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 March 31, 2020

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)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001	BMRN	The Nasdaq Global Select Market

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 every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ 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	☐	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: 180,836,856 shares of common stock, par value $0.001, outstanding as of April 20, 2020.

BIOMARIN PHARMACEUTICAL INC.

TABLE OF CONTENTS

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.

BioMarin®, Brineura®, Kuvan®, Naglazyme®, Palynziq® and Vimizim® are our registered trademarks. Aldurazyme® is a registered trademark of BioMarin/Genzyme LLC. All other brand names and service marks, trademarks and other trade names appearing in this report are the property of their respective owners.

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,” “may,” “will,” “could,” would,” “projects,” “continues,” “estimates,” “potential,” “opportunity” or the negative versions of these terms and 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, 2019, which was filed with the Securities and Exchange Commission (the SEC) on February 27, 2020. 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

March 31, 2020 and December 31, 2019

(In thousands, except share amounts)

	March 31, 2020	December 31, 2019 [1]
ASSETS	(unaudited)	
Current assets:		
Cash and cash equivalents	$ 476,632	$ 437,446
Short-term investments	381,764	316,361
Accounts receivable, net	396,384	377,404
Inventory	705,652	680,275
Other current assets	155,817	130,657
Total current assets	2,116,249	1,942,143
Noncurrent assets:		
Long-term investments	290,796	411,978
Property, plant and equipment, net	1,009,972	1,010,868
Intangible assets, net	443,717	456,580
Goodwill	196,199	197,039
Deferred tax assets	539,990	549,422
Other assets	125,918	122,009
Total assets	$ 4,722,841	$ 4,690,039
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued liabilities	$ 454,506	$ 570,621
Short-term convertible debt, net	365,964	361,882
Total current liabilities	820,470	932,503
Noncurrent liabilities:		
Long-term convertible debt, net	486,713	486,238
Long-term contingent consideration	50,524	50,793
Other long-term liabilities	125,172	98,124
Total liabilities	1,482,879	1,567,658
Stockholders' equity:		
Common stock, $0.001 par value: 500,000,000 shares authorized; 180,761,969 and 179,383,114 shares issued and outstanding, respectively.	181	180
Additional paid-in capital	4,854,814	4,832,707
Company common stock held by Nonqualified Deferred Compensation Plan (the NQDC)	(9,832)	(9,961)
Accumulated other comprehensive income	34,127	20,164
Accumulated deficit	(1,639,328)	(1,720,709)
Total stockholders' equity	3,239,962	3,122,381
Total liabilities and stockholders' equity	$ 4,722,841	$ 4,690,039

(1) December 31, 2019 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, 2019, filed with the SEC on February 27, 2020.

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

BIOMARIN PHARMACEUTICAL INC.

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

Three Months Ended March 31, 2020 and 2019
(In thousands, except per share amounts)
(unaudited)

	Three Months Ended March 31,	
	2020	**2019**
REVENUES:		
Net product revenues	$ 489,043	$ 394,483
Royalty and other revenues	13,026	6,262
Total revenues	502,069	400,745
OPERATING EXPENSES:		
Cost of sales	111,374	89,182
Research and development	142,257	183,591
Selling, general and administrative	187,295	162,158
Intangible asset amortization and contingent consideration	15,677	19,765
Gain on sale of nonfinancial assets	(59,495)	—
Total operating expenses	397,108	454,696
INCOME (LOSS) FROM OPERATIONS	104,961	(53,951)
Equity in the loss of BioMarin/Genzyme LLC	(77)	(185)
Interest income	5,244	6,298
Interest expense	(6,915)	(6,727)
Other income (expense), net	(1,861)	1,608
INCOME (LOSS) BEFORE INCOME TAXES	101,352	(52,957)
Provision for income taxes	19,971	3,516
NET INCOME (LOSS)	$ 81,381	$ (56,473)
NET INCOME (LOSS) PER SHARE, BASIC	$ 0.45	$ (0.32)
NET INCOME (LOSS) PER SHARE, DILUTED	$ 0.44	$ (0.32)
Weighted average common shares outstanding, basic	179,898	178,271
Weighted average common shares outstanding, diluted	187,163	178,271
COMPREHENSIVE INCOME (LOSS)	$ 95,344	$ (41,950)

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

BIOMARIN PHARMACEUTICAL INC.

