	166,082	166,309
Vimizim	127,585	103,137	244,674	208,958
Total net product revenues	$367,786	$315,926	$736,885	$618,116

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

The table below disaggregates total Net Product Revenues based on patient location for Brineura, Firdapse, Kuvan, Naglazyme, and Vimizim, which are sold directly by the Company, and global sales of Aldurazyme, which is marketed by Genzyme. Genzyme is the Company's sole customer for Aldurazyme and is responsible for marketing and selling Aldurazyme to third-parties.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
United States	$138,411	$121,256	$262,552	$233,962
Europe	104,262	87,672	207,419	171,577
Latin America	58,158	66,738	96,633	112,032
Rest of world	42,952	20,275	80,222	61,205
Total net product revenue marketed by the Company	343,783	295,941	646,826	578,776
Aldurazyme net product revenues marketed by Genzyme	24,003	19,985	90,059	39,340
Total net product revenues	$367,786	$315,926	$736,885	$618,116

The following table illustrates the percentage of the Company's total Net Product Revenues attributed to the Company's largest customers for the three and six months ended June 30, 2018 and 2017.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Customer A	18%	17 %	18%	17 %
Customer B	7 %	6 %	12%	6 %
Customer C	12%	14 %	12%	13 %
Customer D	10%	10 %	9 %	10 %
Customer E	4 %	10 %	2 %	7 %
Total	51%	57 %	53%	53 %

On a consolidated basis, the Company's two largest customer accounts receivable balances accounted for 30% and 15% of the June 30, 2018 total accounts receivable balance, respectively, compared to December 31, 2017, when the two largest customer accounts receivable balances accounted for 21% and 18% of the total accounts receivable balance, respectively. As of June 30, 2018, and December 31, 2017, the accounts receivable balance for Genzyme included $85.0 million and $18.1 million, respectively, of unbilled accounts receivable, which become payable to the Company when the product is sold through by Genzyme. The Company does not require collateral from its customers,

but does perform periodic credit evaluations of its customers' financial condition and requires immediate payment in certain circumstances.

The Company sells its products in countries that face economic volatility and weakness. Although the Company has historically collected receivables from customers in such countries, sustained weakness or further deterioration of the local economies and currencies may cause customers in those countries to be unable to pay for the Company's products. The Company has not historically experienced a significant level of uncollected receivables and has received continued payments from its more aged accounts in these countries. The Company believes that the allowances for doubtful accounts related to these countries, if any, is adequate based on its analysis of the specific business circumstances and expectations of collection for each of the underlying accounts in these countries.

(16) COMMITMENTS AND CONTINGENCIES

Contingencies

From time to time the Company is involved in legal actions arising in the normal course of its business. The process of resolving matters through litigation or other means is inherently uncertain and it is possible that an unfavorable resolution of these matters could adversely affect the Company, its results of operations, financial condition and cash flows. The Company's general practice is to expense legal fees as services are rendered in connection with legal matters, and to accrue for liabilities when losses are probable and reasonably estimable.

Contingent Payments

As of June 30, 2018, the Company is subject to contingent payments totaling approximately $540.4 million upon achievement of certain development and regulatory activities and commercial sales and licensing milestones if they occur before certain dates in the future. Of this amount, $158.0 million relates to the acquisition of certain rights and other assets with respect to Kuvan and Palynziq from Merck Serono and $53.2 million relates to programs that are no longer being developed.

As of June 30, 2018, the Company has recorded a total of $134.1 million of contingent acquisition consideration on its Condensed Consolidated Balances Sheet. The Company paid $61.6 million of contingent acquisition consideration in April 2018 related to the filing of the European Marketing Authorization Application for Palynziq.

BIOMARIN PHARMACEUTICAL INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (continued)

(In thousands of U.S. Dollars, except per share amounts or as otherwise disclosed)

See Note 12 to these Condensed Consolidated Financial Statements for further information regarding the Company's contingent acquisition consideration.

Other Commitments

In the normal course of business, the Company enters into various firm purchase commitments primarily related to active pharmaceutical ingredients and certain inventory related items. As of June 30, 2018, these commitments for the next five years were approximately $62.0 million. The amounts primarily represent minimum purchase requirements for active pharmaceutical ingredients and post-marketing commitments related to the Company's commercial products.

(17) BENEFIT FROM INCOME TAXES

The 2017 Tax Act, which became effective on January 1, 2018 resulted in significant changes to the U.S. corporate income tax system including a federal statutory rate reduction from 35% to 21% and the elimination or reduction of certain domestic deductions and credits. The 2017 Tax Act changed U.S. international taxation from a worldwide basis to a modified territorial system that includes base erosion prevention measures on foreign earnings. This will result in the Company's foreign subsidiaries being subject to U.S. taxation in the future.

U.S. and foreign tax expense was computed using a forecasted annual effective tax rate for the three and six months ended June 30, 2018. Prior to the 2017 Tax Act, the Company's effective tax rate was highly sensitive to minor fluctuations in U.S. forecasted income, as such, the Company computed the U.S. component of the consolidated benefit from income taxes for the three and six months ended June 30, 2017 using an actual year-to-date tax calculation. Foreign tax expense was computed using a forecasted annual effective tax rate for the three and six months ended June 30, 2017.

The Company included a provisional estimate of the impact of the 2017 Tax Act in its 2017 tax provision in accordance with its interpretation of the 2017 Tax Act and Staff Accounting Bulletin 118. During the first quarter of 2018, the Company refined its estimates for certain provisional amounts and recorded a tax benefit of $4.6 million associated with the remeasurement of its deferred taxes. The Company may refine its estimates of provisional amounts as further guidance is issued from the U.S. Treasury, SEC and the FASB. The Company has not yet elected an accounting method regarding whether to record deferred tax assets and liabilities for expected amounts of Global Intangible Low-Taxed Income inclusions or whether to treat such amounts as a period cost.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion of our financial condition and results of operations should be read in conjunction with our Condensed Consolidated Financial Statements and the related Notes thereto included in this Quarterly Report on Form 10-Q. This discussion contains forward-looking statements that involve risks and uncertainties. When reviewing the discussion below, you should keep in mind the substantial risks and uncertainties that could impact our business. In particular, we encourage you to review the risks and uncertainties described in "Risk Factors" in Part II, Item 1A in this Quarterly Report on Form 10-Q. These risks and uncertainties could cause actual results to differ significantly from those projected in forward-looking statements contained in this report or implied by past results and trends. Forward-looking statements are statements that attempt to forecast or anticipate future developments in our business, financial condition or results of operations. See the section titled "Forward-Looking Statements" that appears at the beginning of this Quarterly Report on Form 10-Q. These statements, like all statements in this report, speak only as of the date of this Quarterly Report on Form 10-Q (unless another date is indicated), and, except as required by law, we undertake no obligation to update or revise these statements in light of future developments.

Overview

We are a global biotechnology company that develops and commercializes innovative therapies for people with serious and life-threatening rare diseases and medical conditions. We select product candidates for diseases and conditions that represent a significant unmet medical need, have well-understood biology and provide an opportunity to be first-to-market or offer a significant benefit over existing products.

Our portfolio consists of several commercial therapies and multiple clinical and pre-clinical product candidates. A summary of our major commercial products, including key metrics as of June 30, 2018, is provided below:

Commercial Products	Indication	U.S. Orphan Drug Exclusivity Expiration	U.S. Biologic Exclusivity Expiration	EU Orphan Drug Exclusivity Expiration
Aldurazyme (laronidase)	MPS I [1]	Expired	Expired	Expired
Brineura (cerliponase alfa)	CLN2 [2]	2024	2029	2027
Kuvan (sapropterin dihydrochloride)	PKU [3]	Expired	NA	2020 [3]
Naglazyme (galsulfase)	MPS VI [4]	Expired	Expired	Expired
Palynziq (pegvaliase-pqpz)	PKU [5]	2025	2030	NA [5]
Vimizim elosulfase alpha)	MPS IVA [6]	2021	2026	2024

(1) For the treatment of Mucopolysaccharidosis I (MPS I).
(2) For the treatment of late infantile neuronal ceroid lipofuscinosis type 2 (CLN2).
(3) For the treatment of phenylketonuria (PKU). Kuvan has been granted orphan drug status in the EU, which together with pediatric exclusivity, confers 12 years of market exclusivity in the EU that expires in 2020.
(4) For the treatment of Mucopolysaccharidosis VI (MPS VI).
(5) For adult patients with PKU. Palynziq (formerly referred to as pegvaliase) was approved by the U.S. Food and Drug Administration (FDA) in May 2018 and our European Marketing Authorization Application (MAA) submission for Palynziq was accepted by the European Medicines Agency (EMA) in March 2018.
(6) For the treatment of Mucopolysaccharidosis IV Type A (MPS IV A).

A summary of our ongoing major development programs, including key metrics as of June 30, 2018, is provided below:

Major Product Candidates in Development	Target Indication	U.S. Orphan Designation	EU Orphan Designation	Stage
Palynziq [1]	PKU	Yes	Yes	EU MAA regulatory review
Valoctocogene roxaparvovec	Hemophilia A [2]	Yes	Yes	Clinical Phase 3
Vosoritide	Achondroplasia	Yes	Yes	Clinical Phase 3
Tralesinidase alfa (formerly referred to as BMN 250)	MPS IIIB [3]	Yes	Yes	Clinical Phase 1/2
BMN 290	Friedreich's Ataxia	Not applicable	Not applicable	Preclinical

(1) In May 2018, the FDA granted marketing approval for Palynziq in the U.S.
(2) Hemophilia A is also called factor VIII deficiency or classic hemophilia.
(3) Sanfilippo Syndrome Type B, or mucopolysaccharidosis type IIIB (MPS IIIB).

Management’s Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

Business Developments

We continued to grow our commercial business and advance our product candidate pipeline during 2018. We believe that the combination of our internal research programs, acquisitions and partnerships will allow us to continue to develop and commercialize innovative therapies for people with serious and life-threatening rare diseases and medical conditions. Below is a summary of key business developments in 2018 to date:

Product Approvals

- In May 2018, the FDA approved Palynziq, a PEGylated recombinant phenylalanine ammonia lyase enzyme product, for the treatment of adults with PKU who have inadequate blood phenylalanine control despite prior management with available treatment options including sapropterin. We have begun marketing Palynziq in the U.S. and the product was made available in the U.S. in July 2018. The EMA accepted our MAA submission in March 2018.

Continued Emphasis on Research and Development

- We announced 104 weeks of clinical data in 6e13 vg/kg dose and 52 weeks of data for the 4e13 vg/kg dose from our ongoing Phase 1/2 study in valoctocogene roxaparvovec gene therapy for severe hemophilia A. We now have six clinical studies underway in our gene therapy program for the treatment of severe hemophilia A, including two global Phase 3 studies: GENEr8-1, amended to evaluate superiority compared to standard of care, and GENEr8-2, as well as the Phase 1/2 study with the 6E13kg/vg dose, which began enrolling patients in May 2018 to evaluate patients with pre-existing AAV5 antibodies.
- We announced that we dosed the first participant in a global Phase 2 study for vosoritide, an analog of C-type Natriuretic Peptide (CNP), in infants and young children with achondroplasia, the most common form of disproportionate short stature in humans. The Phase 2 study is a randomized, placebo-controlled study of vosoritide in approximately 70 infants and young children with achondroplasia ages zero to less than 60 months for 52 weeks. Continuing studies include our Phase 3 study of vosoritide in approximately 110 children with achondroplasia for 52 weeks and a long-term open-label Phase 2 study of approximately 23 children.
- We announced positive, preliminary results from a multicenter, international Phase 1/2 clinical trial for tralesinidase alfa (formerly referred to as BMN 250), which began enrolling patients in April 2016. The study demonstrated that tralesinidase alfa reduced heparan sulfate levels to normal range in cerebral spinal fluid of MPS IIIB patients and indicated that ICV-administered tralesinidase alfa is well-tolerated by MPS IIIB patients. A complementary observational study was also initiated to study the progression of MPS IIIB over time.
- We announced that we expect to submit an Investigational New Drug (IND) application for a gene therapy product for the treatment of PKU in 2019. We expect to complete IND-enabling evaluations with a view to submitting an IND application for BMN 290 for the treatment of Friedreich's ataxia during the second half of 2018.
- We announced updated results from a multi-center, open-label, dose-escalation and ongoing extension study evaluating the efficacy and safety of Brineura in children with CLN2 disease, noting the new data demonstrated that treatment with Brineura resulted in less decline in motor and language function compared to historical controls. The updated results were published in the May 2018 issue of The New England Journal of Medicine.

Financial Highlights

Key components of our results of operations include the following:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Total revenues	$372.8	$317.4	$746.3	$621.2
Research and development (R&D) expense	175.6	143.0	359.5	288.0
Selling, general and administrative (SG&A) expense	153.3	143.5	291.6	263.5
Gain on sale of intangible assets	(20.0)	-	(20.0)	-
Total operating expenses	398.1	356.3	815.9	680.2
Net loss	(16.8)	(36.8)	(60.9)	(53.1)

The decrease in net loss for the three months ended June 30, 2018 was primarily attributed to the following:

- increased gross profit primarily driven by increased Brineura, Kuvan and Vimizim net product revenues; and
- the gain on the sale of intangible assets from the receipt of $20.0 million triggered by the achievement of a regulatory milestone by a third party; partially offset by
- increased in R&D expense for the expansion of our clinical programs related to tralesinidase alfa; valoctocogene roxaparvovec and vosoritide; and

Management's Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

- increased SG&A expense primarily due to pre-launch activities related to Palynziq, which was approved by the FDA in the U.S. in May 2018.

The increase in net loss for the six months ended June 30, 2018 was primarily attributed to the following:

- increased R&D expense for the expansion of our clinical programs related to tralesinidase alfa, valoctocogene roxaparvovec and vosoritide; and
- increased SG&A expense primarily due to pre-launch activities related to Palynziq; partially offset by
- increased gross profit primarily driven by increased Aldurazyme and Brineura net product revenues; and
- the $20.0 million gain on the sale of intangible assets.

On January 1, 2018, we adopted Accounting Standards Codification (ASC) 606, Revenue from Contracts with Customers (ASC 606) using the modified retrospective method applied to those contracts which were not completed as of January 1, 2018. Results for reporting periods beginning after January 1, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported in accordance with our historic accounting under ASC 605, Revenue Recognition. See Note 4 to our accompanying Condensed Consolidated Financial Statements for additional information.

Our cash, cash equivalents and investments totaled approximately $1.6 billion as of June 30, 2018, compared to $1.8 billion as of December 31, 2017. We have historically financed our operations primarily through our cash flows from operating activities and the issuance of common stock and convertible debt. We will be highly dependent on our net product revenues to supplement our current liquidity and fund our operations for the foreseeable future. We may in the future elect to supplement this with further debt or equity offerings or commercial borrowing. Further, depending on market conditions, our financial position and performance and other factors, we may in the future choose to use a portion of our cash, cash equivalents or investments to repurchase our convertible debt or other securities. See "Financial Position, Liquidity and Capital Resources" below for a further discussion of our liquidity and capital resources.

Critical Accounting Policies and Estimates

In preparing our Condensed Consolidated Financial Statements in accordance with U.S. generally accepted accounting principles (U.S. GAAP) and pursuant to the rules and regulations promulgated by the Securities and Exchange Commission (the SEC), we make assumptions, judgments and estimates that can have a significant impact on our net income/loss and affect the reported amounts of certain assets, liabilities, revenue and expenses, and related

disclosures. On an ongoing basis, we evaluate our estimates and discuss our critical accounting policies and estimates with the Audit Committee of our Board of Directors. We base our estimates on historical experience and various other assumptions that we believe to be reasonable under the circumstances. Actual results could differ materially from these estimates under different assumptions or conditions.

Except as described in Note 3 to our accompanying Condensed Consolidated Financial Statements with respect to changes in our revenue recognition policy related to our adoption of the requirements of ASC 606, there have been no significant changes to our critical accounting policies and estimates during the six months ended June 30, 2018, compared to the critical accounting policies and estimates disclosed in “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included in our Annual Report on Form 10-K for the year ended December 31, 2017.

Recent Accounting Pronouncements

See Note 4 to our accompanying Condensed Consolidated Financial Statements for a description of recent accounting pronouncements and our expectation of their impact on our results of operations and financial condition.

Management's Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

Results of Operations

Total Revenues

Net product revenues consisted of the following:

	Three Months Ended June 30,			Six Months Ended June 30,		
	2018	2017	Change	2018	2017	Change
Aldurazyme	$24.0	$19.9	$ 4.1	$90.1	$39.3	$50.8
Brineura	10.9	0.3	10.6	17.8	0.3	17.5
Firdapse	5.2	4.8	0.4	10.1	8.9	1.2
Kuvan	109.0	102.0	7.0	208.1	194.3	13.8
Naglazyme	91.1	85.7	5.4	166.1	166.3	(0.2)
Vimizim	127.6	103.2	24.4	244.7	209.0	35.7
Total net product revenues	$367.8	$315.9	$ 51.9	$736.9	$618.1	$118.8

Total Revenues include Net Product Revenues and Royalty and Other Revenues. Net Product Revenues include revenues generated from our approved products. In the U.S., our commercial products are generally sold to specialty pharmacies or end-users, such as hospitals, which act as retailers. Outside the U.S., our commercial products are sold to our authorized distributors or directly to government purchasers or hospitals, which act as intermediaries between us and end-users and generally do not stock significant quantities of our products. However, in certain countries, such as in Latin America, governments place large periodic orders for Naglazyme and Vimizim. The timing of these large government orders can be inconsistent and can create significant quarter to quarter variation in our revenues. Genzyme Corporation (Genzyme) is our sole customer for Aldurazyme and is responsible for marketing and selling Aldurazyme to third parties. Royalty and Other Revenues include royalties on net sales of products to licensees or sublicensees, collaborative agreement revenues and rental income associated with the tenants in our San Rafael, California facility.