CONDENSED CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY

Three Months Ended March 31, 2020 and 2019
(In thousands)
(unaudited)

	Three Months Ended March 31,	
	2020	**2019**
Shares of Common Stock, beginning balances [1]	179,838	178,253
Issuances under equity incentive plans	924	780
Shares of Common Stock, ending balances	180,762	179,033
Total stockholders' equity, beginning balances [1]	$ 3,122,381	$ 2,967,940
Common stock:		
Beginning balances [1]	180	178
Issuances under equity incentive plans, net of tax	1	1
Ending balance	181	179
Additional paid-in capital:		
Beginning balance [1]	4,832,707	4,669,926
Issuances under equity incentive plans, net of tax	(24,227)	(28,732)
Stock-based compensation	46,463	41,706
Common stock held by the NQDC	(129)	—
Ending balance	4,854,814	4,682,900
Company common stock held by the NQDC:		
Beginning balance [1]	(9,961)	(13,301)
Common stock held by the NQDC	129	389
Ending balance	(9,832)	(12,912)
Accumulated other comprehensive income:		
Beginning balance [1]	20,164	5,271
Other comprehensive income	13,963	14,523
Ending balance	34,127	19,794
Accumulated Deficit:		
Beginning balance [1]	(1,720,709)	(1,694,134)
Impact of change in accounting principles	—	(2,727)
Net income (loss)	81,381	(56,473)
Ending balance	(1,639,328)	(1,753,334)
Total stockholders' equity, ending balances	$ 3,239,962	$ 2,936,627

(1) The beginning balances were derived from the audited Consolidated Financial Statements included in Company's Annual Report on Form 10-K for the years ended December 31, 2019 and 2018, respectively, filed with the SEC on February 27, 2020.

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

BIOMARIN PHARMACEUTICAL INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
Three Months Ended March 31, 2020 and 2019
(In thousands)
(unaudited)

	Three Months Ended March 31,	
	2020	**2019**
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income (loss)	$ 81,381	$ (56,473)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	25,964	22,427
Non-cash interest expense	4,618	4,409
(Accretion of discount) Amortization of premium on investments	60	(891)
Stock-based compensation	46,994	42,761
Gain on sale of nonfinancial assets	(59,495)	—
Deferred income taxes	10,603	(704)
Unrealized foreign exchange (gain) loss	9,400	(419)
Non-cash changes in the fair value of contingent consideration	(4)	12,260
Other	(383)	(19)
Changes in operating assets and liabilities:		
Accounts receivable, net	(31,898)	(51,690)
Inventory	(20,706)	1,735
Other current assets	8,302	10,112
Other assets	(441)	2,220
Accounts payable and accrued liabilities	(94,733)	(42,070)
Other long-term liabilities	5,144	1,474
Net cash used in operating activities	(15,194)	(54,868)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property, plant and equipment	(40,554)	(28,756)
Maturities and sales of investments	94,701	219,894
Purchases of available-for-sale securities	(40,104)	(239,843)
Proceeds from sale of nonfinancial assets	67,159	—
Purchase of intangible assets	(3,463)	(1,706)
Other	(335)	(68)
Net cash provided by (used in) investing activities	77,404	(50,479)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from exercises of awards under equity incentive plans	10,116	5,798
Taxes paid related to net share settlement of equity awards	(28,844)	(30,105)
Principal repayments of financing leases	(943)	(674)
Net cash used in financing activities	(19,671)	(24,981)
Effect of exchange rate changes on cash	(3,353)	715
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	39,186	(129,613)
Cash and cash equivalents:		
Beginning of period	$ 437,446	$ 493,982
End of period	$ 476,632	$ 364,369
SUPPLEMENTAL CASH FLOW DISCLOSURES:		
Cash paid for income taxes	$ 2,267	$ 906
Cash paid for interest	$ 1,403	$ 1,483
SUPPLEMENTAL CASH FLOW DISCLOSURES FOR NON-CASH INVESTING AND FINANCING ACTIVITIES:		
Decrease in accounts payable and accrued liabilities related to fixed assets	$ (19,927)	$ (3,502)

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

BIOMARIN PHARMACEUTICAL INC.
NOTES TO 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 portfolio consists of several commercial therapies and multiple clinical and preclinical product candidates.

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 United States (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, 2019 included in the Company's Annual Report on Form 10-K. The results of operations for the three months ended March 31, 2020 are not necessarily indicative of the results that may be expected for the fiscal year ending December 31, 2020 or any other period.

On January 1, 2020, the Company adopted Financial Accounting Standards Board (FASB) Accounting Standards Update (ASU) No. 2016-13, *Financial Instruments-Credit Losses: Measurement of Credit Losses on Financial Instruments* (ASU 2016-13), as amended, using a modified retrospective approach. The standard has amended the guidance for measuring and recording credit losses on financial assets measured at amortized cost by replacing the incurred-loss model with an expected-loss model. This new standard also requires that credit losses related to available-for-sale debt securities be recorded as an allowance through net income rather than by reducing the carrying amount under the current, other-than-temporary impairment model. Results for reporting periods beginning January 1, 2020 are presented under ASU 2016-13 and the adoption of this standard had no impact on the Company's Financial Statements.

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 full extent to which the novel coronavirus disease (referred to as COVID-19) pandemic will directly or indirectly impact the Company's business, results of operations and financial condition, including revenues, expenses, reserves and allowances, manufacturing, clinical trials and research and development costs, will depend on future developments that are highly uncertain at this time. As events continue to evolve and additional information becomes available, the Company's estimates may change materially in future periods.

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) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Except as detailed below, there have been no material changes to the Company's significant accounting policies during the three months ended March 31, 2020, as compared to the significant accounting policies disclosed in Note 3 – *Significant Accounting Policies* included in the Company's Annual Report on Form 10-K for the year ended December 31, 2019.

Marketable Securities

The Company determines the appropriate classification of its investments in debt and equity securities at the time of purchase and reevaluates such designations at each reporting period. The Company classifies its debt and equity securities with

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

original maturities greater than three months when purchased as either short-term or long-term investments based on each instrument's underlying contractual maturity date and its availability for use in current operations. Available-for-sale debt securities are recorded at fair market value with unrealized gains and losses included in Accumulated Other Comprehensive Income (AOCI) on the Company's Consolidated Balance Sheets, with the exception of unrealized losses believed to be related to credit losses, which, if any, are recognized through earnings in the period the impairment occurs. 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 related to a credit loss and, if it is, the portion of the impairment relating to credit loss is recorded as an allowance through net income.

(4) RECENT ACCOUNTING PRONOUNCEMENTS

Except as described in Note 2 – *Basis of Presentation*, there have been no new accounting pronouncements adopted by the Company or new accounting pronouncements issued by the FASB during the three months ended March 31, 2020, 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, 2019, that the Company believes are of significance or potential significance to the Company.

(5) FINANCIAL INSTRUMENTS

All marketable securities were classified as available-for-sale at March 31, 2020 and December 31, 2019.

The following tables show the Company's cash, cash equivalents and available-for-sale securities by significant investment category for each period presented:

	March 31, 2020						
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Aggregate Fair Value	Cash and Cash Equivalents	Short-term Marketable Securities [1]	Long-term Marketable Securities [2]
Level 1:							
Cash	$ 287,756	$ —	$ —	$ 287,756	$ 287,756	$ —	$ —
Level 2:							
Money market instruments	188,876	—	—	188,876	188,876	—	—
Corporate debt securities	475,439	1,450	(1,888)	475,001	—	286,894	188,107
U.S. government agency securities	181,818	3,561		185,379	—	92,597	92,782
Asset-backed securities	11,454	59	(33)	11,480	—	2,273	9,207
Foreign and other	549	152	(1)	700	—		700
Subtotal	858,136	5,222	(1,922)	861,436	188,876	381,764	290,796
Total	$ 1,145,892	$ 5,222	$ (1,922)	$ 1,149,192	$ 476,632	$ 381,764	$ 290,796

(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.

As of March 31, 2020, the Company has the ability and intent to hold all investments that were in an unrealized loss position until maturity or recovery. The Company considered the extent to which fair value is less than amortized cost basis, conditions specifically related to the security's industry and geography, payment structure and history and changes to the ratings (if any) in determining that the decline in fair value compared to carrying value is not related to a credit loss.

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

	December 31, 2019						
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Aggregate Fair Value	Cash and Cash Equivalents	Short-term Marketable Securities [1]	Long-term Marketable Securities [2]
Level 1:							
Cash	$ 259,347	$ —	$ —	$ 259,347	$ 259,347	$ —	$ —
Level 2:							
Money market instruments	173,100	—	—	173,100	173,100	—	—
Corporate debt securities	518,523	3,575	(12)	522,086	—	233,294	288,792
U.S. government agency securities	209,633	993	(67)	210,559	4,999	83,067	122,493
Foreign and other	549	145	(1)	693	—	—	693
Subtotal	901,805	4,713	(80)	906,438	178,099	316,361	411,978
Total	$ 1,161,152	$ 4,713	$ (80)	$ 1,165,785	$ 437,446	$ 316,361	$ 411,978

(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 has three investments in non-marketable equity securities, measured using unobservable valuation inputs remeasured on a nonrecurring basis, which are collectively considered strategic investments. As of March 31, 2020 and December 31, 2019, the fair value of the Company's strategic investments was $6.2 million in each period. These investments were recorded in Other Assets in the Company's Condensed Consolidated Balance Sheets.