The following is additional discussion of our Net Product Revenue results for our major products:

- Aldurazyme: Aldurazyme net product revenues for the three months ended June 30, 2018 compared to 2017 increased primarily due to an increase in volume. The increase in Aldurazyme net product revenues for the six months ended June 30, 2018 compared to 2017 is attributed to an increase in volume and the adoption of ASC 606, which contributed $27.2 million as we now recognize the estimated variable consideration that we expect to receive when the product is sold through by Genzyme at the time our performance obligation is met. Our performance obligation is met when the product is delivered and the required quality certification documentation is issued. We believe any differences between the estimated variable consideration to be received from Genzyme and actual payments will be insignificant. Prior to the adoption of ASC 606, we recognized product transfer revenues, representing the fixed amount per unit of Aldurazyme that Genzyme is required to pay us if they do not sell the product, at the time of fulfillment of Genzyme purchase orders. Product transfer revenue was subsequently deducted from the calculated variable consideration recognized when the product was sold by Genzyme to third parties. Although Genzyme sells Aldurazyme worldwide, the net product revenues earned by us on Genzyme's net sales are denominated in U.S. Dollar (USD).

- Brineura: The increase in Brineura net product revenues for the three and six months ended June 30, 2018 compared to 2017 was primarily attributable to new patients initiating therapy as the product was launched in mid-2017.
- Kuvan: The increase in Kuvan net product revenues for the three and six months ended June 30, 2018 compared to 2017 was primarily attributable to an increase in patients on Kuvan therapy, the majority of which were in the U.S.
- Naglazyme: The increase in Naglazyme net product revenues for the three months ended June 30, 2018 compared to 2017 was mainly due to increased sales in the U.S. and Middle East. Naglazyme net product revenues for both the three and six months ended June 30, 2018 were impacted by government ordering patterns in certain Latin American countries. During the six months ended June 30, 2018, the effect of government ordering patterns in certain Latin American countries was partially offset by increased sales in the Middle East.
- Vimizim: The increase in Vimizim net product revenues for the three and six months ended June 30, 2018 compared to 2017 was primarily attributed to new patients initiating therapy.

Management's Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

We face exposure to movements in foreign currency exchange rates, primarily the Euro. We use foreign currency exchange contracts to hedge a percentage of our foreign currency exposure. The following table shows our Net Product Revenues denominated in USD and foreign currencies:

	For the Three Months Ended June 30,			For the Six Months Ended June 30,		
	2018	2017	Change	2018	2017	Change
Sales denominated in USD	$219.8	$187.3	$ 32.5	$456.2	$366.5	$89.7
Sales denominated in foreign currencies	148.0	128.6	19.4	280.7	251.6	29.1
Total net product revenues	$367.8	$315.9	$ 51.9	$736.9	$618.1	$118.8

The net impact of foreign currency exchange rates on product sales denominated in currencies other than USD during the three and six months ended June 30, 2018 was positive by $3.4 million and $9.5 million, respectively, compared to a positive impact of $1.5 million and $2.4 million during the three and six months ended June 30, 2017, respectively. The currency primarily driving the positive impact was the Euro, partially offset by a negative impact related to the Brazilian Real.

Cost of Sales and Product Gross Margin

Cost of Sales includes raw materials, personnel and facility and other costs associated primarily with manufacturing Aldurazyme, Brineura, Naglazyme and Vimizim at our production facilities. Cost of Sales also includes third-party manufacturing costs related to the active ingredient in Kuvan and Firdapse and third-party production costs related to final formulation and packaging services for all products and cost of royalties payable to third parties for all products.

The following table summarizes our cost of goods sold and product gross margin:

	For the Three Months Ended June 30,			For the Six Months Ended June 30,		
	2018	2017	Change	2018	2017	Change
Total net product revenues	$367.8	$315.9	$ 51.9	$736.9	$618.1	$118.8
Cost of sales	79.0	56.3	22.7	161.4	106.3	55.1
Product gross margin	79 %	82 %	(3.0)%	78 %	83 %	(5.0)%

Our Cost of Sales increased and gross margins decreased for the three and six months ended June 30, 2018 compared to 2017 primarily due to higher Naglazyme and Vimizim manufacturing costs and higher volume of Aldurazyme and Vimizim product sales. We expect product gross margin to remain near 80 percent over the next twelve months.

Research and Development

R&D expense includes costs associated with the research and development of product candidates and post-marketing research commitments related to our approved products. R&D expense primarily includes preclinical and clinical studies, personnel and cost to manufacture our product candidates, and related quality control and assurance, research and development, facilities and regulatory costs.

We manage our R&D expense by identifying the R&D activities we anticipate will be performed during a given period and then prioritizing efforts based on scientific data, probability of successful development, market potential, available human and capital resources and other similar considerations. We continually review our product pipeline and the development status of product candidates and, as necessary, reallocate resources among the research and development portfolio that we believe will best support the future growth of our business.

Management's Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

R&D expense increased to $175.6 million for the three months ended June 30, 2018 from $143.0 million for the three months ended June 30, 2017. R&D expense increased to $359.5 million for the six months ended June 30, 2018 from $288.0 million for the six months ended June 30, 2017. R&D Expense consisted of the following:

	Three Months Ended June 30,			Six Months Ended June 30,		
	2018	2017	Change	2018	2017	Change
Palynziq	$22.4	$30.6	$ (8.2)	$56.9	$56.4	$ 0.5
Valoctocogene roxaparvovec	37.2	32.6	4.6	72.2	53.9	18.3
Vosoritide	19.5	12.3	7.2	40.4	25.9	14.5
Tralesinidase alfa	23.6	11.4	12.2	54.3	20.9	33.4
Brineura	12.8	12.1	0.7	24.2	28.7	(4.5)
Other approved products	17.7	20.1	(2.4)	35.6	37.3	(1.7)
Early stage programs	15.8	11.8	4.0	32.6	31.4	1.2
Other and non-allocated	26.6	12.1	14.5	43.3	33.5	9.8
Total	$175.6	$143.0	$ 32.6	$359.5	$288.0	$ 71.5

The increase in R&D expense was primarily a result of the following:

- increased manufacturing of clinical products, primarily to support our ongoing development of our tralesinidase alfa, valoctocogene roxaparvovec and vosoritide product candidates; and
- an increase in other and non-allocated R&D expenses primarily related to preclinical activity for programs recently announced, such as BMN 290, and personnel-related costs not allocated to specific programs; partially offset by
- a decrease in the three months ended June 30, 2018 related to Palynziq, for which capitalization of manufacturing costs began in the second quarter of 2018; and
- a decrease for the six months ended June 30, 2018 related to Brineura was primarily due to a decrease in manufacturing costs for clinical product.

For the remainder of 2018, we expect our R&D spending to increase over 2017 levels due to our valoctocogene roxaparvovec, vosoritide, tralesinidase alfa and BMN 290 programs progressing in their development. We also expect increased spending on pre-clinical activities for our early development stage programs and we expect to continue incurring R&D expense for the foreseeable future due to long-term clinical activities related to post-approval regulatory commitments for our approved products.

We continuously evaluate the recoverability of costs associated with pre-launch or pre-qualification manufacturing activities, and if it is determined that recoverability is highly likely and therefore future revenues are expected, the costs subsequently incurred related to pre-launch or pre-qualification manufacturing activities for purposes of commercial sales will likely be capitalized. When regulatory approval and the likelihood of future revenues for a product candidate are less certain, the related manufacturing costs are recorded as R&D expense.

Selling, General and Administrative

SG&A expense increased to $153.3 million for the three months ended June 30, 2018 from $143.5 million for the three months ended June 30, 2017. SG&A expense increased to $291.6 million for the six months ended June 30, 2018 from $263.5 million for the six months ended June 30, 2017. The increase in SG&A expense was primarily a result of the following:

	Three Months Ended June 30,			Six Months Ended June 30,		
	2018	2017	Change	2018	2017	Change
Selling & Marketing expense	$81.1	$72.1	$ 9.0	$157.2	$134.9	$ 22.3
General & Administrative expense	72.2	71.4	0.8	134.4	128.6	5.8
Total SG&A expense	$153.3	$143.5	$ 9.8	$291.6	$263.5	$ 28.1

	Three Months Ended June 30,			Six Months Ended June 30,		
Selling & Marketing expense by product	2018	2017	Change	2018	2017	Change
Brineura	$10.6	$7.6	$ 3.0	$21.1	$12.4	$ 8.7
Palynziq	7.4	1.5	5.9	12.4	2.3	10.1
Other approved products	54.9	55.9	(1.0)	106.0	106.1	(0.1)
Other and not allocated	8.2	7.1	1.1	17.7	14.1	3.6
Total Selling & Marketing expense	$81.1	$72.1	$ 9.0	$157.2	$134.9	$ 22.3

Management's Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

The increase in Selling & Marketing expense was primarily a result of the following:

- pre-launch activities related to Palynziq; and
- the continued expansion of marketing activities related to Brineura.

The increase in General & Administrative expense was primarily due to increased personnel-related costs mainly due to increased headcount.

We expect SG&A expense to increase in future periods as a result of the continued commercial launch of Brineura, the commercial launch in the U.S. of Palynziq, pre-commercialization efforts related to product candidates, the continued international expansion of Kuvan and Vimizim, and the increase in administrative support required for our expanding global operations.

Intangible Asset Amortization and Contingent Consideration

Changes in the fair value of contingent acquisition consideration result from updates to the estimated probability of achievement or assumed timing of milestones and adjustments to the discount periods and rates. Intangible Asset Amortization and Contingent Consideration expense consisted of the following:

	Three Months Ended June 30,			Six Months Ended June 30,		
	2018	2017	Change	2018	2017	Change
Changes in the fair value of contingent acquisition consideration	$2.7	$5.8	$ (3.1)	$8.3	$7.2	$ 1.1
Amortization of intangible assets	7.5	7.6	(0.1)	15.1	15.1	—
Total intangible asset amortization and contingent consideration	$10.2	$13.4	$ (3.2)	$23.4	$22.3	$ 1.1

The changes in the fair value of the contingent acquisition consideration were attributable to changes in the estimated probability of achieving development milestones based on the current status of the related development programs, which, in the first half of 2018, primarily related to progress of our Palynziq program to support the filing of the European MAA in 2018, as well as the passage of time.

Gain on Sale of Intangible Assets

We recognized a gain of $20.0 million in the three and six months ended June 30, 2018 due to the achievement by a third party of regulatory milestones related to a previously sold intangible asset. See Note 7 to the accompanying Condensed Consolidated Financial Statements for additional information.

Interest Income

We invest our cash and investments in U.S. government securities and other high credit quality debt securities in order to limit default and market risk. Interest Income totaled $5.6 million and $10.8 million for the three and six months ended June 30, 2018, respectively, compared to $3.0 million and $6.1 million for the three and six months ended June 30, 2017, respectively. The increase in Interest Income during the three and six months ended June 30, 2018 compared to 2017 was primarily due to higher investment balances and higher average interest rate on investments. We expect Interest Income in 2018 to decrease moderately over the next 12 months due to the October 2018 maturity of the 0.75% senior subordinated convertible notes due in 2018 (the 2018 Notes), when the principle will be settled in cash.

Interest Expense

We incur interest expense on our convertible debt. Interest expense consisted of the following:

	Three Months Ended June 30,			Six Months Ended June 30,		
	2018	2017	Change	2018	2017	Change
Coupon interest expense	$3.5	$2.1	$ 1.4	$6.5	$4.6	$ 1.9
Amortization of issuance costs	1.0	0.9	0.1	2.0	1.8	0.2
Accretion of discount on convertible notes	7.7	7.0	0.7	15.3	13.8	1.5
Total interest expense	$12.2	$10.0	$ 2.2	$23.8	$20.2	$ 3.6

The increase in Interest Expense for the three and six months ended June 30, 2018 compared to 2017 was primarily due to the issuance of the 2024 Notes in August 2017. We expect Interest Expense to decrease moderately over the next 12 months due to the

October 2018 maturity of the 2018 Notes. See Note 10 to our accompanying Condensed Consolidated Financial Statements for additional information regarding our debt obligations.

Benefit from Income Taxes

For the three and six months ended June 30, 2018, we recognized a benefit from income taxes of $12.4 million and $19.0 million, respectively, compared to the three and six months ended June 30, 2017 when we recognized a benefit from income taxes of $8.7 million and $16.7 million, respectively. U.S. and foreign tax expense was computed using a forecasted annual effective tax rate for the three and six months ended June 30, 2018. Prior to the Tax Cuts and Jobs Act of 2017, we computed the U.S. component of the consolidated benefit from income taxes using an actual year-to-date tax calculation because our effective tax rate was highly sensitive to minor fluctuations in U.S. forecasted income. Foreign tax expense for the three and six months ended June 30, 2017 was computed using a forecasted annual effective tax rate.

The Benefit from Income Taxes for all periods presented also consisted of state, federal and foreign current tax expense, offset by deferred tax benefits from federal orphan drug and R&D credits and the tax benefit for stock options exercised during these periods, which resulted in a net tax benefit in all periods presented. Additionally, the six months ended June 30, 2018 included the tax benefit of $4.6 million associated with the remeasurement of its deferred taxes resulting from the refinement of certain provisional amounts included in our 2017 tax provision. See Note 17 to the accompanying Condensed Consolidated Financial Statements for additional discussion.

See Note 15 to our Consolidated Financial Statements included in our Annual Report on Form 10-K for the year ended December 31, 2017 for additional discussion of the components of our benefit from income taxes.

Financial Position, Liquidity and Capital Resources

As of June 30, 2018, we had approximately $1.6 billion in cash, cash equivalents and investments. We expect to fund our operations with our net product revenues from our commercial products, cash, cash equivalents and investments, supplemented as may become necessary by proceeds from equity or debt financings and loans, or collaborative agreements with corporate partners. We may require additional financing to fund the repayment of our convertible debt, future milestone payments and our future operations, including the commercialization of our products and product candidates currently under development, preclinical studies and clinical trials, and potential licenses and acquisitions. We will need to raise additional funds from equity or debt securities, loans or collaborative agreements if we are unable to satisfy our liquidity requirements. The timing and mix of our funding options could change depending on many factors, including how much we elect to spend on our development programs, potential licenses and acquisitions of complementary technologies, products and companies or if we elect to settle all or a portion of our convertible debt in cash.

In managing our liquidity needs in the U.S., we do not rely on unrepatriated earnings as a source of funds and we have not provided for U.S. federal or state income taxes on these undistributed foreign earnings. We do not record U.S. tax expense on the undistributed earnings of our controlled foreign subsidiaries as these earnings are intended to be indefinitely reinvested offshore. Currently, we are not subject to the repatriation tax on foreign earnings due to the net deficit in these foreign jurisdictions.

As of June 30, 2018, $139.2 million of our $1.6 billion balance of cash, cash equivalents, and investments was held in foreign subsidiaries, a significant portion of which is required to fund the liquidity needs of these foreign subsidiaries. For additional discussion regarding income taxes, see Note 15 to our Consolidated Financial Statements included in our Annual Report on Form 10-K for the year ended December 31, 2017.

We are mindful that conditions in the current macroeconomic environment could affect our ability to achieve our goals. We sell our products in countries that face economic volatility and weakness. Although we have historically collected receivables from customers in such countries, sustained weakness or further deterioration of the local economies and currencies may cause customers in those countries to be unable to pay for our products. We will continue to monitor these conditions and will attempt to adjust our business processes, as appropriate, to mitigate macroeconomic risks to our business.

Our liquidity and capital resources as of June 30, 2018 and December 31, 2017 were as follows:

	June 30, 2018	December 31, 2017	Change
Cash and cash equivalents	$427.4	$ 598.0	$(170.6)
Short-term investments	935.7	797.9	137.8
Long-term investments	280.0	385.8	(105.8)
Cash, cash equivalents and investments	$1,643.1	$ 1,781.7	$(138.6)
Convertible debt	$1,191.6	$ 1,174.5	$17.1

Management's Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

Our cash flows for the six months ended June 30, 2018 and 2017 are summarized as follows:

	2018	2017	Change
Cash and cash equivalents at the beginning of the period	$598.0	$408.3	$189.7
Net cash used in operating activities	(76.4)	(61.7)	(14.7)
Net cash used in investing activities	(67.0)	(14.8)	(52.2)
Net cash (used in) provided by financing activities	(26.8)	12.1	(38.9)
Foreign exchange impact	(0.4)	11.0	(11.4)
Cash and cash equivalents at the end of the period	$427.4	$354.9	$72.5
Short-term and long-term investments	1,215.7	854.9	360.8
Cash, cash equivalents and investments	$1,643.1	$1,209.8	$433.3

Cash Used in Operating Activities

Cash used in operating activities increased by $14.7 million to $76.4 million in the six months ended June 30, 2018, compared to $61.7 million in the six months ended June 30, 2017. The increase is primarily attributed to the timing of cash receipts from customers and payments to vendors, partially offset by a reduction in inventory levels.

Cash Used in Investing Activities

Net cash used in investing activities increased by $52.2 million to $67.0 million in the six months ended June 30, 2018 from $14.8 million in the six months ended June 30, 2017. The increase in net cash used in investing activities during the six months ended June 30, 2018 was primarily attributable to a $137.1 million increase in net purchases of available-for-sale securities, partially offset by a $64.2 million decrease in capital purchases and the receipt of $20.0 million in milestone payments related to a previously sold intangible asset. We expect to continue to make significant capital investments in our manufacturing facilities to facilitate planned product line expansion and our corporate headquarters to accommodate anticipated headcount growth.

Cash Provided by (Used in) Financing Activities

Net cash used in financing activities increased by $38.9 million to $26.8 million used in the six months ended June 30, 2018 from cash provided by financing activities of $12.1 million during the six months ended June 30, 2017. The increase in net cash used in financing activities for the six months ended June 30, 2018 was primarily attributable to the $41.2 million increase in payments of contingent acquisition consideration.

Other Information

Our $1.2 billion (undiscounted) of total convertible debt as of June 30, 2018 will impact our liquidity due to the semi-annual cash interest payments. Our indebtedness consists primarily of the 2018 Notes, our 1.50% senior subordinated convertible notes due in 2020 (the 2020 Notes) and our 0.599% senior subordinated convertible notes due in 2024 (the 2024 Notes and, together with the 2018 Notes and the 2020 Notes, the Notes), which, if not converted, will be required to be repaid in cash at maturity in 2018, 2020 and 2024, respectively. Our senior

subordinated convertible notes due in 2017 matured on April 23, 2017, with conversion of all principal amounts except for a final cash settlement of $26,000. See Note 10 to our accompanying Condensed Consolidated Financial Statements for additional discussion.

In addition, holders of the 2018 Notes are currently entitled to convert the 2018 Notes at any time until the second scheduled trading day prior to October 15, 2018 (the maturity date of the 2018 Notes), and in the event the conditional conversion feature of the 2020 Notes is triggered, holders of the 2020 Notes will be entitled to convert the 2020 Notes at any time during specified periods at their option. In addition, the 2020 Notes will be freely convertible on or after July 15, 2020. We intend to use a majority of the net proceeds we received from the issuance of the 2024 Notes to repay, repurchase or settle in cash some or all of the 2018 Notes. We have elected to settle conversions of the 2018 Notes in cash up to the principal amount of the 2018 Notes, shares of our common stock in respect of conversion value in excess thereof, and cash in lieu of any fractional shares. We may also elect to settle conversions of the 2020 Notes in cash, in whole or in part, which could further affect our liquidity. While we could seek to obtain additional third-party financing to pay for any amounts due in cash upon such events, we cannot be sure that such third-party financing will be available on commercially reasonable terms, if at all. The $375.0 million principal amount of the 2018 Notes mature on October 15, 2018 and therefore we have reclassified the net outstanding principal of the 2018 Notes as a current liability. Even if holders of the 2020 Notes do not elect to convert their 2020 Notes, we could be required under applicable accounting rules to reclassify all or a portion of the outstanding principal of such Notes as a current liability rather than long-term liability (for example, when there are 12 months or less remaining until maturity), which would result in a material reduction of our net working capital.

Management's Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

In November 2016 we entered into a credit agreement (the Credit Agreement) providing for up to $100.0 million in revolving loans (the Revolving Credit Facility). We expect to use the proceeds of the Revolving Credit Facility to finance ongoing working capital needs (including timing differences resulting from the strategic management of short-term investments) and for other general corporate purposes. As of June 30, 2018, we had not drawn on the Revolving Credit Facility. Although quarterly interest payments will be due on any outstanding balance due, we anticipate any balance due to be short-term in nature. See Note 10 to our accompanying Condensed Consolidated Financial Statements for additional discussion.

Funding Commitments

We cannot estimate with certainty the cost to complete any of our product development programs. Additionally, we cannot precisely estimate the time to complete any of our product development programs or when we expect to receive net cash inflows from any of our product development programs. Please see "Risk Factors" included in Part II, Item 1A of this Quarterly Report on Form 10-Q, for a discussion of the reasons we are unable to estimate such information, and in particular the following risk factors:

- If we fail to obtain regulatory approval to commercially market and sell our product candidates, or if approval of our product candidates is delayed, we will be unable to generate revenue from the sale of these product candidates, our potential for generating positive cash flow will be diminished, and the capital necessary to fund our operations will increase;
- If we are unable to successfully develop and maintain manufacturing processes for our products to produce sufficient quantities at acceptable costs, we may be unable to meet demand for our products and lose potential revenue, have reduced margins or be forced to terminate a program;
- If we fail to compete successfully with respect to product sales, we may be unable to generate sufficient sales to recover our expenses related to the development of a product program or to justify continued marketing of a product and our revenue could be adversely affected; and
- If we do not achieve our projected development goals in the timeframes we announce and expect, the commercialization of our product candidates may be delayed and the credibility of our management may be adversely affected and, as a result, our stock price may decline.

Our investment in our product development programs and continued development of our existing commercial products has a major impact on our operating performance. The R&D expenses of our major development programs from inception to June 30, 2018 were as follows:

	Since Program Inception
Brineura	$ 264.4
Palynziq	579.8
Valoctocogene roxaparvovec	311.5
Vosoritide	270.1
Tralesinidase alfa	208.9
Other approved products	1,015.4
Other and non-allocated	Not meaningful

We may elect to increase our spending above our current long-term plans and consequently we may be unable to achieve our long-term goals. This may increase our capital requirements, including: costs associated with the commercialization of our products; additional clinical trials; investments in the manufacturing of our commercial products; pre-clinical studies and clinical trials for our other product candidates; potential licenses and other acquisitions of complementary technologies, products and companies; and general corporate purposes.

Our future capital requirements will depend on many factors, including, but not limited to:

- product sales and profitability of our products;
- manufacturing, supply or distribution of our product candidates and commercial products;
- progress of our product candidates through the regulatory process and our ability to successfully commercialize any such products that receive regulatory approval;
- results of clinical trials, announcements of technological innovations or new products by us or our competitors;
- generic competition to Kuvan relating to our settlements with Dr. Reddy's Laboratories, Inc. and Dr. Reddy's Laboratories, Ltd. (related to Kuvan tablets and powder) and Par Pharmaceutical, Inc. (related to Kuvan tablets and powder) or potential generic competition from future competitors;

Management's Discussion and Analysis of Financial Condition and Results of Operations (continued)

(In millions, except as otherwise disclosed)

- government regulatory action affecting our product candidates, our products or our competitors' product candidates and products in both the U.S. and non-U.S. countries;
- developments or disputes concerning patent or proprietary rights.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that are currently material or reasonably likely to be material to our consolidated financial position or results of operations.

Contractual and Commercial Obligations

We have contractual and commercial obligations under our convertible debt, operating leases and other obligations related to R&D activities, purchase commitments, licenses and sales royalties with annual minimums. Our contractual obligations as of June 30, 2018 are presented in the table below.

	Payments Due Within				
	2018 or Less	>1 -3 Years	> 3 - 5 Years	More Than 5 Years	Total
2018 Notes and related interest	$376.4	$—	$—	$—	$376.4
2020 Notes and related interest	2.8	386.2	—	—	389.0
2024 Notes and related interest	1.5	5.9	5.9	500.9	514.2
Operating leases	4.9	21.1	19.2	26.8	72.0
R&D and purchase commitments	62.0	—	—	—	62.0
Other commitments	15.9	—	—	—	15.9
Total	$463.5	$413.2	$25.1	$527.7	$1,429.5

We are also subject to contingent payments related to certain development and regulatory activities and commercial sales and licensing milestones totaling approximately $540.4 million as of June 30, 2018, which are due upon achievement of certain development and commercial milestones, and if they occur before certain dates in the future. Of this amount, $158.0 million relates to our acquisition of certain rights and other assets with respect to Kuvan and Palynziq from Ares Trading S.A. (Merck Serono) and its affiliates and $53.2 million relates to programs that are no longer being developed.

As of June 30, 2018, we have recorded $134.1 million of total contingent acquisition consideration on our Condensed Consolidated Balance Sheets. We paid $61.6 million of contingent acquisition consideration in April 2018 related to the Palynziq European MAA filing in March 2018.

See Note 16 to our accompanying Condensed Consolidated Financial Statements for additional discussion on our commitments.

Any outstanding amounts due under the Revolving Credit Facility will be due in full in November 2018 with related interest, if any, due on a quarterly basis. As of June 30, 2018, there was no outstanding balance.

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Item 3. Quantitative and Qualitative Disclosures About Market Risk

Our market risks during the six months ended June 30, 2018 have not materially changed from those discussed in Part II, Item 7A of our Annual Report on Form 10-K for the year ended December 31, 2017, which was filed with the SEC on February 26, 2018.

Item 4. Controls and Procedures

(a) Controls and Procedures

An evaluation was carried out, under the supervision of and with the participation of our management, including our Chief Executive Officer and our Chief Financial Officer, of the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act)), as of the end of the period covered by this report.

Based on the evaluation, our Chief Executive Officer and our Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of June 30, 2018.

In designing and evaluating our disclosure controls and procedures, our management recognizes 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 must apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Accordingly, our disclosure controls and procedures are designed to provide reasonable, not absolute, assurance that the objectives of our disclosure controls system are met.

(b) Change in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act, during our most recently completed quarter that have materially affected or are reasonably likely to materially affect our internal control over financial reporting. We implemented internal controls in 2017 to ensure we adequately evaluated our contracts and properly assessed the impact of the new accounting standard related to revenue recognition on our financial statements to facilitate adoption on January 1, 2018. There were no significant changes to our internal control over financial reporting due to the adoption of the new standard. We are utilizing the Committee of Sponsoring Organizations of the Treadway Commission (COSO) 2013 Framework on internal control.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings.

None.

Item 1A. Risk Factors

An investment in our securities involves a high degree of risk. We operate in a dynamic and rapidly changing industry that involves numerous risks and uncertainties. The risks and uncertainties described below are not the only ones we face. Other risks and uncertainties, including those that we do not currently consider material, may impair our business. If any of the risks discussed below actually occur, our business, financial condition, operating results or cash flows could be materially adversely affected. This could cause the value of our securities to decline, and you may lose all or part of your investment.

We have marked with an asterisk (*) those risk factors below that include a substantive change from or update to the risk factors included in our Annual Report on Form 10-K for the year ended December 31, 2017, which was filed with the SEC on February 26, 2018.

Risks Related to Our Business

*If we fail to obtain regulatory approval to commercially market and sell our product candidates, or if approval of our product candidates is delayed, we will be unable to generate revenue from the sale of these product candidates, our potential for generating positive cash flow will be diminished, and the capital necessary to fund our operations will increase.

We must obtain and maintain regulatory approval to market and sell our product candidates. For example, in the U.S., we must obtain Food and Drug Administration (FDA) approval for each product candidate that we intend to commercialize, and in Europe we must obtain approval from the European Medicines Agency (EMA). The FDA and EMA approval processes are typically lengthy and expensive, and approval is never certain. Accordingly, there are no assurances that we will obtain regulatory approval for any of our product candidates. Furthermore, there can be no assurance that approval of one of our product candidates by one regulatory agency will mean that other agencies will also approve the same product candidate. For example, although the FDA approved Palynziq, there can be no assurance that the EMA will also approve Palynziq.

Although the FDA and the EMA have programs to facilitate accelerated approval processes, the timelines agreed under legislative goals or mandated by regulations are subject to the possibility of substantial delays. In addition, the FDA, the EMA and other international regulatory authorities have substantial discretion over the approval process for pharmaceutical products. These regulatory agencies may not agree that we have demonstrated the requisite level of product safety and efficacy to grant approval and may require additional data. If we fail to obtain regulatory approval for our product candidates, we will be unable to market and sell those product candidates. Because of the risks and uncertainties in pharmaceutical development, our product candidates could take a significantly longer time to gain regulatory approval than we expect or may never gain approval. We also rely on independent third-party contract research organizations (CROs) to file some of our foreign marketing applications and important aspects of the services performed for us by the CROs are out of our direct control. If we fail to adequately manage our CROs, if the CRO elects to prioritize work on our projects below other projects or if there is any dispute or disruption in our relationship with our CROs, the filing of our applications may be delayed.

In addition, some of our product candidates are intended to be used in combination with a delivery device, such as an injector or other delivery system. Medical products containing a combination of new drugs, biological products or medical devices may be regulated as “combination products” in the U.S. A combination product generally is defined as a product consisting of components from two or more regulatory categories (e.g., drug/device, device/biologic, drug/biologic). Each component of a combination product is subject to the requirements established by the FDA for that type of component, whether a new drug, biologic or device. In order to facilitate pre-market review of

combination products, the FDA designates one of its centers to have primary jurisdiction for the pre-market review and regulation of the overall product based upon a determination by the FDA of the primary mode of action of the combination product. The determination whether a product is a combination product or two separately regulated products is made by the FDA on a case-by-case basis. Our product candidates intended for use with such devices, or expanded indications that we may seek for our products used with such devices, may not be approved or may be substantially delayed in receiving approval if the devices do not gain and/or maintain their own regulatory approvals or clearances. Where approval of the drug or biologic product and device is sought under a single application, the increased complexity of the review process may delay approval. The FDA review process and criteria is not a well-established area, which could also lead to delays in the approval process. In addition, because these delivery devices are provided by unaffiliated third-party companies, we are dependent on the sustained cooperation and effort of those third-party companies both to obtain regulatory approval and to maintain their own regulatory compliance. Failure of third-party companies to assist in the approval process or to maintain their own regulatory compliance could delay or prevent approval of our product candidates, or limit our ability to sell a product once it is approved.

From time to time during the regulatory approval process for our products and product candidates, we engage in discussions with the FDA and comparable international regulatory authorities regarding our development programs, including discussions about the regulatory requirements for approval. As part of these discussions, we sometimes seek advice in the design of our clinical programs from various regulatory agencies globally, but we do not always follow such guidance. This increases the chance of adverse regulatory actions, but we try to always provide appropriate scientific evidence to support approval. For example, although we designed our Phase 3 study of vosoritide in a manner that we believe can demonstrate efficacy and safety of the product candidate for the target patient population, the FDA may ultimately disagree. Moreover, sometimes different regulatory agencies provide different or conflicting advice. While we attempt to harmonize the advice we receive from multiple regulatory authorities, it is not always practical to do so. Also, we may choose not to harmonize conflicting advice when harmonization would significantly delay clinical trial data or is otherwise inappropriate. If we are unable to effectively and efficiently resolve and comply with the inquiries and requests of the FDA and other non-U.S. regulatory authorities, the approval of our product candidates may be delayed and their value may be reduced.

*Any product for which we have obtained regulatory approval, or for which we obtain approval in the future, is subject to, or will be subject to, extensive ongoing regulatory requirements by the FDA, the EMA and other comparable international regulatory authorities, and if we fail to comply with regulatory requirements or if we experience unanticipated problems with our products, we may be subject to penalties, we will be unable to generate revenue from the sale of such products, our potential for generating positive cash flow will be diminished, and the capital necessary to fund our operations will be increased.

Aldurazyme, Brineura, Kuvan, Naglazyme and Vimizim have received regulatory approval to be commercially marketed and sold in the U.S., the EU and certain other countries, Palynziq has received regulatory approval to be commercially marketed in the U.S., and Firdapse has received regulatory approval to be commercially marketed in the EU. Any product for which we have obtained regulatory approval, or for which we obtain regulatory approval in the future, along with the manufacturing processes and practices, post-approval clinical research, product labeling, advertising and promotional activities for such product, are subject to continual requirements of, and review by, the FDA, the EMA and other comparable international regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, current good manufacturing practices (cGMP) requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians, import and export requirements and recordkeeping.

An example of the ongoing regulatory requirements our products are subject to is the Palynziq Risk Evaluation and Mitigation Strategy (REMS) program. In the U.S., Palynziq is only available through the REMS program, which is required by the FDA to mitigate the risk of anaphylaxis while using the product. Notable requirements of our REMS program include the following:

- prescribers must be certified by enrolling in the REMS program and completing training;
- prescribers must prescribe auto-injectable epinephrine with Palynziq;
- pharmacies must be certified with the REMS program and must dispense Palynziq only to patients who are authorized to receive it;
- patients must enroll in the REMS program and be educated about the risk of anaphylaxis by a certified prescriber to ensure they understand the risks and benefits of treatment with Palynziq; and
- patients must have auto-injectable epinephrine available at all times while taking Palynziq.

Failure of prescribers, pharmacies or patients to enroll in our REMS program or to successfully complete and comply with its requirements may result in regulatory action from the FDA or decreased sales of Palynziq. The restrictions and requirements under our REMS program, as well as potential changes to these restrictions and requirements in the future, subject us to increased risks and uncertainties, any of which could harm our business. We cannot predict

whether the FDA will request, seek to require or ultimately require modifications to, or impose additional requirements on, the Palynziq REMS program, or whether the FDA will permit modifications to the Palynziq REMS program that we consider warranted. Any modifications required or rejected by the FDA could make it more difficult or expensive for us to distribute Palynziq in the U.S., impair the safety profile of Palynziq, disrupt continuity of care for Palynziq patients and/or negatively affect sales of Palynziq.