(6) GOODWILL AND INTANGIBLE ASSETS

Intangible assets consisted of the following:

	March 31, 2020	December 31, 2019
Intangible assets:		
Finite-lived intangible assets	$ 623,972	$ 652,734
Accumulated amortization	(180,255)	(196,154)
Net carrying value	$ 443,717	$ 456,580

In January 2020, the Company completed the sale of worldwide rights to Firdapse, the Company's commercial product for the treatment of Lambert-Eaton myasthenic syndrome, to a third party in exchange for a one-time cash payment of $67.2 million plus residual royalties. Under the terms of the agreement, the Company agreed to provide certain transition services to the third-party purchaser, such as customer sales and support, for up to 12 months after the closing of the transaction. During the first quarter of 2020, the Company recognized a net before-tax gain of $59.5 million related to the sale of the Firdapse intellectual property and existing inventory. Additionally, the Company recognized a $0.8 million reduction to goodwill and disposed of $32.2 million in intangible assets, including related accumulated amortization of $31.6 million, as a result of the sale of Firdapse.

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

(7) PROPERTY, PLANT AND EQUIPMENT

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

	March 31, 2020	December 31, 2019
Building and improvements	$ 727,272	$ 725,906
Manufacturing and laboratory equipment	376,035	366,951
Computer hardware and software	170,132	167,554
Leasehold improvements	51,323	51,324
Furniture and equipment	38,124	38,569
Land improvements	7,349	7,349
Land	90,418	90,418
Construction-in-progress	119,328	111,897
	1,579,981	1,559,968
Accumulated depreciation	(570,009)	(549,100)
Total property, plant and equipment, net	$ 1,009,972	$ 1,010,868

The construction-in-progress balance primarily included costs related to significant in-progress projects at the Company's facilities in Marin County, California, and Shanbally, Ireland.

Depreciation expense for the three months ended March 31, 2020 and 2019, was $21.5 million and $21.4 million, respectively, of which $11.2 million and $6.5 million was capitalized into inventory, respectively.

(8) SUPPLEMENTAL BALANCE SHEET INFORMATION

Inventory consisted of the following:

	March 31, 2020	December 31, 2019
Raw materials	$ 82,207	$ 74,442
Work-in-process	371,963	349,978
Finished goods	251,482	255,855
Total inventory	$ 705,652	$ 680,275

Inventory as of March 31, 2020, included manufacturing-related costs for the commercial production of valoctocogene roxaparvovec inventory totaling $52.5 million. Valoctocogene roxaparvovec is an investigational gene therapy product candidate for the treatment of severe hemophilia A. The Company must receive marketing approval from the applicable regulators before the valoctocogene roxaparvovec inventory can be sold commercially. The Company believes that all material uncertainties related to the ultimate regulatory approval of valoctocogene roxaparvovec for commercial sale have been significantly reduced. A number of factors were taken into consideration, including the current status in the drug development process, pivotal clinical trial results for the underlying product candidate, results from meetings with the relevant regulatory authorities prior to the filing of regulatory applications, historical experience, as well as potential impediments to the approval process such as product safety or efficacy, as well as commercialization and marketplace trends. If regulatory approval is not obtained, the manufacturing-related costs for the commercial production of valoctocogene roxaparvovec will be expensed to Research and Development (R&D).

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

Accounts Payable and Accrued Liabilities consisted of the following:

	March 31, 2020	December 31, 2019
Accounts payable and accrued operating expenses	$ 235,163	$ 240,981
Accrued compensation expense	95,148	192,467
Accrued rebates payable	63,917	57,163
Accrued royalties payable	20,331	30,797
Deferred revenue	7,889	13,037
Value added taxes payable	8,444	8,395
Forward foreign currency exchange contracts	7,675	10,448
Lease liabilities	10,401	10,700
Other	5,538	6,633
Total accounts payable and accrued liabilities	$ 454,506	$ 570,621

(9) FAIR VALUE MEASUREMENTS

The Company measures certain financial assets and liabilities at fair value in accordance with the policy described in Note 3 – *Significant Accounting Policies* included in the Company's Annual Report on Form 10-K for the year ended December 31, 2019.

The following tables present the classification within the fair value hierarchy of financial assets and liabilities not disclosed elsewhere in these Condensed Consolidated Financial Statements that are remeasured on a recurring basis as of March 31, 2020 and December 31, 2019. There were no financial assets or liabilities that were remeasured using a quoted price in active markets for identical assets (Level 1) as of March 31, 2020.