Moreover, promotional communications with respect to prescription drugs, including biologics, are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved labeling. Thus, we will not be able to promote any products we develop for indications or uses for which they are not approved.

In addition, the FDA often requires post-marketing testing and surveillance to monitor the effects of products. The FDA, the EMA and other comparable international regulatory agencies may condition approval of our product candidates on the completion of such post-marketing clinical studies. These post-marketing studies may suggest that a product causes undesirable side effects or may present a risk to the patient.

Discovery after approval of previously unknown problems with any of our products, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in actions such as:

- restrictions on our ability to conduct clinical trials, including full or partial clinical holds on ongoing or planned trials
- restrictions on product manufacturing processes;
- restrictions on the marketing of a product;
- restrictions on product distribution;
- requirements to conduct post-marketing clinical trials;
- untitled or warning letters or other adverse publicity;
- withdrawal of the products from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- refusal to permit the import or export of our products;
- product seizure;
- fines, restitution or disgorgement of profits or revenue;
- injunctions; or
- imposition of civil or criminal penalties.

If such regulatory actions are taken, our value and our operating results will be adversely affected. Additionally, if the FDA, the EMA or any other comparable international regulatory agency withdraws its approval of a product, we will be unable to generate revenue from the sale of that product in the relevant jurisdiction, our potential for generating positive cash flow will be diminished and the capital necessary to fund our operations will be increased. Accordingly, we continue to expend significant time, money and effort in all areas of regulatory compliance, including manufacturing, production, product surveillance, post-marketing studies and quality control.

*If we fail to obtain or maintain orphan drug exclusivity for some of our products, our competitors may obtain approval to sell the same drugs to treat the same conditions and our revenues will be reduced.

As part of our business strategy, we have developed and may in the future develop some drugs that may be eligible for FDA and EU orphan drug designation. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is intended to treat a rare disease or condition, defined as a patient population of fewer than 200,000 in the U.S. In the EU, orphan drug designation is granted to drugs intended to treat a rare disease or condition, defined as having a prevalence of no more than five in 10,000 people in the EU, which is equivalent to around 250,000 people or fewer. The company that first obtains FDA approval for a designated orphan drug for a given rare disease receives marketing exclusivity for use of that drug for the stated condition for a period of seven years. Orphan drug exclusive marketing rights may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug. Similar regulations are available in the EU with a ten-year period of market exclusivity.

Because the extent and scope of patent protection for some of our products is limited, orphan drug designation is especially important for our products that are eligible for orphan drug designation. For eligible products, we plan to rely on the exclusivity period under the Orphan Drug Act to maintain a competitive position. If we do not obtain orphan drug exclusivity for our products that do not have broad patent protection, our competitors may then sell the same drug to treat the same condition and our revenues will be reduced.

Even though we have obtained orphan drug designation for certain of our product candidates and even if we obtain orphan drug designation for our future product candidates, due to the uncertainties associated with developing biopharmaceutical products, we may not be the first to obtain marketing approval for any particular orphan indication,

which means that we may not obtain orphan drug exclusivity and could also potentially be blocked from approval of certain product candidates until the competitor product's orphan drug exclusivity period expires. Moreover, with respect to biologics and gene therapy, it is uncertain how similarity between product candidates designed to treat the same rare disease or condition may affect such product candidates' orphan drug designations. Further, even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same condition and the same drug can be approved for different conditions and potentially used off-label in the orphan indication. Even after an orphan drug is approved and granted orphan drug exclusivity, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is safer or more effective or makes a major contribution to patient care. Orphan drug designation neither shortens the development time or regulatory review time of a drug, nor gives the drug any advantage in the regulatory review or approval process.

*We may face competition from biosimilars approved through an abbreviated regulatory pathway.

Our Aldurazyme, Brineura, Naglazyme, Palynziq and Vimizim products are regulated by the FDA as biologics under the Federal Food, Drug, and Cosmetic Act (the FDC Act) and the Public Health Service Act (the PHS Act). Biologics require the submission of a BLA and approval by the FDA prior to being marketed in the U.S. Historically, a biologic product approved under a BLA was not subject to the generic drug review and approval provisions of the FDC Act. However, the Biologics Price Competition and Innovation Act of 2009 (BPCIA) created a regulatory pathway under the PHS Act for the abbreviated approval of biological products that are demonstrated to be "biosimilar" or "interchangeable" with an FDA-approved biological product. In order to meet the standard of interchangeability, a sponsor must demonstrate that the biosimilar product can be expected to produce the same clinical result as the reference product, and for a product that is administered more than once, that the risk of switching between the reference product and biosimilar product is not greater than the risk of maintaining the patient on the reference product. Such biosimilars would reference biological products approved in the U.S. The BPCIA establishes a period of 12 years of exclusivity for reference products. Aldurazyme's exclusivity under the BPCIA expired in 2015, Brineura's exclusivity under the BPCIA expires in 2029, Naglazyme's exclusivity under the BPCIA expired in 2017, Palynziq's exclusivity under the BPCIA expires in 2030 and Vimizim's exclusivity under the BPCIA expires in 2026. Our products approved under BLAs, as well as products in development that may be approved under BLAs in the future, could be reference products for biosimilar marketing applications.

*To obtain regulatory approval to market our products, preclinical studies and costly and lengthy clinical trials are required and the results of the studies and trials are highly uncertain.

As part of the drug development process we must conduct, at our own expense, preclinical studies in the laboratory, including studies in animals, and clinical trials on humans for each product candidate. We expect the number of preclinical studies and clinical trials that the regulatory authorities will require will vary depending on the product candidate, the disease or condition the drug is being developed to address and regulations applicable to the particular drug. Generally, new drugs for diseases or conditions that affect larger patient populations, are less severe, or are treatable by alternative strategies must be validated through additional preclinical and clinical trials and/or clinical trials with higher enrollments. With respect to our early stage product candidates, we may need to perform multiple preclinical studies using various doses and formulations before we can begin clinical trials, which could result in delays to our development timeline. Furthermore, even if we obtain favorable results in preclinical studies, the results in humans may be significantly different. After we have conducted preclinical studies, we must demonstrate that our product candidates are safe and efficacious for use in the targeted human patients in order to receive regulatory approval for commercial sale. Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. The results of preclinical studies and early clinical trials of our product candidates may not be predictive of the results of later-stage clinical trials, and favorable data from interim analyses do not ensure the final results of a trial will be favorable. Product candidates may fail to show the desired safety and efficacy traits despite having progressed through preclinical studies and initial clinical trials, or despite having favorable data in connection with an interim analysis. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or adverse safety profiles, notwithstanding promising results in earlier trials. Also, as noted above, we do not always follow the advice of regulatory authorities or comply with all of their requests regarding the design of our clinical programs. In those cases, we may choose a development program that is inconsistent with the advice of regulatory authorities, which may limit the jurisdictions where we conduct clinical trials and/or adversely affect our ability to obtain approval in those jurisdictions where we do not follow the regulatory advice.

Adverse or inconclusive clinical results could stop us from obtaining regulatory approval of our product candidates. Additional factors that can cause delay or termination of our clinical trials include:

- slow or insufficient patient enrollment;
- slow recruitment of, and completion of necessary institutional approvals at, clinical sites;
- budgetary constraints or prohibitively high clinical trial costs;
- longer treatment time required to demonstrate efficacy;
- lack of sufficient supplies of the product candidate;
- adverse medical events or side effects in treated patients, including immune reactions;
- lack of effectiveness of the product candidate being tested;
- availability of competitive therapies to treat the same indication as our product candidates;
- regulatory requests for additional clinical trials or pre-clinical studies;
- deviations in standards for Good Clinical Practice (GCP); and
- disputes with or disruptions in our relationships with clinical trial partners, including CROs, clinical laboratories, clinical sites, and principal investigators

Moreover, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and receive compensation in connection with such services reportable to the FDA or other regulatory authority. If the FDA or other regulatory authority concludes that a financial relationship between us and a principal investigator has created a conflict of interest, the FDA or other regulatory authority may question the integrity of the data generated at the applicable clinical trial site and the utility of the clinical trial itself may be jeopardized.

Our valoctocogene roxaparvovec (formerly referred to as BMN 270) program is based on a gene therapy approach, which, as a novel technology, presents additional treatment, regulatory, manufacturing, and commercial risks in relation to our other, more traditional drug development programs.

In addition to the risks set forth in this Risk Factors section associated with developing and commercializing more traditional pharmaceutical drugs, there are additional, unique risks associated with gene therapy products like our product candidate valoctocogene roxaparvovec. The goal of gene therapy is to be able to correct an inborn genetic defect through one-time administration of therapeutic genetic material containing non-defective gene copies. The gene copies are designed to reside permanently in a patient, allowing the patient to produce an essential protein or ribonucleic acid (RNA) molecule that a healthy person would normally produce. There is a risk, however, that the new gene copies will produce too much or too little of the desired protein or RNA. There is also a risk that production of the desired protein or RNA will increase or decrease over time. Because the treatment is irreversible, there may be challenges in managing side effects, particularly those caused by overproduction. Adverse effects would not be able to be reversed or relieved by stopping dosing, and we may have to develop additional clinical safety procedures. Furthermore, because the new gene copies are designed to reside permanently in a patient, there is a risk that they will disrupt other normal biological molecules and processes, including other healthy genes, and we may not learn the nature and magnitude of these side effects until long after clinical trials have been completed.

We may experience development problems related to our gene therapy program that cause significant delays or unanticipated costs, or that cannot be solved. Although numerous companies are currently advancing gene therapy product candidates through clinical trials and the FDA has approved several cell-based gene therapy treatments to date, the FDA has only approved one vector-based gene therapy product thus far. Moreover, there are very few approved gene therapy products outside the U.S. As a result, it is difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidate in any jurisdiction. Regulatory requirements governing gene and cell therapy products are still evolving and may continue to change in the future. Regulatory review agencies and the new requirements and guidelines they promulgate may lengthen the regulatory review process, require us to perform additional or larger studies, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of our treatment candidate or lead to significant post-approval studies, limitations or restrictions. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring valoctocogene roxaparvovec to market could have a negative effect on our business and financial condition. Even if we do obtain regulatory approval, ethical, social and legal concerns about gene therapy arising in the future could result in additional regulations restricting or prohibiting sale of our product.

Even if we obtain regulatory approval for valoctocogene roxaparvovec, we may experience delays, and increased costs, in developing a sustainable, reproducible and large-scale manufacturing process. Gene therapy products are novel, complex and difficult to manufacture, and have only in limited cases been manufactured at scales sufficient for pivotal trials and commercialization. Few pharmaceutical contract manufacturers specialize in gene therapy products and those that do are still developing appropriate processes and facilities for large-scale production. Whether we produce valoctocogene roxaparvovec at a contract manufacturer or at our own gene therapy manufacturing facility, we will likely face technical and scientific challenges, considerable capital costs, and potential difficulty in recruiting and hiring experienced, qualified personnel. As a result, we could experience manufacturing delays that prevent us from completing our clinical studies or commercializing valoctocogene roxaparvovec in a timely, or on a profitable, basis,

if at all.

Due to the relative novelty of gene therapy and the potential to provide extended duration therapeutic treatment with a one-time administration, we also face uncertainty with respect to the pricing, coverage and reimbursement of valoctocogene roxaparvovec, if approved. In order to recover our research and development costs and commercialize this one-time treatment on a profitable basis, we expect the cost of a single administration of valoctocogene roxaparvovec to be substantial. Therefore, we expect that coverage and reimbursement by governments and other third-party payers will be essential for the vast majority of patients to be able to afford valoctocogene roxaparvovec. Accordingly, sales of valoctocogene roxaparvovec, if approved, will depend substantially, both domestically and internationally, on the extent to which its cost will be paid by third-party payers. Even if coverage is provided, the reimbursement amounts approved by third-party payers may not be high enough to allow us to realize a sufficient return on our investment.

We also face uncertainty as to whether gene therapy will gain the acceptance of the public or the medical community. Even if we obtain regulatory approval for valoctocogene roxaparvovec, the commercial success of valoctocogene roxaparvovec will depend, in part, on the acceptance of physicians, patients and healthcare payers of gene therapy products in general, and our product candidate in particular, as medically necessary, cost-effective and safe. In particular, our success will depend upon physicians prescribing our product candidate in lieu of existing treatments they are already familiar with and for which greater clinical data may be available. Even if valoctocogene roxaparvovec displays a favorable efficacy and safety profile in clinical trials and is ultimately approved, market acceptance of valoctocogene roxaparvovec will not be fully known until after it is launched. Negative public opinion or more restrictive government regulations or could have a negative effect on our business and financial condition and may delay or impair the development and commercialization of, and demand for, valoctocogene roxaparvovec.

If we continue to incur operating losses and experience net cash outflows for a period longer than anticipated, we may be unable to continue our operations at planned levels and be forced to reduce our operations.

Since we began operations in March 1997, we have been engaged in substantial research and development and capital investments, and we have operated at a net loss for each year since our inception, with the exception of 2008 and 2010. Based upon our current plan for investments in research and development for existing and new programs, as well as capital investments in our facilities and working capital needs, such as for inventory, we expect to operate at a net loss and experience net cash outflows for at least the next 12 months. Our future profitability and cash flows depend on our marketing and selling of our products, the receipt of regulatory approval of our product candidates, our ability to successfully manufacture and market any products, either by ourselves or jointly with others, our spending on our development programs, the impact of any possible future business development transactions and other risks set forth in this Risk Factors section. The extent of our future losses and the timing of profitability and positive cash flows are highly uncertain. If we fail to become profitable and cash flow positive or are unable to sustain profitability and positive cash flows on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce our operations.

*If we fail to obtain the capital necessary to fund our operations, our financial results and financial condition will be adversely affected and we will have to delay or terminate some or all of our product development programs.

As of June 30, 2018, we had cash, cash equivalents and investments totaling $1.6 billion and convertible debt obligations of $1.2 billion (undiscounted).In October 2013, we completed an offering of our 0.75% senior subordinated convertible notes due in 2018 (the 2018 Notes) and our 1.50% senior subordinated convertible notes due in 2020 (the 2020 Notes) and received net proceeds of approximately $696.4 million, after deducting commissions, estimated offering expenses payable by us and the purchase of the related capped calls. In August 2017, we completed an offering of our 0.599% senior subordinated convertible notes due in 2024 (the 2024 Notes and, together with the 2018 Notes and the 2020 Notes, the Notes) and received net proceeds of approximately $481.7 million, after deducting commissions and estimated offering expenses payable by us, a majority of which we intend to use to repay, repurchase or settle in cash some or all of the 2018 Notes. We will need cash to not only repay the principal amount of these Notes, but also the ongoing interest due on the Notes during their term.

In January 2016 we terminated our License and Commercialization Agreement with Ares Trading, S.A. (Merck Serono). Pursuant to the Termination and Transition Agreement related to Kuvan and the Termination Agreement related to Palynziq, we are obligated to pay Merck Serono up to a maximum of €60 million, in cash, if future sales milestones are met with respect to Kuvan and up to a maximum of €75 million, in cash, if future development milestones are met with respect to Palynziq.

We may require additional financing to fund the repayment of our Notes, future milestone payments and our future operations, including the commercialization of our products and product candidates currently under development, preclinical studies and clinical trials, and potential licenses and acquisitions. We may be unable to raise additional financing due to a variety of factors, including our financial condition, the status of our product programs, and the general condition of the financial markets. If we fail to raise any necessary additional financing we may have to delay or terminate some or all of our product development programs and our financial condition and operating results will be adversely affected.

We expect to continue to spend substantial amounts of capital for our operations for the foreseeable future. The amount of capital we will need depends on many factors, including:

- our ability to successfully market and sell our products;
-

the time and cost necessary to develop commercial manufacturing processes, including quality systems, and to build or acquire manufacturing capabilities the progress and success of our preclinical studies and clinical trials (including studies and the manufacture of materials);

- the timing, number, size and scope of our preclinical studies and clinical trials;
- the time and cost necessary to obtain regulatory approvals and the costs of post-marketing studies which may be required by regulatory authorities;
- the progress of research programs carried out by us;
- our possible achievement of development and commercial milestones under agreements with third parties, such as the termination agreements with Merck Serono related to Kuvan and Palynziq milestones;
- any changes made to, or new developments in, our existing collaborative, licensing and other commercial relationships or any new collaborative, licensing and other commercial relationships that we may establish;
- Genzyme's ability to continue to successfully commercialize Aldurazyme; and
- whether our convertible debt is converted to common stock in the future.

Moreover, our fixed expenses such as rent, license payments, interest expense and other contractual commitments are substantial and may increase in the future. These fixed expenses may increase because we may enter into:

- additional licenses and collaborative agreements;
- additional contracts for product manufacturing; and
- additional financing facilities or arrangements.

We will need to raise additional funds from equity or debt securities, loans or collaborative agreements if we are unable to satisfy our liquidity requirements. The sale of additional securities will result in additional dilution to our stockholders. Furthermore, additional financing may not be available in amounts or on terms satisfactory to us or at all. This could result in the delay, reduction or termination of our research, which could harm our business.