	Fair Value Measurements at March 31, 2020		
	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Assets:			
Other current assets:			
NQDC Plan assets	$ 367	$ —	$ 367
Other assets:			
NQDC Plan assets	14,917	—	14,917
Restricted investments [1]	4,554	—	4,554
Total other assets	19,471	—	19,471
Total assets	$ 19,838	$ —	$ 19,838
Liabilities:			
Current liabilities:			
NQDC Plan liability	$ 367	$ —	$ 367
Other long-term liabilities:			
NQDC Plan liability	14,917	—	14,917
Contingent consideration	—	50,524	50,524
Total other long-term liabilities	14,917	50,524	65,441
Total liabilities	$ 15,284	$ 50,524	$ 65,808

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

	Fair Value Measurements at December 31, 2019		
	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Assets:			
Other current assets:			
NQDC Plan assets	$ 1,177	$ —	$ 1,177
Other assets:			
NQDC Plan assets	16,288	—	16,288
Restricted investments [1]	3,168	—	3,168
Total other assets	19,456	—	19,456
Total assets	$ 20,633	$ —	$ 20,633
Liabilities:			
Current liabilities:			
NQDC Plan liability	$ 1,177	$ —	$ 1,177
Other long-term liabilities:			
NQDC Plan liability	16,288	—	16,288
Contingent consideration	—	50,793	50,793
Total other long-term liabilities	16,288	50,793	67,081
Total liabilities	$ 17,465	$ 50,793	$ 68,258

(1) The restricted investments at March 31, 2020 and December 31, 2019 secure the Company's irrevocable standby letters of credit obtained in connection with certain commercial agreements.

There were no transfers between levels during the three months ended March 31, 2020. The following table represents a roll forward of contingent consideration.

Contingent consideration at December 31, 2019	$ 50,793
Changes in fair value of contingent consideration	(4)
Foreign exchange remeasurement of Euro denominated contingent acquisition consideration	(265)
Contingent consideration at March 31, 2020	$ 50,524

(10) DERIVATIVE INSTRUMENTS AND HEDGING STRATEGIES

The Company uses forward foreign currency exchange contracts (forward contracts) to hedge certain operational exposures resulting from potential changes in foreign currency exchange rates. Such exposures result from portions of the Company's 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 contracts as hedging instruments and also enters into forward contracts that are considered to be economic hedges that are not designated as hedging instruments. Whether designated or undesignated, these forward 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. To receive hedge accounting treatment, cash flow hedges must be highly effective in offsetting changes to expected future cash flows on hedged transactions. The Company does not hold or issue derivative instruments for trading or speculative purposes. 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 contracts is through March 2023.

The following table summarizes the Company's derivatives designated as hedging instruments outstanding as of March 31, 2020 (notional amounts in millions):

Foreign Exchange Contracts	Number of Contracts	Aggregate Notional Amount in Foreign Currency	Maturity
Purchase:			
Euros	137	165.4	Apr 2020 - Mar 2023
Sell:			
Australian Dollars	36	12.8	Apr 2020 - Mar 2021
Canadian Dollars	50	41.2	Apr 2020 - Mar 2021
Colombian Pesos	27	93,150.0	Apr 2020 - Mar 2021
Euros	374	605.3	Apr 2020 - Mar 2023
Norwegian Krone	36	82.0	Apr 2020 - Mar 2021
Total	660		

The following table summarizes the Company's derivatives not designated as hedging instruments outstanding as of March 31, 2020 (notional amounts in millions):

Foreign Exchange Contracts	Number of Contracts	Aggregate Notional Amount in Foreign Currency	Maturity
Purchase:			
Euros	1	4.1	Jun 2020
Great British Pounds	1	8.3	Jun 2020
Sell:			
Colombian Pesos	1	49,800.0	Jun 2020
Rubles	1	1,055.0	Jun 2020
Total	4		

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

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

Balance Sheet Location	March 31, 2020	December 31, 2019
Derivatives designated as hedging instruments:		
Asset Derivatives - Level 2 (1)		
Other current assets	$ 30,077	$ 19,584
Other assets	16,984	13,539
Subtotal	$ 47,061	$ 33,123
Liability Derivatives - Level 2 (1)		
Accounts payable and accrued liabilities	$ 7,522	$ 8,184
Other long-term liabilities	5,790	5,493
Subtotal	$ 13,312	$ 13,677
Derivatives not designated as hedging instruments:		
Asset Derivatives - Level 2 (1)		
Other current assets	$ 200	$ 469
Liability Derivatives - Level 2 (1)		
Accounts payable and accrued liabilities	$ 153	$ 2,264
Total Derivatives Assets	$ 47,261	$ 33,592
Total Derivatives Liabilities	$ 13,465	$ 15,941

(1) For additional discussion of fair value measurements, see Note 3 – *Summary of Significant Accounting Policies* included in the Company's Annual Report on Form 10-K for the year ended December 31, 2019.

The following tables summarize the impact of gains and losses from the Company's derivatives on its Condensed Consolidated Statements of Comprehensive Income (Loss) for the periods presented.