*We have incurred substantial indebtedness that may decrease our business flexibility, access to capital, and/or increase our borrowing costs, which may adversely affect our operations and financial results.

As of June 30, 2018, we had $1.2 billion (undiscounted) principal amount of indebtedness, including $375.0 million (undiscounted) principal amount of indebtedness under the 2018 Notes, $375.0 million (undiscounted) principal amount of indebtedness under the 2020 Notes, and $495.0 million (undiscounted) principal amount of indebtedness under the 2024 Notes. In November 2016, we also entered into a credit agreement (the Credit Agreement) with Bank of America, N.A., as the administrative agent, swingline lender and letter of credit issuer, providing for up to $100.0 million in revolving loans. Our indebtedness may:

- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions or other general business purposes;
- limit our ability to use our cash flow or obtain additional financing for future working capital, capital expenditures, acquisitions or other general business purposes;
- require us to use a substantial portion of our cash flow from operations to make debt service payments;
- limit our flexibility to plan for, or react to, changes in our business and industry;
- place us at a competitive disadvantage compared to our less leveraged competitors; and
- increase our vulnerability to the impact of adverse economic and industry conditions.

In addition, the Credit Agreement does, and any future indebtedness that we may incur may, contain financial and other restrictive covenants that limit our ability to operate our business, raise capital or make payments under our other indebtedness. If we fail to comply with these covenants or to make payments under our indebtedness when due, then we would be in default under that indebtedness, which could, in turn, result in that and our other indebtedness becoming immediately payable in full. If we default under the Credit Agreement, the outstanding borrowings thereunder could become immediately due and payable, the Credit Agreement lenders could refuse to permit additional borrowings under the facility, or it could lead to defaults under agreements governing our current or future indebtedness, including the indentures governing our Notes. If we default under any of the Notes, such Notes could become immediately due and payable and it could lead to defaults under the other Notes and/or the Credit Agreement.

*In addition, our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time.

Our outstanding indebtedness consists primarily of the 2018 Notes, 2020 Notes and 2024 Notes, which, if not converted, will be required to be repaid in cash at maturity in 2018, 2020 and 2024, respectively. In addition, holders of the 2018 Notes are currently entitled to convert the 2018 Notes at any time until the second scheduled trading day prior to October 15, 2018 (the maturity date of the 2018 Notes), and in the event the conditional conversion feature of the 2020 Notes is triggered, holders of the 2020 Notes will be entitled to convert the 2020 Notes at any time during specified periods at their option. In addition, the 2020 Notes will be freely convertible on or after July 15, 2020. We intend to use a majority of the net proceeds we received from the issuance of the 2024 Notes to repay, repurchase or

settle in cash some or all of the 2018 Notes. We have elected to settle conversions of the 2018 Notes in cash up to the principal amount of the 2018 Notes, shares of our common stock in respect of conversion value in excess thereof, and cash in lieu of any fractional shares. We may also elect to settle conversions of the 2020 Notes in cash, in whole or in part, which could further affect our liquidity. While we could seek to obtain additional third-party financing to pay for any amounts due in cash upon such events, we cannot be sure that such third-party financing will be available on commercially reasonable terms, if at all.

The 2018 Notes mature on October 15, 2018, and therefore we have reclassified the outstanding principal of such Notes as a current liability. We could also be required under applicable accounting rules to reclassify all or a portion of the outstanding principal of such the 2020 Notes as a current rather than long-term liability (for example, if there are 12 months or less remaining until maturity), which would result in a material reduction of our net working capital. While we could seek to obtain third-party financing to pay for any amounts due in cash upon such events, we cannot be sure that such third-party financing will be available on commercially reasonable terms, if at all. Furthermore, if we are required to share settle any conversions of Notes, due to lack of requisite liquidity or otherwise, we may cease to be eligible to account for the Notes using the treasury stock method, which may adversely impact our diluted earnings per share. In addition, although we had no outstanding balance under the Credit Agreement as of June 30, 2018, we also may borrow up to $100.0 million in revolving loans under the Credit Agreement, which would be required to be repaid in cash at maturity in November 2018.

If we fail to comply with manufacturing regulations, our financial results and financial condition will be adversely affected.

Before we can begin commercial manufacture of our products, regulatory authorities must approve marketing applications that identify manufacturing facilities operated by us or our contract manufacturers that have passed regulatory inspection and manufacturing processes that are acceptable to the regulatory authorities. In addition, our pharmaceutical manufacturing facilities are continuously subject to scheduled and unannounced inspection by the FDA and international regulatory authorities, before and after product approval, to monitor and ensure compliance with cGMP and other regulations. Our manufacturing facility in the U.S. has been approved by the FDA, the EC, and health agencies in other countries for the manufacture of Aldurazyme, Brineura, Naglazyme and Vimizim. Our manufacturing facility in Shanbally, Cork, Ireland has been approved by the FDA, the EC, and health agencies in other countries for the manufacture of Vimizim, and it has been approved by the FDA and the EMA as a formulated bulk drug substance manufacturing and quality control facility for Brineura. In addition, our third-party manufacturers' facilities involved with the manufacture of our products have also been inspected and approved by various regulatory authorities. Although we are not involved in the day-to-day operations of our contract manufacturers, we are ultimately responsible for ensuring that our products are manufactured in accordance with cGMP regulations.

Due to the complexity of the processes used to manufacture our products and product candidates, we may be unable to continue to pass or initially pass federal or international regulatory inspections in a cost-effective manner. For the same reason, any potential third-party manufacturer of our products or our product candidates may be unable to comply with cGMP regulations in a cost-effective manner and may be unable to initially or continue to pass a federal or international regulatory inspection.

If we, or third-party manufacturers with whom we contract, are unable to comply with manufacturing regulations, we may be subject to delay of approval of our product candidates, warning or untitled letters, fines, unanticipated compliance expenses, recall or seizure of our products, total or partial suspension of production and/or enforcement actions, including injunctions, and criminal or civil prosecution. These possible sanctions would adversely affect our financial results and financial condition.

If we are unable to successfully develop and maintain manufacturing processes for our products to produce sufficient quantities at acceptable costs, we may be unable to meet demand for our products and lose potential revenue, have reduced margins or be forced to terminate a program.

Due to the complexity of manufacturing our products, we may not be able to manufacture products successfully with a commercially viable process or at a scale large enough to support their respective commercial markets or at acceptable margins.

The development of commercially viable manufacturing processes typically is very difficult to achieve and is often very expensive and may require extended periods of time. Changes in manufacturing processes (including manufacturing cell lines), equipment or facilities (including moving manufacturing from one of our facilities to another one of our facilities or a third-party facility, or from a third-party facility to one of our facilities) may require us to complete clinical trials to receive regulatory approval of any manufacturing modifications.

Also, we may be required to demonstrate product comparability between a biological product made after a manufacturing change and the product made before implementation of the change through additional types of analytical and functional testing or may have to complete additional clinical studies. If we contract for manufacturing services with an unproven process, our contractor is subject to the same uncertainties, high standards and regulatory controls, and may therefore experience difficulty if further process development is necessary.

Even a developed manufacturing process can encounter difficulties. Problems may arise during manufacturing for a variety of reasons, including human error, mechanical breakdowns, problems with raw materials and cell banks, malfunctions of internal information technology systems, and other events that cannot always be prevented or anticipated. Many of the processes include biological systems, which add significant complexity, as compared to chemical synthesis. We expect that, from time to time, consistent with biotechnology industry expectations, certain production lots will fail to produce product that meets our quality control release acceptance criteria. To date, our historical failure rates for all of our product programs, including Aldurazyme, Brineura, Naglazyme and Vimizim, have been within our expectations, which are based on industry norms. If the failure rate increased substantially, we could experience increased costs, lost revenue, damage to customer relations, time and expense investigating the cause and, depending upon the cause, similar losses with respect to other lots or products. If problems are not discovered before the product is released to the market, recall and product liability costs may also be incurred.

In order to produce product within our time and cost parameters, we must continue to produce product within our expected success rate and yield expectations. Because of the complexity of our manufacturing processes, it may be difficult or impossible for us to determine the cause of any particular lot failure and we must effectively take corrective action in response to any failure in a timely manner.

Although we have entered into contractual relationships with third-party manufacturers to produce the active ingredient in Firdapse and Kuvan, if those manufacturers are unwilling or unable to fulfill their contractual obligations, we may be unable to meet demand for Firdapse and Kuvan or sell these products at all, we may lose potential revenue, and we may be forced to terminate a program. We have contracts for the production of final product for Firdapse and Kuvan. We also rely on third parties for portions of the manufacture of Aldurazyme, Brineura, Naglazyme and Vimizim. If those manufacturers are unwilling or unable to fulfill their contractual obligations or satisfy demand outside of or in excess of the contractual obligations, we may be unable to meet demand for these products or sell these products at all and we may lose potential revenue. Further, the availability of suitable contract manufacturing capacity at scheduled or optimum times is not certain.

In addition, our manufacturing processes subject us to a variety of federal, state and local laws and regulations governing the use, generation, manufacture, storage, handling and disposal of hazardous materials and wastes resulting from their use. We incur significant costs in complying with these laws and regulations.

Supply interruptions may disrupt our inventory levels and the availability of our products and product candidates and cause delays in obtaining regulatory approval for our product candidates, or harm our business by reducing our revenues.

We depend on single-source suppliers for critical raw materials and a limited number of manufacturing facilities to manufacture our finished products and product candidates. Numerous factors could cause interruptions in the supply or manufacture of our products and product candidates, including:

- timing, scheduling and prioritization of production by our contract manufacturers or a breach of our agreements by our contract manufacturers;
- labor interruptions;
- changes in our sources for manufacturing;
- the timing and delivery of shipments;
- our failure to locate and obtain replacement suppliers and manufacturers as needed on a timely basis; and
- conditions affecting the cost and availability of raw materials.

If one of our suppliers or manufacturers fails or refuses to supply us with necessary raw materials or finished products or product candidates on a timely basis or at all, it would take a significant amount of time and expense to qualify a new supplier or manufacturer. We may not be able to obtain active ingredients or finished products from new

suppliers or manufacturers on acceptable terms and at reasonable prices, or at all.

Any interruption in the supply of finished products could hinder our ability to distribute finished products to meet commercial demand.

With respect to our product candidates, production of product is necessary to perform clinical trials and successful registration batches are necessary to file for approval to commercially market and sell product candidates. Delays in obtaining clinical material or registration batches could adversely impact our clinical trials and delay regulatory approval for our product candidates.

Because the target patient populations for our products are small, we must achieve significant market share and maintain high per-patient prices for our products to achieve profitability.

All of our products target diseases with small patient populations. As a result, our per-patient prices must be relatively high in order to recover our development and manufacturing costs and achieve profitability. For Brineura, Naglazyme and Vimizim in particular,

we must market worldwide to achieve significant market penetration of the product. In addition, because the number of potential patients in each disease population is small, it is not only important to find patients who begin therapy to achieve significant market penetration of the product, but we also need to be able to maintain these patients on therapy for an extended period of time. Due to the expected costs of treatment for our products, we may be unable to maintain or obtain sufficient market share at a price high enough to justify our product development efforts and manufacturing expenses.

If we fail to obtain an adequate level of coverage and reimbursement for our products by third-party payers, the sales of our products would be adversely affected or there may be no commercially viable markets for our products.

The course of treatment for patients using our products is expensive. We expect patients to need treatment for extended periods, and for some products throughout the lifetimes of the patients. We expect that most families of patients will not be capable of paying for this treatment themselves. There will be no commercially viable market for our products without coverage and reimbursement from third-party payers. Additionally, even if there is a commercially viable market, if the level of reimbursement is below our expectations, our revenue and gross margins will be adversely affected.

Third-party payers, such as government or private healthcare insurers, carefully review and increasingly challenge the prices charged for drugs. Reimbursement rates from private companies vary depending on the third-party payer, the insurance plan and other factors. Reimbursement systems in international markets vary significantly by country and by region, and reimbursement approvals must be obtained on a country-by-country basis.

Government authorities and other third-party payers are developing increasingly sophisticated methods of controlling healthcare costs, such as by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payers are requiring that drug companies provide them with predetermined discounts from list prices as a condition of coverage, are using restrictive formularies and preferred drug lists to leverage greater discounts in competitive classes, and are challenging the prices charged for medical products. Further, no uniform policy requirement for coverage and reimbursement for drug products exists among third-party payers in the U.S. Therefore, coverage and reimbursement for drug products can differ significantly from payer to payer. As a result, the coverage determination process is often a time-consuming and costly process that will require us to provide scientific and clinical support for the use of our products to each payer separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance.

We cannot be sure that coverage and reimbursement will be available for any product that we commercialize or will continue to be available for any product that we have commercialized and, if reimbursement is available, what the level of reimbursement will be. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. If coverage and reimbursement are not available or reimbursement is available only to limited levels, we may not successfully commercialize any product candidate for which we obtain marketing approval or continue to market any product that has already been commercialized.

Reimbursement in the EU and many other territories must be negotiated on a country-by-country basis and in many countries the product cannot be commercially launched until reimbursement is approved. The timing to complete the negotiation process in each country is highly uncertain, and in some countries we expect that it will exceed 12 months. Even after a price is negotiated, countries frequently request or require reductions to the price and other concessions over time.

For our future products, we will not know what the reimbursement rates will be until we are ready to market the product and we actually negotiate the rates. If we are unable to obtain sufficiently high reimbursement rates for our products, they may not be commercially viable or our future revenues and gross margins may be adversely affected.

A significant portion of our international sales are made based on special access programs, and changes to these programs could adversely affect our product sales and revenue in these countries.

We make a significant portion of our international sales of Naglazyme and Vimizim through special access or “named patient” programs, which do not require full product approval, and we expect a significant portion of our international sales of Brineura will also be through such programs. The specifics of the programs vary from country to country. Generally, special approval must be obtained for each patient. The approval normally requires an application or a lawsuit accompanied by evidence of medical need. Generally, the approvals for each patient must be renewed from time to time.

These programs are not well defined in some countries and are subject to changes in requirements and funding levels. Any change to these programs could adversely affect our ability to sell our products in those countries and delay sales. If the programs are not funded by the respective government, there could be insufficient funds to pay for all patients. Further, governments have in the past undertaken and may in the future undertake unofficial measures to limit purchases of our products, including initially denying coverage for purchasers, delaying orders and denying or taking excessively long to approve customs clearance. Any such actions could materially delay or reduce our revenues from such countries.

Without the special access programs, we would need to seek full product approval to commercially market and sell our products in certain jurisdictions. This can be an expensive and time-consuming process and may subject our products to additional price controls. Because the number of patients is so small in some countries, it may not be economically feasible to seek and maintain a full product approval, and therefore the sales in such country would be permanently reduced or eliminated. For all of these reasons, if the special access programs that we are currently using are eliminated or restricted, our revenues could be adversely affected.

If we fail to compete successfully with respect to product sales, we may be unable to generate sufficient sales to recover our expenses related to the development of a product program or to justify continued marketing of a product and our revenue could be adversely affected.

Our competitors may develop, manufacture and market products that are more effective or less expensive than ours. They may also obtain regulatory approvals for their products faster than we can obtain them (including those products with orphan drug designation, which may prevent us from marketing our product entirely) or commercialize their products before we do. If we do not compete successfully, our revenue would be adversely affected, and we may be unable to generate sufficient sales to recover our expenses related to the development of a product program or to justify continued marketing of a product.

Government price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our current and future products, which would adversely affect our revenue and results of operations.

We expect that coverage and reimbursement may be increasingly restricted both in the U.S. and internationally. The escalating cost of healthcare has led to increased pressure on the healthcare industry to reduce costs. In particular, drug pricing by pharmaceutical companies has recently come under increased scrutiny and continues to be subject to intense political and public debate in the U.S. and abroad. Governmental and private third-party payers have proposed healthcare reforms and cost reductions. A number of federal and state proposals to control the cost of healthcare, including the cost of drug treatments, have been made in the U.S. Specifically, there have been several recent U.S. Congressional inquiries and proposed bills designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. In some international markets, the government controls the pricing, which can affect the profitability of drugs. Current government regulations and possible future legislation regarding healthcare may affect coverage and reimbursement for medical treatment by third-party payers, which may render our products not commercially viable or may adversely affect our future revenues and gross margins.

International operations are also generally subject to extensive price and market regulations, and there are many proposals for additional cost-containment measures, including proposals that would directly or indirectly impose additional price controls or mandatory price cuts or reduce the value of our intellectual property portfolio. As part of these cost containment measures, some countries have imposed or threatened to impose revenue caps limiting the annual volume of sales of our products. To the extent that these caps are significantly below actual demand, our future revenues and gross margins may be adversely affected.

We cannot predict the extent to which our business may be affected by these or other potential future legislative or regulatory developments. However, future price controls or other changes in pricing regulation or negative publicity related to our product pricing or the pricing of pharmaceutical drugs generally could restrict the amount that we are able to charge for our current and future products or our sales volume, which would adversely affect our revenue and results of operations.

*Government healthcare reform could increase our costs and adversely affect our revenue and results of operations.

Our industry is highly regulated and changes in law may adversely impact our business, operations or financial results. The U.S. the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Reconciliation Act of 2010 (the PPACA) is a sweeping measure intended to, among other things, expand healthcare coverage within the U.S., primarily through the imposition of health insurance mandates on employers and individuals and expansion of the Medicaid program. Several provisions of the law have affected us and increased certain of our costs.

Since its enactment, there have been judicial and Congressional challenges to certain aspects of the PPACA, as well as recent efforts by the U.S. Presidential administration to repeal or replace certain aspects of the PPACA, and we expect there will be additional challenges and amendments to the PPACA in the future. Since January 2017, the U.S. President has signed two Executive Orders and other directives designed to delay, circumvent, or loosen certain requirements mandated by the PPACA. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the PPACA. While Congress has not passed legislation repealing the PPACA in its entirety, the Tax Cuts and Jobs Act of 2017 includes a provision repealing the “individual mandate,” the tax-based shared responsibility payment imposed by the PPACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year, effective January 1, 2019. Additionally, on January 23, 2018, the U.S. President signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain PPACA-mandated fees, including the so-called “Cadillac” tax on certain high cost employer-sponsored insurance plans, the annual fee imposed on certain health insurance providers based on market share, and the medical device excise tax on non-exempt medical devices. Congress may consider other legislation to repeal or replace elements of the PPACA. It is uncertain the extent to which any such changes may impact our business or financial condition.

In addition, other legislative changes have been adopted since the PPACA was enacted. Some of these changes have resulted in additional reductions in Medicare and other healthcare funding, which could have a material adverse effect on our customers and,

accordingly, our financial operations.

We anticipate that the PPACA, as well as other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and an additional downward pressure on the reimbursement our customers may receive for our products. Recently there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products. For example, there have been several recent U.S. Congressional inquiries and proposed bills designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, reduce the cost of drugs under Medicare, and reform government program reimbursement methodologies for drug products. The U.S. Presidential administration's budget proposal for fiscal year 2019 contains further drug price control measures that could be enacted during the 2019 budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid, and to eliminate cost sharing for generic drugs for low-income patients. Further, the U.S. Presidential administration released a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. The U.S. Department of Health and Human Services has already started the process of soliciting feedback on some of these measures and, at the same, is immediately implementing others under its existing authority. Although a number of these, and other potential, proposals will require authorization through additional legislation to become effective, Congress and the U.S. Presidential administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. Any reduction in reimbursement from Medicare and other government programs may result in a similar reduction in payments from private payers. In addition, individual states in the United States have also increasingly passed legislation and implemented regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. Legally mandated price controls on payment amounts by third-party payers or other restrictions could harm our business, results of operations, financial condition and prospects. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability or commercialize our products. For more information regarding government healthcare reform, see "Government Regulation - Health Reform" in Part I, Item 1 of our Annual Report on Form 10-K for the year ended December 31, 2017, filed with the SEC on February 26, 2018.

We face credit risks from government-owned or sponsored customers outside of the U.S. that may adversely affect our results of operations.

Our product sales to government-owned or supported customers in various countries outside of the U.S. are subject to significant payment delays due to government funding and reimbursement practices. This has resulted and may continue to result in an increase in days sales outstanding due to the average length of time that we have accounts receivable outstanding. If significant changes were to occur in the reimbursement practices of these governments or if government funding becomes unavailable, we may not be able to collect on amounts due to us from these customers and our results of operations would be adversely affected.

*If we are found in violation of federal or state healthcare laws, we may be required to pay a penalty or be suspended from participation in federal or state healthcare programs, which may adversely affect our business, financial condition and results of operations.

We are subject to various federal and state healthcare laws and regulations, including anti-kickback laws, false claims laws, data privacy and security laws, and laws related to ensuring compliance. The federal Anti-Kickback Statute makes it illegal for any person or entity, including a pharmaceutical company, to knowingly and willfully offer, solicit, pay or receive any remuneration, directly or indirectly, in exchange for or to induce the referral of business, including the purchase, order or prescription of a particular drug, for which payment may be made under federal healthcare programs, such as Medicare and Medicaid. Under the federal Anti-Kickback Statute and related regulations, certain arrangements are deemed not to violate the federal Anti-Kickback Statute if they fit within a statutory exception or regulatory safe harbor. However, the exceptions and safe harbors are drawn narrowly, and practices that involve remuneration not intended to induce prescribing, purchases or recommendations may be subject to scrutiny if they do not qualify for an exception or safe harbor. Our practices may not in all cases meet all of the criteria for safe harbor protection from Anti-Kickback liability, although we seek to comply with these safe harbors. Many states have adopted laws similar to the federal Anti-Kickback Statute, some of which apply to referral of patients for healthcare services reimbursed by any source, not just governmental payers.

Federal and state false claims laws, including the civil False Claims Act, prohibit any person or entity from knowingly presenting, or causing to be presented, a false claim for payment to the federal government, or knowingly making, or causing to be made, a false statement to have a false claim paid, or knowingly making, using, or causing to be made or used, a false record or statement to avoid, decrease or conceal an obligation to pay money to the federal government. In addition, certain marketing practices, including off-label promotion, may also violate false claims laws. Under the Health Insurance Portability and Accountability Act of 1996 (HIPAA), we also are prohibited from knowingly and willfully executing a scheme to defraud any healthcare benefit program, including private payers, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services.

HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act and its implementing regulations, also imposes obligations, including mandatory contractual terms, on certain types of individuals and entities, with respect to safeguarding the privacy, security and transmission of individually identifiable health information. Many state and foreign laws also govern the privacy and security of health information. They often differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts. For instance, the EU has adopted a comprehensive data protection law called the General Data Protection Regulation (GDPR) that took effect on May 25, 2018. The GDPR establishes extensive new requirements applicable to the handling of personal data of individuals in the EU and imposes penalties for non-compliance of up to the greater of €20 million or 4% of worldwide revenue. The significant costs of compliance with, risk of regulatory enforcement actions under, and other burdens imposed by, the GDPR could have an adverse impact on our business.

Substantial new provisions affecting compliance have also been adopted, which may require us to modify our business practices with healthcare practitioners. The PPACA, through the Physician Payments Sunshine Act, requires certain drug, biologicals and medical supply manufacturers to collect and report to CMS information on payments or transfers of value to physicians and teaching hospitals, as well as investment and ownership interests held by physicians and their immediate family members during the preceding calendar year. Failure to submit required information may result in civil monetary penalties.

In addition, there has been a recent trend of increased state regulation of payments made to physicians. Certain states mandate implementation of compliance programs, compliance with the Office of Inspector General Compliance Program Guidance for Pharmaceutical Manufacturers and the Pharmaceutical Research and Manufacturers of America (PhRMA) Code on Interactions with Healthcare Professionals, and/or the tracking and reporting of gifts, compensation and other remuneration to physicians. The shifting compliance environment and the need to implement systems to comply with multiple jurisdictions with different compliance and/or reporting requirements increases the possibility that a pharmaceutical manufacturer may violate one or more of the requirements.

Due to the breadth of these laws, the narrowness of available statutory and regulatory exceptions and safe harbors and the increased focus by law enforcement agencies in enforcing such laws, our business activities could be subject to challenge under one or more of such laws.

In addition, recent healthcare reform legislation has strengthened these laws. For example, the PPACA, among other things, amends the intent requirement of the federal Anti-Kickback Statute and criminal healthcare fraud statutes. A person or entity no longer needs to have actual knowledge of these statutes or specific intent to violate them in order to commit a violation. Moreover, the PPACA provides that the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act. If we are found in violation of one of these laws, we may be subject to criminal, civil or administrative sanctions, including damages, fines, disgorgement, imprisonment, contractual damages, reputational harm, diminished profits and future earnings, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, curtailment of our operations, debarment, suspension or exclusion from participation in federal or state healthcare programs, any of which could adversely affect our business, financial condition and results of operations.

We conduct a significant amount of our sales and operations outside of the U.S., which subjects us to additional business risks that could adversely affect our revenue and results of operations.

A significant portion of the sales of Aldurazyme, Kuvan, Naglazyme and Vimizim, and all of the sales of Firdapse are generated from countries other than the U.S. Similarly, we expect a significant portion of the sales of Brineura to be generated from countries other than the U.S. We have operations in Canada and in several European, Middle Eastern, Asian, and Latin American countries. We expect that we will continue to expand our international operations in the

future. International operations inherently subject us to a number of risks and uncertainties, including:

- the increased complexity and costs inherent in managing international operations;
- diverse regulatory and compliance requirements, and changes in those requirements that could restrict our ability to manufacture, market and sell our products;
- political and economic instability;
- diminished protection of intellectual property in some countries outside of the U.S.;
- trade protection measures and import or export licensing requirements;
- difficulty in staffing and managing international operations;
- differing labor regulations and business practices;
- potentially negative consequences from changes in or interpretations of tax laws;
- changes in international medical reimbursement policies and programs;
- financial risks such as longer payment cycles, difficulty collecting accounts receivable, exposure to fluctuations in foreign currency exchange rates and potential currency controls imposed by foreign governments;

- regulatory and compliance risks that relate to maintaining accurate information and control over sales and distributors' and service providers' activities that may fall within the purview of the Foreign Corrupt Practices Act (the FCPA); and
- regulations relating to data security and the unauthorized use of, or access to, commercial and personal information.

Any of these factors may, individually or as a group, have a material adverse effect on our business and results of operations.

As we continue to expand our existing international operations, we may encounter new risks. For example, as we focus on building our international sales and distribution networks in new geographic regions, we must continue to develop relationships with qualified local distributors and trading companies. If we are not successful in developing and maintaining these relationships, we may not be able to grow sales in these geographic regions. These or other similar risks could adversely affect our revenue and profitability.

*If we fail to comply with U.S. export control and economic sanctions, our business, financial condition and operating results may be adversely affected.

Our products are subject to U.S. export control laws and regulations, including the U.S. Export Administration Regulations and various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Control (OFAC). Exports of our products and solutions must be made in compliance with these laws and regulations. Changes to these laws and regulations, or to the countries, governments, persons or activities targeted by such laws, could result in decreased use of our products, or in our decreased ability to export or sell our products to existing or potential customers, which would likely adversely affect our results of operations, financial condition or strategic objectives. If we fail to comply with these laws and regulations, we and certain of our employees could be subject to substantial civil or criminal penalties, including the possible loss of export or import privileges; fines, which may be imposed on us and responsible employees or officers and, in extreme cases, the incarceration of responsible employees or officers.

We rely on a general license from OFAC to sell our medicines for eventual use by hospital and clinic end-users in Iran. The use of this OFAC general license requires us to observe strict conditions with respect to products sold, end-user limitations and payment requirements. Although we believe we have maintained compliance with the general license requirements, there can be no assurance that the general license will not be revoked, be renewed in the future or that we will remain in compliance. A violation of the OFAC general license could result in substantial fines, sanctions, civil or criminal penalties, competitive or reputational harm, litigation or regulatory action and other consequences that might adversely affect our results of operations, financial condition or strategic objectives.

Failure to comply with applicable anti-corruption legislation could result in fines, criminal penalties and materially adversely affect our business, financial condition and results of operations.

We are required to comply with anti-corruption and anti-bribery laws in the jurisdictions in which we operate, including the FCPA in the United States, the UK Bribery Act and other similar laws in other countries in which we do business. We operate in a number of countries that are recognized to have a reputation for corruption and pose an increased risk of corrupt practices. We also regularly interact with government regulators in many countries, including those that are considered higher risk for corruption, in order to secure regulatory approval to manufacture and distribute our products. The anti-corruption and anti-bribery laws to which we are subject generally prohibit companies and their intermediaries from making improper payments to foreign officials or other persons for the purposes of influencing official decisions or obtaining or retaining business and/or other benefits. These laws also require us to make and keep books and records that accurately and fairly reflect our transactions and to devise and maintain an adequate system of internal accounting controls. As part of our business, we deal with state-owned business enterprises, the employees and representatives of which may be considered foreign officials for purposes of

applicable anti-corruption laws.

Although we have adopted policies and procedures designed to ensure that we, our employees and third-party agents will comply with such laws, there can be no assurance that such policies or procedures will work effectively at all times or protect us against liability under these or other laws for actions taken by our employees, partners and other third parties with respect to our business. If we are not in compliance with anti-corruption laws and other laws governing the conduct of business with government entities and/or officials (including local laws), we may be subject to criminal and civil penalties and other remedial measures, which could harm our business, financial condition, results of operations, cash flows and prospects. Investigations of any actual or alleged violations of such laws or policies related to us could harm our business, financial condition, results of operations, cash flows and prospects.

Our international operations pose currency risks, which may adversely affect our operating results and net income.

A significant and growing portion of our revenues and earnings, as well as our substantial international net assets, are exposed to changes in foreign exchange rates. As we operate in multiple foreign currencies, including the euro, the Brazilian real, the U.K. pound, the Canadian dollar, the Swiss franc, the Japanese yen and several other currencies, changes in those currencies relative to the U.S. Dollar will impact our revenues and expenses. If the U.S. Dollar were to weaken against another currency, assuming all other variables remained constant, our revenues would increase, having a positive impact on earnings, and our overall expenses would increase, having a negative impact on earnings. Conversely, if the U.S. Dollar were to strengthen against another currency, assuming all other variables remained constant, our revenues would decrease, having a negative impact on earnings, and our overall expenses would decrease, having a positive impact on earnings. In addition, because our financial statements are reported in U.S. Dollars, changes in

currency exchange rates between the U.S. Dollar and other currencies have had, and will continue to have, an impact on our results of operations. Therefore, significant changes in foreign exchange rates can impact our results and our financial guidance.

We implement currency hedges intended to reduce our exposure to changes in foreign currency exchange rates. However, our hedging strategies may not be successful, and any of our unhedged foreign exchange exposures will continue to be subject to market fluctuations. These risks could cause a material adverse effect on our business, financial position and results of operations and could cause the market value of our common stock to decline.

If we are unable to protect our intellectual property, we may not be able to compete effectively.

Where appropriate, we seek patent protection for certain aspects of our technology. Patent protection may not be available for some of the products we are developing. If we must spend significant time and money protecting or enforcing our patents, designing around patents held by others or licensing, potentially for large fees, patents or other proprietary rights held by others, our business and financial prospects may be harmed.

The patent positions of biopharmaceutical products are complex and uncertain. The scope and extent of patent protection for some of our products and product candidates are particularly uncertain because key information on some of our product candidates has existed in the public domain for many years. The composition and genetic sequences of animal and/or human versions of Aldurazyme, Naglazyme and many of our product candidates have been published and are believed to be in the public domain. The chemical structure of 6R-BH4 (the active ingredient in Kuvan) and 3,4-DAP (the active ingredient in Firdapse) have also been published. Publication of this information may prevent us from obtaining or enforcing patents relating to our products and product candidates, including without limitation composition-of-matter patents, which are generally believed to offer the strongest patent protection.

We own or have licensed patents and patent applications related to our products. However, these patents and patent applications do not ensure the protection of our intellectual property for a number of reasons, including without limitation the following:

- With respect to pending patent applications, unless and until actually issued, the protective value of these applications is impossible to determine. We do not know whether our patent applications will result in issued patents.
- Competitors may interfere with our patent process in a variety of ways. Competitors may claim that they invented the claimed invention prior to us or that they filed their application for a patent on a claimed invention before we did. Competitors may also claim that we are infringing on their patents and therefore we cannot practice our technology. Competitors may also contest our patents by showing the patent examiner or a court that the invention was not original, was not novel or was obvious, for example. In litigation, a competitor could claim that our issued patents are not valid or are unenforceable for a number of reasons. If a court agrees, we would not be able to enforce that patent. We have no meaningful experience with competitors interfering with or challenging the validity or enforceability of our patents or patent applications.
- Generic manufacturers may use litigation and regulatory means to obtain approval for generic versions of our products notwithstanding our filed patents or patent applications.
- Enforcing patents is expensive and may absorb significant time of our management. Management would spend less time and resources on developing products, which could increase our operating expenses and delay product programs.
- Receipt of a patent may not provide much, if any, practical protection. For example, if we receive a patent with a narrow scope, then it will be easier for competitors to design products that do not infringe on our patent.
- The Leahy-Smith America Invents Act of 2011, which reformed certain patent laws in the U.S., may create additional uncertainty. Among the significant changes are switching from a “first-to-invent” system to a “first-to-file” system, and the implementation of new procedures that permit competitors to challenge our patents in the U.S. Patent

and Trademark Office after grant.

It is also unclear whether our trade secrets are adequately protected. Our current and former employees, consultants or contractors may unintentionally or willfully disclose trade secrets to competitors. Enforcing a claim that someone else illegally obtained and is using our trade secrets, as with patent litigation, is expensive and time consuming, requires significant resources and has an unpredictable outcome. In addition, courts outside of the U.S. are sometimes less willing to protect trade secrets. Furthermore, our competitors may independently develop equivalent knowledge, methods and know-how, in which case we would not be able to enforce our trade secret rights against such competitors.

Under policies recently adopted in the EU, clinical trial data submitted to the EMA in MAAs that were traditionally regarded as confidential commercial information are now subject to public disclosure. Subject to BioMarin's ability to review and redact a narrow sub-set of confidential commercial information, the new EU policies will result in the EMA's public disclosure of certain of our clinical study reports, clinical trial data summaries and clinical overviews for recently completed and future MAA submissions. The move toward public disclosure of development data could adversely affect our business in many ways, including, for example, resulting in the disclosure of our confidential methodologies for development of our products, preventing us from obtaining intellectual property right protection for innovations, requiring us to allocate significant resources to prevent other companies from violating our intellectual property rights, adding even more complexity to processing health data from clinical trials consistent with applicable data privacy regulations, and enabling competitors to use our data to gain approvals for their own products.