	Three Months Ended	
Derivatives Designated as Cash Flow Hedging Instruments	**March 31, 2020**	**March 31, 2019**
Amount of Gain (Loss) Recognized in Other Comprehensive Income	$ 19,630	$ 12,825

	Three Months Ended			
	March 31, 2020		**March 31, 2019**	
Derivatives Designated as Cash Flow Hedging Instruments		**Cash Flow Hedging Gains (Losses) Reclassified into Earnings**		**Cash Flow Hedging Gains (Losses) Reclassified into Earnings**
Net product revenues as reported	$ 489,043	$ 6,329	$ 394,483	$ 695
Operating expenses as reported	$ 397,108	$ (1,673)	$ 454,696	$ 271

Derivatives Not Designated as Hedging Instruments	**Gains (Losses) Recognized in Earnings**	**Gains (Losses) Recognized in Earnings**
Operating Expenses	$ 3,809	$ (2,978)

As of March 31, 2020, the Company expects to reclassify unrealized gains of $21.0 million from AOCI to earnings as the forecasted revenue and operating expense transactions occur over the next 12 months.

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

The Company is exposed to counterparty credit risk on its derivatives. The Company has established and maintains strict counterparty credit guidelines and enters into hedging agreements with financial institutions that are investment grade or better to minimize the Company's exposure to potential defaults. The Company is not required to pledge collateral under these agreements.

(11) LEASES

The following table presents the Company's right-of-use (ROU) assets and lease liabilities as of March 31, 2020:

Lease Classification	Classification	March 31, 2020	December 31, 2019
Assets:			
Operating	Other Assets	$ 49,116	$ 49,045
Financing	Other Assets	9,703	10,389
Total ROU assets		$ 58,819	$ 59,434
Liabilities:			
Current:			
Operating	Accounts payable and accrued liabilities	$ 7,114	$ 7,451
Financing	Accounts payable and accrued liabilities	3,287	3,249
Noncurrent:			
Operating	Other long-term liabilities	44,529	44,092
Financing	Other long-term liabilities	5,844	6,708
Total lease liabilities		$ 60,774	$ 61,500

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

Maturities of lease liabilities as of March 31, 2020 by fiscal year were as follows:

Maturity of Lease Liabilities	Operating	Financing	Total
Remainder of 2020	$ 8,814	$ 2,763	$ 11,577
2021	9,441	3,070	12,511
2022	8,749	2,339	11,088
2023	7,805	1,749	9,554
2024	5,995	—	5,995
Thereafter	22,044	—	22,044
Total lease payments	62,848	9,921	72,769
Less: Interest	(11,205)	(790)	(11,995)
Present value of lease liabilities	$ 51,643	$ 9,131	$ 60,774

		Three Months Ended March 31,	
Lease Cost	Classification	2020	2019
Operating [1]	Operating Expenses	$ 2,748	$ 3,080
Financing:			
Amortization	Operating Expenses	707	607
Interest expense	Operating Expenses	125	161
Total lease costs		$ 3,580	$ 3,848

(1) Includes short-term leases and variable lease costs, both of which were not material in the periods presented.

	Three Months Ended March 31,	
Other Information	2020	2019
Weighted average remaining lease term (in years):		
Operating leases	7.6	7.8
Financing leases	3.1	4.0
Weighted average discount rate:		
Operating leases	5.1 %	5.2 %
Financing leases	5.3 %	5.4 %

As of March 31, 2020, no operating leases are expected to commence in the remainder of 2020.

	Three Months Ended March 31,	
Supplemental Cash Flow Information	2020	2019
Cash paid for amounts included in the measurement of lease liabilities:		
Cash used in operating activities:		
Operating leases	$ 1,440	$ 1,600
Financing leases	$ 127	$ 161
Cash used in financing activities:		
Financing leases	$ 823	$ 674
ROU assets obtained in exchange for lease obligations:		
Operating leases	$ 2,427	$ 19
Financing leases	$ 27	$ 68

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

(12) DEBT

Convertible Notes

As of March 31, 2020, the Company had outstanding fixed-rate notes with varying maturities for an undiscounted aggregate principal amount of $870.0 million (collectively the Notes). The Notes are senior subordinated convertible obligations, and interest is payable in arrears, semi-annually. The following table summarizes information regarding the Company's convertible debt:

	March 31, 2020	December 31, 2019
1.50% senior subordinated convertible notes due in October 2020 (the 2020 Notes)	$ 374,993	$ 374,993
Unamortized discount	(8,322)	(12,078)
Unamortized deferred offering costs	(707)	(1,033)
Convertible Notes due in 2020, net [1]	365,964	361,882
0.599% senior subordinated convertible notes due in August 2024 (the 2024 Notes)	495,000	495,000
Unamortized discount	(6,179)	(6,533)
Unamortized deferred offering costs	(2,108)	(2,229)
Convertible Notes due in 2024, net	486,713	486,238
Total convertible debt, net	$ 852,677	$ 848,120
Fair value of fixed rate convertible debt [2]:		
Convertible Notes due in October 2020	401,081	405,679
Convertible Notes due in August 2024	513,147	521,839
Total fair value of fixed rate convertible debt	$ 914,228	$ 927,518

(1) The 2020 Notes are classified as a current liability in the periods presented since they mature in October 2020.

(2) 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. For additional discussion of fair value measurements, see Note 3 – *Summary of Significant Accounting Policies* included in the Company's Annual Report on Form 10-K for the year ended December 31, 2019.

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

	Three Months Ended March 31,	
	2020	2019
Coupon interest expense	$ 2,172	$ 2,157
Amortization of debt issuance costs	508	507
Accretion of discount on convertible notes	4,110	3,902
Total interest expense on convertible debt	$ 6,790	$ 6,566

See Note 13 - *Debt* in the Company's Annual Report on Form 10-K for the year ended December 31, 2019 for additional information related to the Company's convertible debt.

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

Revolving Credit Facility

In October 2018, the Company entered into an unsecured revolving credit facility of up to $200.0 million (the 2018 Credit Facility). The 2018 Credit Facility includes a letter of credit subfacility and a swingline loan subfacility and is intended to finance ongoing working capital needs and for other general corporate purposes. Borrowings under the 2018 Credit Facility bear interest, at the Company's option, at a rate equal to either (a) the LIBOR rate (except that if LIBOR is less than zero it shall be deemed to be zero for purposes of the 2018 Credit Facility), or LIBOR successor rate, plus an applicable margin ranging from 1.00% to 1.95% per annum, based upon the Company's net leverage ratio and earnings before interest, taxes, depreciation and amortization (EBITDA) for each of the two most recently ended four-quarter measurement periods, or (b) the Base Rate, generally the prime lending rate, plus an applicable margin ranging from 0.00% to 0.95%, based upon the Company's net leverage ratio and EBITDA for each of the two most recently ended four-quarter measurement periods. Commitment fees payable on the undrawn amount range from 0.15% to 0.35% per annum based upon the Company's net leverage ratio and EBITDA for each of the two most recently ended four-quarter measurement periods. The Company's obligations under the Credit Facility are guaranteed by its direct subsidiary, California Corporate Center Acquisition LLC, and such obligations may in the future be guaranteed from time to time by certain other material domestic subsidiaries. The 2018 Credit Facility matures on October 19, 2021 at which time all outstanding amounts become due and payable, except that if at least $100.0 million aggregate principal amount of the 2020 Notes remain outstanding on August 1, 2020 and certain other conditions have not been met, the Company may be required to repay all amounts borrowed under the 2018 Credit Facility on August 1, 2020. The Company incurred approximately $1.0 million of issuance costs, which will be amortized to Interest Expense over the term of the 2018 Credit Facility. The 2018 Credit Facility contains financial covenants requiring the Company to maintain a minimum interest coverage ratio and a minimum liquidity requirement. As of March 31, 2020, and December 31, 2019, there were no outstanding amounts due on nor any usage of the 2018 Credit Facility. As of March 31, 2020, the Company and certain of its subsidiaries that served as guarantors were in compliance with all covenants.

(13) ACCUMULATED OTHER COMPREHENSIVE INCOME

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 months ended March 31, 2020 and 2019.

	Condensed Consolidated Statement of Comprehensive Income (Loss) Classification	Three Months Ended March 31,	
		2020	2019
Gains (losses) on cash flow hedges:			
Forward contracts	Net product revenues	$ 6,329	$ 695
Forward contracts	Operating expenses	(1,673)	271
Total gain (loss) on cash flow hedges		$ 4,656	$ 966

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 months ended March 31, 2020 and 2019.

	Three Months Ended March 31, 2020			
	Unrealized Gains (Losses) on Cash Flow Hedges	Unrealized Gains (Losses) on Available for-Sale Debt Securities	Other	Total
AOCI balance at December 31, 2019	$ 16,614	$ 3,565	$ (15)	$ 20,164
Other comprehensive income (loss) before reclassifications	19,630	(1,334)	15	18,311
Less: net gain (loss) reclassified from AOCI	4,656		—	4,656
Tax effect	—	308	—	308
Net current-period other comprehensive income (loss)	14,974	(1,026)	15	13,963
AOCI balance at March 31, 2020	$ 31,588	$ 2,539	$ —	$ 34,127

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

	Three Months Ended March 31, 2019			
	Unrealized Gains (Losses) on Cash Flow Hedges	Unrealized Gains (Losses) on Available for-Sale Debt Securities	Other	Total
AOCI balance at December 31, 2018	$ 7,201	$ (1,917)	$ (13)	$ 5,271
Other comprehensive income (loss) before reclassifications	12,825	3,455	(1)	16,279
Less: gain (loss) reclassified from AOCI	966	—	—	966
Tax effect	—	(790)	—	(790)
Net current-period other comprehensive income (loss)	11,859	2,665	(1)	14,523
AOCI balance at March 31, 2019	$ 19,060	$ 748	$ (14)	$ 19,794

(14) 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 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, which is sold exclusively to Genzyme Corporation, a wholly owned subsidiary of Sanofi (Genzyme) who markets and sells Aldurazyme world-wide. Aldurazyme revenues earned by the Company are included in the U.S. region as the transactions are with Genzyme whose headquarters is located in the U.S.