If we are unable to protect our intellectual property, third parties could develop competing products, which could adversely affect our revenue and financial results generally.

Competitors and other third parties may have developed intellectual property that could limit our ability to market and commercialize our products and product candidates, if approved.

Similar to us, competitors continually seek intellectual property protection for their technology. Several of our development programs, such as valoctocogene roxaparvovec, focus on therapeutic areas that have been the subject of extensive research and development by third parties for many years. Due to the amount of intellectual property in our field of technology, we cannot be certain that we do not infringe intellectual property rights of competitors or that we will not infringe intellectual property rights of competitors granted or created in the future. For example, if a patent holder believes our product infringes its patent, the patent holder may sue us even if we have received patent protection for our technology. If someone else claims we infringe its intellectual property, we would face a number of issues, including the following:

- Defending a lawsuit takes significant executive resources and can be very expensive.
- If a court decides that our product infringes a competitor's intellectual property, we may have to pay substantial damages.
- With respect to patents, in addition to requiring us to pay substantial damages, a court may prohibit us from making, selling, offering to sell, importing or using our product unless the patent holder licenses the patent to us. The patent holder is not required to grant us a license. If a license is available, it may not be available on commercially reasonable terms. For example, we may have to pay substantial royalties or grant cross licenses to our patents and patent applications.
- We may need to redesign our product so it does not infringe the intellectual property rights of others.
- Redesigning our product so it does not infringe the intellectual property rights of competitors may not be possible or could require substantial funds and time.

We may also support and collaborate in research conducted by government organizations, hospitals, universities or other educational institutions. These research partners may be unwilling to grant us any exclusive rights to technology or products derived from these collaborations.

If we do not obtain required licenses or rights, we could encounter delays in our product development efforts while we attempt to design around other patents or may be prohibited from making, using, importing, offering to sell or selling products requiring these licenses or rights. There is also a risk that disputes may arise as to the rights to technology or products developed in collaboration with other parties. If we are not able to resolve such disputes and obtain the licenses or rights we need, we may not be able to develop or market our products.

If our Manufacturing, Marketing and Sales Agreement with Genzyme were terminated, we could be prevented from continuing to commercialize Aldurazyme or our ability to successfully commercialize Aldurazyme would be delayed

or diminished.

Either party may terminate the Manufacturing, Marketing and Sales Agreement (the MMS Agreement) between Genzyme and us related to Aldurazyme for specified reasons, including if the other party is in material breach of the MMS Agreement, has experienced a change of control, as such term is defined in the MMS Agreement, or has declared bankruptcy and also is in breach of the MMS Agreement. Although we are not currently in breach of the MMS Agreement, there is a risk that either party could breach the MMS Agreement in the future. Either party may also terminate the MMS Agreement upon one year prior written notice for any reason.

If the MMS Agreement is terminated for breach, the breaching party will transfer its interest in the BioMarin/Genzyme LLC to the non-breaching party, and the non-breaching party will pay a specified buyout amount for the breaching party's interest in Aldurazyme and in the BioMarin/Genzyme LLC. If we are the breaching party, we would lose our rights to Aldurazyme and the related intellectual property and regulatory approvals. If the MMS Agreement is terminated without cause, the non-terminating party would have the option, exercisable for one year, to buy out the terminating party's interest in Aldurazyme and in the BioMarin/Genzyme LLC at a specified buyout amount. If such option is not exercised, all rights to Aldurazyme will be sold and the BioMarin/Genzyme LLC will be dissolved. In the event of termination of the buyout option without exercise by the non-terminating party as described above, all right and title to Aldurazyme is to be sold to the highest bidder, with the proceeds to be split between Genzyme and us in accordance with our percentage interest in the BioMarin/Genzyme LLC.

If the MMS Agreement is terminated by either party because the other party declared bankruptcy, the terminating party would be obligated to buy out the other party and would obtain all rights to Aldurazyme exclusively. If the MMS Agreement is terminated by a party because the other party experienced a change of control, the terminating party shall notify the other party, the offeree, of its intent to buy out the offeree's interest in Aldurazyme and the BioMarin/Genzyme LLC for a stated amount set by the terminating party at its discretion. The offeree must then either accept this offer or agree to buy the terminating party's interest in Aldurazyme and the BioMarin/Genzyme LLC on those same terms. The party who buys out the other party would then have exclusive worldwide rights to Aldurazyme. The Amended and Restated Collaboration Agreement between us and Genzyme will automatically terminate upon the effective date of the termination of the MMS Agreement and may not be terminated independently from the MMS Agreement.

If we were obligated or given the option to buy out Genzyme's interest in Aldurazyme and the BioMarin/Genzyme LLC, and thereby gain exclusive rights to Aldurazyme, we may not have sufficient funds to do so and we may not be able to obtain the financing to do so. If we fail to buy out Genzyme's interest, we may be held in breach of the agreement and may lose any claim to the rights to Aldurazyme and the related intellectual property and regulatory approvals. We would then effectively be prohibited from developing and commercializing Aldurazyme. If this happened, not only would our product revenues decrease, but our share price would also decline.

If we fail to develop new products and product candidates or compete successfully with respect to acquisitions, joint ventures, licenses or other collaboration opportunities, our ability to continue to expand our product pipeline and our growth and development would be impaired.

Our future growth and development depends in part on our ability to successfully develop new products from our research and development activities. The development of biopharmaceutical products is very expensive and time intensive and involves a great degree of risk. The outcomes of research and development programs, especially for innovative biopharmaceuticals, are inherently uncertain and may not result in the commercialization of any products.

Our competitors compete with us to attract organizations for acquisitions, joint ventures, licensing arrangements or other collaborations. To date, several of our former and current product programs have been acquired through acquisitions and several of our former and current product programs have been developed through licensing or collaborative arrangements, such as Aldurazyme, Firdapse, Kuvan and Naglazyme. These collaborations include licensing proprietary technology from, and other relationships with, academic research institutions. Our future success will depend, in part, on our ability to identify additional opportunities and to successfully enter into partnering or acquisition agreements for those opportunities. If our competitors successfully enter into partnering arrangements or license agreements with academic research institutions, we will then be precluded from pursuing those specific opportunities. Because each of these opportunities is unique, we may not be able to find a substitute. Several pharmaceutical and biotechnology companies have already established themselves in the field of genetic diseases. These companies have already begun many drug development programs, some of which may target diseases that we

are also targeting, and have already entered into partnering and licensing arrangements with academic research institutions, reducing the pool of available opportunities.

Universities and public and private research institutions also compete with us. While these organizations primarily have educational or basic research objectives, they may develop proprietary technology and acquire patents that we may need for the development of our product candidates. We will attempt to license this proprietary technology, if available. These licenses may not be available to us on acceptable terms, if at all. If we are unable to compete successfully with respect to acquisitions, joint venture and other collaboration opportunities, we may be limited in our ability to develop new products and to continue to expand our product pipeline.

*If generic manufacturers are successful in their use of litigation or regulatory means to obtain approval for generic versions of Kuvan, our revenue and results of operations would be adversely affected.

The Drug Price Competition and Patent Term Restoration Act of 1984, known as the Hatch-Waxman Act, permits the FDA to approve ANDAs for generic versions of branded drugs. We refer to this process as the ANDA process. The ANDA process permits competitor companies to obtain marketing approval for a drug with the same active ingredient as a branded drug, but does not generally require the conduct and submission of clinical efficacy studies for the generic product. In place of such clinical studies, an ANDA applicant usually needs only to submit data demonstrating that its product is bioequivalent to the branded product.

Pursuant to the Hatch-Waxman Act, companies were permitted to file ANDA applications for proposed generic versions of Kuvan at any time after December 2011. We own several patents that cover Kuvan, and we have listed those patents in conjunction with that

product in the FDA’s Approved Drug Products with Therapeutic Equivalence Evaluations (the Orange Book). The Hatch-Waxman Act requires an ANDA applicant seeking FDA approval of its proposed generic product prior to the expiration of our Orange Book-listed patents to certify that the applicant believes that our patents are invalid or will not be infringed by the manufacture, use or sale of the drug for which the application has been submitted (a paragraph IV certification) and notify us of such certification (a paragraph IV notice). Upon receipt of a paragraph IV notice, the Hatch-Waxman Act allows us, with proper basis, to bring an action for patent infringement against the ANDA filer, asking that the proposed generic product not be approved until after our patents expire. If we commence a lawsuit within 45 days from receipt of the paragraph IV notice, the Hatch-Waxman Act provides a 30-month stay, during which time the FDA cannot finally approve the generic’s application. If the litigation is resolved in favor of the ANDA applicant during the 30-month stay period, the stay is lifted and the FDA may approve the ANDA if it is otherwise ready for approval. The discovery, trial and appeals process in such a lawsuit is costly, time consuming, and may result in generic competition if the ANDA applicant prevails.

We received a paragraph IV notice letter, dated December 23, 2016, from Dr. Reddy’s Laboratories, Inc. and Dr. Reddy’s Laboratories, Ltd. (collectively, DRL), notifying us that DRL had filed an abbreviated new drug application (ANDA) seeking approval of a proposed generic version of Kuvan (sapropterin dihydrochloride) 100 mg oral powder prior to the expiration of our patents listed in the FDA's Approved Drug Products with Therapeutic Equivalence Evaluations (the Orange Book). We filed a lawsuit alleging patent infringement against DRL. In August 2017, we entered into a settlement agreement with DRL (the DRL Powder Settlement Agreement) that resolved the patent litigation with DRL in the U.S. related to Kuvan 100 mg oral powder. Under the terms of the DRL Powder Settlement Agreement, we granted DRL a non-exclusive license to our Kuvan-related patents to allow DRL to market a generic version of sapropterin dihydrochloride in oral powder form in 100 mg and 500 mg packet formulations in the U.S. for the indications approved for Kuvan beginning on October 1, 2020, or earlier under certain circumstances.

We also received two separate paragraph IV notice letters, dated January 14, 2016 and January 22, 2015, from Par Pharmaceutical, Inc. (Par) notifying us that Par had filed an ANDA seeking approval of proposed generic versions of Kuvan 100 mg oral powder and Kuvan 100 mg oral tablets, respectively, prior to the expiration of our patents listed in the FDA’s Orange Book. We filed two lawsuits alleging patent infringement against Par (the lawsuit against Par pertaining to the proposed generic version of Kuvan 100 mg oral tablets was filed together with Merck & Cie), and the two Par cases were consolidated. In April 2017, we and Merck & Cie entered into a settlement agreement with Par (the Par Settlement Agreement) that resolved both cases against Par. Under the Par Settlement Agreement, we granted Par a non-exclusive license to our Kuvan-related patents to allow Par to market a generic version of sapropterin dihydrochloride in 100 mg oral tablets and oral powder in 100 mg and 500 mg packet formulations in the U.S. for the indications approved for Kuvan beginning on: April 1, 2021 if Par is not entitled to the statutory 180-day first filer exclusivity period; October 1, 2020 if Par is entitled to the statutory 180-day first filer exclusivity period; or earlier under certain circumstances.

We also received a paragraph IV notice letter, dated October 3, 2014, from DRL notifying us that DRL had filed an ANDA seeking approval of a proposed generic version of Kuvan 100 mg oral tablets prior to the expiration of our patents listed in the FDA’s Orange Book. We, together with Merck & Cie, filed a lawsuit alleging patent infringement against DRL. In September 2015, we and Merck & Cie entered into a settlement agreement with DRL (the DRL Tablet Settlement Agreement) that resolved the patent litigation with DRL in the U.S. related to Kuvan 100 mg oral tablets. Under the terms of the DRL Tablet Settlement Agreement, we granted DRL a non-exclusive license to our Kuvan-related patents to allow DRL to market a generic version of sapropterin dihydrochloride 100 mg oral tablets in the U.S. for the indications approved for Kuvan beginning on October 1, 2020, or earlier under certain circumstances.

The DRL Powder Settlement Agreement, the Par Settlement Agreement, and the DRL Tablet Settlement Agreement, as well as any future ANDA or related legal proceeding, could have an adverse impact on our stock price, and litigation to enforce our patents has, and is likely to continue to, cost a substantial amount and require significant

management attention. If the patents covering Kuvan and its use are not upheld in litigation, or if DRL is found to not infringe our asserted patents, the resulting generic competition following the expiration of regulatory exclusivity would have a material adverse effect on our revenue and results of operations. Moreover, generic competition from DRL and Par following the settlements described above could have a material adverse effect on our revenue and results of operations.

We also face potential generic competition for Kuvan in certain foreign countries, and our ability to successfully market and sell Kuvan in many countries in which we operate is based upon patent rights or certain regulatory forms of exclusivity, or both. The scope of our patent rights and regulatory exclusivity for Kuvan vary from country to country and are dependent on the availability of meaningful legal remedies in each country. If our patent rights and regulatory exclusivity for Kuvan are successfully challenged, expire, or otherwise terminate in a particular country, the resulting generic competition could have a material adverse effect on our revenue and results of operations.

If we do not achieve our projected development goals in the timeframes we announce and expect, the commercialization of our product candidates may be delayed and the credibility of our management may be adversely affected and, as a result, our stock price may decline.

For planning purposes, we estimate the timing of the accomplishment of various scientific, clinical, regulatory and other product development goals, which we sometimes refer to as milestones. These milestones may include the commencement or completion of scientific studies and clinical trials and the submission of regulatory filings. From time to time, we publicly announce the expected timing of some of these milestones. All of these milestones are based on a variety of assumptions. The actual timing of these milestones can vary dramatically compared to our estimates, in many cases for reasons beyond our control. If we do not meet these milestones as

publicly announced, the commercialization of our products may be delayed and the credibility of our management may be adversely affected and, as a result, our stock price may decline.

We depend upon our key personnel and our ability to attract and retain employees.

Our future growth and success will depend in large part on our continued ability to attract, retain, manage and motivate our employees. The loss of the services of any member of our senior management or the inability to hire or retain experienced management personnel could adversely affect our ability to execute our business plan and harm our operating results.

Because of the specialized scientific and managerial nature of our business, we rely heavily on our ability to attract and retain qualified scientific, technical and managerial personnel. In particular, the loss of one or more of our senior executive officers could be detrimental to us if we do not have an adequate succession plan or if we cannot recruit suitable replacements in a timely manner. While our senior executive officers are parties to employment agreements with us, these agreements do not guarantee that they will remain employed with us in the future. In addition, in many cases, these agreements do not restrict our senior executive officers' ability to compete with us after their employment is terminated. The competition for qualified personnel in the pharmaceutical field is intense, and there is a limited pool of qualified potential employees to recruit. Due to this intense competition, we may be unable to continue to attract and retain qualified personnel necessary for the development of our business or to recruit suitable replacement personnel. If we are unsuccessful in our recruitment and retention efforts, our business may be harmed.

Our success depends on our ability to manage our growth.

Product candidates that we are currently developing or may license or acquire in the future may be intended for patient populations that are significantly larger than any of the patient populations we currently target. In order to continue development and marketing of these products, if approved, we will need to significantly expand our operations. To manage expansion effectively, we need to continue to develop and improve our research and development capabilities, manufacturing and quality capacities, sales and marketing capabilities, financial and administrative systems and standard processes for global operations. Our staff, financial resources, systems, procedures or controls may be inadequate to support our operations and may increase our exposure to regulatory and corruption risks and our management may be unable to manage successfully future market opportunities or our relationships with customers and other third parties.

Changes in methods of treatment of disease could reduce demand for our products and adversely affect revenues.

Even if our product candidates are approved, if doctors elect a course of treatment which does not include our products, this decision would reduce demand for our products and adversely affect revenues. For example, if gene therapy becomes widely used as a treatment of genetic diseases, the use of enzyme replacement therapy, such as Aldurazyme, Naglazyme, and Vimizim in MPS diseases, could be greatly reduced. Moreover, if we obtain regulatory approval for valoctocogene roxaparvovec, the commercial success of valoctocogene roxaparvovec will still depend, in part, on the acceptance of physicians, patients and healthcare payers of gene therapy products in general, and our product candidate in particular, as medically necessary, cost-effective and safe. Changes in treatment method can be caused by the introduction of other companies' products or the development of new technologies or surgical procedures which may not directly compete with ours, but which have the effect of changing how doctors decide to treat a disease.

If product liability lawsuits are successfully brought against us, we may incur substantial liabilities.

We are exposed to the potential product liability risks inherent in the testing, manufacturing and marketing of human pharmaceuticals. We currently maintain insurance against product liability lawsuits for the commercial sale of our products and for the clinical trials of our product candidates. Pharmaceutical companies must balance the cost of insurance with the level of coverage based on estimates of potential liability. Historically, the potential liability associated with product liability lawsuits for pharmaceutical products has been unpredictable. Although we believe that our current insurance is a reasonable estimate of our potential liability and represents a commercially reasonable balancing of the level of coverage as compared to the cost of the insurance, we may be subject to claims in connection with our clinical trials and commercial use of our products and product candidates for which our insurance coverage may not be adequate and we may be unable to avoid significant liability if any product liability lawsuit is brought against us. If we are the subject of a successful product liability claim that exceeds the limits of any insurance coverage we obtain, we may incur substantial charges that would adversely affect our earnings and require the commitment of capital resources that might otherwise be available for the development and commercialization of our product programs.

*We rely significantly on information technology and any failure, inadequacy, interruption or security lapse of that technology, including any cybersecurity incidents, could harm our ability to operate our business effectively.

We rely significantly on our information technology and manufacturing infrastructure to effectively manage and maintain our inventory and internal reports, to manufacture and ship products to customers and to timely invoice them. Any failure, inadequacy or interruption of that infrastructure or security lapse of that technology, including cybersecurity incidents, could harm our ability to operate our business effectively. Our ability to manage and maintain our inventory and internal reports, to manufacture and ship our products to customers and timely invoice them depends significantly on our enterprise resource planning, production management and other information systems. Cybersecurity attacks in particular are evolving and include, but are not limited to, malicious software, attempts to

gain unauthorized access to data, business email compromise and other cyber attacks or cyber incidents that could lead to electronic security issues (including data breaches) that could lead to disruptions in or unavailability of systems, misappropriation of our confidential or otherwise protected information and corruption of data. Cybersecurity incidents resulting in the failure of our enterprise resource planning system, production management or other systems to operate effectively or to integrate with other systems, or a breach in security or other unauthorized access of these systems, may affect our ability to manage and maintain our inventory and internal reports, and result in delays in product fulfillment and reduced efficiency of our operations. It could also cause a loss in the confidence of our customers, employees, and partners and other third parties with respect to our business. A breach in security, unauthorized access resulting in misappropriation, theft, or sabotage with respect to our proprietary and confidential information, including research or clinical data, could require significant capital investments to remediate and could adversely affect our business, financial condition and results of operations.

If a natural disaster or terrorist or criminal activity caused significant damage to our facilities or the facilities of our third-party manufacturers and suppliers, we may be unable to meet demand for our products and lose potential revenue, have reduced margins, or be forced to terminate a program.

We manufacture Aldurazyme, Brineura, Naglazyme and a portion of Vimizim in a manufacturing facility located near known earthquake fault zones, and the occurrence of an earthquake or other catastrophic disaster could cause damage to our facility and equipment, or that of our third-party manufacturers or single-source suppliers, which could materially impair our ability to manufacture Aldurazyme, Brineura, Naglazyme and Vimizim or our third-party manufacturers' ability to manufacture Firdapse or Kuvan.

Our Galli Drive facility located in Novato, California is currently our only manufacturing facility for Aldurazyme and Naglazyme and is one of two manufacturing facilities for Brineura and Vimizim. It is located in the San Francisco Bay Area near known earthquake fault zones and is vulnerable to significant damage from earthquakes. We, the third-party manufacturers with whom we contract and our single-source suppliers of raw materials, which include many of our critical raw materials, are also vulnerable to damage from other types of disasters, including fires, explosions, floods, power loss and similar events. If any disaster were to occur, or any terrorist or criminal activity caused significant damage to our facilities or the facilities of our third-party manufacturers and suppliers, our ability to manufacture Aldurazyme, Brineura, Naglazyme and Vimizim, or to have Firdapse or Kuvan manufactured, could be seriously, or potentially completely, impaired, and our commercialization efforts and revenue could be seriously impaired. The insurance that we carry, the inventory that we maintain and our risk mitigation plans may not be adequate to cover our losses resulting from disasters or other business interruptions.

The impact of the recently passed U.S. comprehensive tax reform bill on us is uncertain and could have a material adverse effect on our business and financial condition.

On December 22, 2017, the U.S. President signed into law new legislation, known as the Tax Cuts & Jobs Act, that significantly revises the Internal Revenue Code of 1986, as amended. The newly enacted federal income tax law, among other things, contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, limitation of the deduction for net operating losses to 80% of current year taxable income and elimination of net operating loss carrybacks, one time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, creation of a base erosion and anti-abuse tax and modification or repeal of many business deductions and credits (including reduction of tax credits under the Orphan Drug Act). Many aspects of the new federal tax law are unclear and may not be clarified for some time. We have estimated the impact of the Tax Cuts & Jobs Act by incorporating assumptions made based upon our current interpretation and analysis to date of the law. The actual impact of the Tax Cuts & Jobs Act may differ from our estimates due to, among other things, further refinement

of our calculations, changes in interpretations and assumptions we have made, guidance that may be issued and actions we may take as a result of the new legislation. Notwithstanding the reduction in the corporate income tax rate, it is possible that the Tax Cuts & Jobs Act, or regulations or interpretations under it, could adversely affect our business and financial condition, and such effect could be material. In addition, it is uncertain if and to what extent various U.S. states will conform to the newly enacted federal tax law.

Our business is affected by macroeconomic conditions.

Various macroeconomic factors could adversely affect our business and the results of our operations and financial condition, including changes in inflation, interest rates and foreign currency exchange rates and overall economic conditions and uncertainties, including those resulting from the current and future conditions in the global financial markets. For instance, if inflation or other factors were to significantly increase our business costs, it may not be feasible to pass price increases on to our customers due to the process by which healthcare providers are reimbursed for our products by the government. Interest rates, the liquidity of the credit markets and the volatility of the capital markets could also affect the value of our investments and our ability to liquidate our investments in order to fund our operations. We purchase or enter into a variety of financial instruments and transactions, including investments in commercial paper, the extension of credit to corporations, institutions and governments and hedging contracts. If any of the issuers or counter parties to these instruments were to default on their obligations, it could materially reduce the value of the transaction and adversely affect our cash flows.

We sell our products in countries that face economic volatility and weakness. Although we have historically collected receivables from customers in those countries, sustained weakness or further deterioration of the local economies and currencies may cause customers in those countries to be unable to pay for our products. Additionally, if one or more of these countries were unable to purchase our products, our revenue would be adversely affected.

Interest rates and the ability to access credit markets could also adversely affect the ability of our customers/distributors to purchase, pay for and effectively distribute our products. Similarly, these macroeconomic factors could affect the ability of our contract manufacturers, sole-source or single-source suppliers to remain in business or otherwise manufacture or supply product. Failure by any of them to remain a going concern could affect our ability to manufacture products.

Risks Related to Ownership of Our Securities

*Our stock price may be volatile, and an investment in our stock could suffer a decline in value.

Our valuation and stock price have no meaningful relationship to current or historical earnings, asset values, book value or many other criteria based on conventional measures of stock value. The market price of our common stock will fluctuate due to factors including:

- product sales and profitability of our products;
- manufacturing, supply or distribution of our product candidates and commercial products;
- progress of our product candidates through the regulatory process and our ability to successfully commercialize any such products that receive regulatory approval;
- results of clinical trials, announcements of technological innovations or new products by us or our competitors;
- generic competition to Kuvan relating to our settlements with DRL (related to Kuvan tablets and powder) and Par (related to Kuvan tablets and powder) or potential generic competition from future competitors;
- government regulatory action affecting our product candidates, our products or our competitors' product candidates and products in both the U.S. and non-U.S. countries;
- developments or disputes concerning patent or proprietary rights;
- general market conditions and fluctuations for the emerging growth and pharmaceutical market sectors;
- economic conditions in the U.S. or abroad;
- negative publicity about us or the pharmaceutical industry;
- cybersecurity incidents experienced by us or others in our industry;
- broad market fluctuations in the U.S., the EU or in other parts of the world;
- actual or anticipated fluctuations in our operating results, including due to timing of large order for our products, in particular in Latin America, where governments place large periodic orders for Naglazyme and Vimizim;
- changes in company assessments or financial estimates by securities analysts;
- acquisitions of products, businesses, or other assets; and
- sales of our shares of stock by us, our significant stockholders, or members of our management or Board of Directors.

In the past, following periods of large price declines in the public market price of a company's securities, securities class action litigation has often been initiated against that company. Litigation of this type could result in substantial costs and diversion of management's attention and resources, which would hurt our business. Any adverse determination in litigation could also subject us to significant liabilities. In addition, our stock price can be materially adversely affected by factors beyond our control, such as disruptions in global financial markets or negative trends in the biotechnology sector of the economy, even if our business is operating well.

*Conversion of the Notes will dilute the ownership interest of existing stockholders, including holders who had previously converted their Notes, or may otherwise depress the price of our common stock.

The conversion of some or all of the Notes will dilute the ownership interests of existing stockholders to the extent we deliver shares upon conversion of any of the Notes. The 2018 Notes are currently convertible and the 2020 Notes and 2024 Notes may in the future become convertible at the option of their holders prior to their scheduled terms under certain circumstances. Any sales in the public market of the common stock issuable upon such conversion could adversely affect prevailing market prices of our common stock. In addition, the existence of the Notes may encourage short selling by market participants because the conversion of the Notes could be used to satisfy short positions, or anticipated conversion of the Notes into shares of our common stock could depress the price of our common stock.

The capped call transactions may affect the value of the Notes and our common stock.

In connection with the issuance of the 2018 Notes and 2020 Notes, we entered into capped call transactions with respect to 50% of the principal amount of the 2018 Notes and 50% of the principal amount of the 2020 Notes with certain hedge counterparties. The capped call transactions will cover, subject to customary anti-dilution adjustments, the aggregate number of shares of common stock underlying 50% of the principal amount of the relevant Notes and are expected generally to reduce potential dilution to the common stock upon conversion of the relevant Notes in excess of the principal amount of such converted Notes. In connection with establishing their initial hedges of the capped call transactions, the hedge counterparties (or their affiliates) entered into various derivative transactions with respect to the common stock concurrently with, and/or purchased the common stock shortly after, the pricing of the relevant notes. The hedge counterparties (or their affiliates) are likely to modify their hedge positions by entering into or unwinding various derivative transactions with respect to the common stock and/or by purchasing or selling the common stock or other securities of ours in secondary market transactions prior to the maturity of the relevant Notes (and are likely to do so during the settlement averaging period under the relevant capped call transactions, which precedes the maturity date of the relevant Notes, and on or around any earlier conversion date related to a conversion of the relevant Notes).

The effect, if any, of any of these transactions and activities on the market price of our common stock or the Notes will depend in part on market conditions and cannot be ascertained at this time, but any of these activities could adversely affect the value of our common stock, which could affect the value of the Notes and the value of our common stock, if any, that Note holders receive upon any conversion of the Notes.

Anti-takeover provisions in our charter documents and under Delaware law may make an acquisition of us, which may be beneficial to our stockholders, more difficult.

We are incorporated in Delaware. Certain anti-takeover provisions of Delaware law and our charter documents as currently in effect may make a change in control of us more difficult, even if a change in control would be beneficial to the stockholders. Our anti-takeover provisions include provisions in our restated certificate of incorporation and amended and restated bylaws, as amended, providing that stockholders' meetings may only be called by our Chairman, the lead independent director or the majority of our Board of Directors and that the stockholders may not take action by written consent and requiring that stockholders that desire to nominate any person for election to our Board of Directors or to make any proposal with respect to business to be conducted at a meeting of our stockholders be submitted in appropriate form to our Secretary within a specified period of time in advance of any such meeting. Additionally, our Board of Directors has the authority to issue shares of preferred stock and to determine the terms of those shares of stock without any further action by our stockholders. The rights of holders of our common stock are subject to the rights of the holders of any preferred stock that may be issued. The issuance of preferred stock could make it more difficult for a third party to acquire a majority of our outstanding voting stock. Delaware law also prohibits corporations from engaging in a business combination with any holders of 15% or more of their capital stock until the holder has held the stock for three years unless, among other possibilities, our Board of Directors approves the transaction. Our Board of Directors may use these provisions to prevent changes in the management and control of us. Also, under applicable Delaware law, our Board of Directors may adopt additional anti-takeover measures in the future.

The fundamental change repurchase feature of the Notes may delay or prevent an otherwise beneficial attempt to take us over.

The terms of the Notes require us to repurchase the Notes in the event of a fundamental change. A takeover of us would trigger options by the respective holders of the applicable Notes to require us to repurchase such Notes. This may have the effect of delaying or preventing a takeover of us that would otherwise be beneficial to our stockholders

or investors in the Notes.

Our amended and restated bylaws, as amended, provide that the Court of Chancery of the State of Delaware will be the exclusive forum for the adjudication of certain disputes, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.

Our amended and restated bylaws, as amended, provide that the Court of Chancery of the State of Delaware is the sole and exclusive forum for:

- any derivative action or proceeding brought on our behalf;
- any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of BioMarin to us or our stockholders;
- any action asserting a claim against us or any of our directors, officers or other employees arising pursuant to any provision of the General Corporation Law of the State of Delaware, our restated certificate of incorporation or our amended and restated bylaws, as amended; and
- any action asserting a claim against us or any of our directors, officers or other employees that is governed by the internal affairs doctrine.

This exclusive-forum provision further provides that any person or entity that acquires any interest in shares of our capital stock will be deemed to have notice of and consented to the provisions of such provision, including consent to the personal jurisdiction of the Court of Chancery of the State of Delaware related to any action covered by such provision.

This exclusive-forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers, or other employees, which may discourage lawsuits against us and our directors, officers, and other employees. If a court were to find this exclusive-forum provision to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could seriously harm our business.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.
None.

Item 3. Defaults Upon Senior Securities.
None.

Item 4. Mine Safety Disclosures
Not applicable.

Item 5. Other Information.
None.

Item 6. Exhibits.

Exhibit Number	Description
2.1	Amended and Restated Termination and Transition Agreement, dated as of December 23, 2015, between BioMarin Pharmaceutical Inc. and Ares Trading S.A., previously filed with the SEC on January 7, 2016 as Exhibit 2.1 to the Company's Current Report on Form 8-K (File No. 000-26727), which is incorporated herein by reference. Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment. Omitted portions have been filed separately with the SEC.
2.2	Termination Agreement, dated as of October 1, 2015, between BioMarin Pharmaceutical Inc. and Ares Trading S.A., previously filed with the SEC on January 7, 2016 as Exhibit 2.2 to the Company's Current Report on Form 8-K (File No. 000-26727), which is incorporated herein by reference. Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment. Omitted portions have been filed separately with the SEC.
2.3	Termination and Transition Agreement, dated as of October 1, 2015, between BioMarin Pharmaceutical Inc. and Ares Trading S.A., previously filed with the SEC on January 7, 2016 as Exhibit 2.3 to the Company's Current Report on Form 8-K (File No. 000-26727), which is incorporated herein by reference. Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment. Omitted portions have been filed separately with the SEC.
2.4	First Amendment, dated as of December 12, 2016, to the Amended and Restated Termination and Transition Agreement, dated as of December 23, 2015 and effective as of October 1, 2015, between BioMarin Pharmaceutical Inc. and Ares Trading S.A., previously filed with the SEC on February 27, 2017 as Exhibit 2.6 to the Company's Annual Report on Form 10-K (File No. 000-26727), which is incorporated herein by reference. Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment. Omitted portions have been filed separately with the SEC.
3.1	Restated Certificate of Incorporation of BioMarin Pharmaceutical Inc., previously filed with the SEC on June 12, 2017 as Exhibit 3.2 to the Company's Current Report on Form 8-K (File No. 000-26727), which is incorporated herein by reference.
3.2	Amended and Restated Bylaws of BioMarin Pharmaceutical Inc., as amended, previously filed with the SEC on October 31, 2017 as Exhibit 3.2 to the Company's Quarterly Report on Form 10-Q (File No. 000-26727), which is incorporated herein by reference.
31.1*	Certification of Chief Executive Officer pursuant to Rules 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as amended.
31.2*	Certification of Chief Financial Officer pursuant to Rules 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as amended.
32.1*+	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. This Certification accompanies this report and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed

filed for purposes of §18 of the Securities Exchange Act of 1934, as amended.

101.INS* XBRL Instance Document

101.SCH* XBRL Taxonomy Extension Schema Document

101.CAL* XBRL Taxonomy Extension Calculation Document

101.DEF* XBRL Taxonomy Extension Definition Linkbase

101.LAB* XBRL Taxonomy Extension Labels Linkbase Document

101.PRE* XBRL Taxonomy Extension Presentation Link Document

*Filed herewith

+The certifications attached as Exhibit 32.1 accompany this Quarterly Report on Form 10-Q pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed "filed" by the Registrant for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and are not to be incorporated by reference into any of the Registrant's filings under the Securities Act of 1933, as amended, irrespective of any general incorporation language contained in any such filing.

Attached as Exhibit 101 to this report are documents formatted in XBRL (Extensible Business Reporting Language): (i) Condensed Consolidated Balance Sheets as of June 30, 2018 and December 31, 2017, (ii) Condensed Consolidated Statements of Comprehensive Income (Loss) for the three and six months ended June 30, 2018 and 2017, (iii) Condensed Consolidated Statement of Stockholders' Equity for the six months ended June 30, 2018, (iv) Condensed Consolidated Statements of Cash Flows for the six months ended June 30, 2018 and 2017, and (v) Notes to Condensed Consolidated Financial Statements.

SIGNATURE

Pursuant to the requirements 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.

BIOMARIN PHARMACEUTICAL INC.

Dated: August 3, 2018 By /S/ DANIEL SPIEGELMAN
Daniel Spiegelman,

Executive Vice President and Chief Financial Officer
(On behalf of the registrant and as principal financial officer)