	Three Months Ended March 31,	
	2020	2019
Total revenues by geographic region:		
United States	$ 244,172	$ 190,936
Europe	145,036	124,539
Latin America	59,924	33,839
Rest of world	52,937	51,431
Total revenues	$ 502,069	$ 400,745

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

The following table disaggregates Net Product Revenues by product.

	Three Months Ended March 31,	
	2020	2019
Net product revenues by product:		
Brineura	$ 23,970	$ 12,180
Firdapse	1,288	5,112
Kuvan	122,028	106,924
Naglazyme	114,256	86,927
Palynziq	34,632	12,272
Vimizim	137,203	125,801
Total net product revenues marketed by the Company	$ 433,377	$ 349,216
Aldurazyme net product revenues marketed by Genzyme	55,666	45,267
Total net product revenues	$ 489,043	$ 394,483

The table below disaggregates total Net Product Revenues based on patient location for products sold directly by the Company, and global sales of Aldurazyme, which is marketed by Genzyme.

	Three Months Ended March 31,	
	2020	2019
United States	$ 181,671	$ 144,285
Europe	140,851	123,085
Latin America	59,924	33,840
Rest of world	50,931	48,006
Total net product revenues marketed by the Company	433,377	349,216
Aldurazyme net product revenues marketed by Genzyme	55,666	45,267
Total net product revenues	$ 489,043	$ 394,483

The following table illustrates the percentage of the Company's total Net Product Revenues attributed to the Company's largest customers for the periods presented.

	Three Months Ended March 31,	
	2020	2019
Customer A	13 %	18 %
Customer B	12 %	11 %
Customer C	11 %	12 %
Customer D	11 %	11 %
Total	47 %	52 %

On a consolidated basis, two customers accounted for 29% and 14% of the March 31, 2020 accounts receivable balance, respectively, compared to December 31, 2019, when two customers accounted for 24% and 16% of the accounts receivable balance, respectively. As of March 31, 2020, and December 31, 2019, the accounts receivable balance for Genzyme included $86.5 million and $60.2 million, respectively, of unbilled accounts receivable, which become payable to the Company when the product is sold 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.

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

The outbreak of COVID-19 will continue to affect economies and business around the world. Although the Company did not see a significant impact on its Net Product Revenues or overall business operations in the first quarter of 2020, ongoing and future effects of COVID-19 (or any future pandemic) on all aspects of its operations, and the duration of such effects, are highly uncertain and difficult to predict. The Company is actively monitoring and managing its response and assessing potential impacts to its operating results and financial condition, as well as adverse developments in its business.

The Company is mindful that conditions in the current macroeconomic environment could affect the Company's ability to achieve its goals. The Company sells its products in countries that face economic volatility and weakness. Although the Company has historically collected receivables from customers in certain countries, sustained weakness or further deterioration of the local economies and currencies and adverse effects of the impact of the ongoing COVID-19 pandemic may cause customers in those countries to be unable to pay for the Company's products. The Company believes that the allowances for doubtful accounts related to these countries, if any, was adequate based on its analysis of the specific business circumstances and expectations of collection for each of the underlying accounts in these countries. The Company will continue to monitor these conditions and will attempt to adjust its business processes, as appropriate, to mitigate macroeconomic risks to its business.

(15) STOCK-BASED COMPENSATION

The Company has stockholder-approved equity incentive plans that provide for the granting of service-based restricted stock units (RSUs), market-based RSUs, performance-based RSUs, stock options and other types of awards to its employees, officers and non-employee directors. 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 March 31,	
	2020	2019
Cost of sales	$ 5,084	$ 4,819
Research and development	13,711	13,833
Selling, general and administrative	28,199	24,109
Total stock-based compensation expense	$ 46,994	$ 42,761

Stock-based compensation of $4.6 million and $3.8 million was capitalized into inventory for the three months ended March 31, 2020 and 2019, respectively. Capitalized stock-based compensation is recognized as cost of sales when the related product is sold.

Restricted Stock Unit Awards with Market Conditions

In March 2020, the Compensation Committee and Board approved the grant of 126,710 RSUs with market-based vesting conditions (base TSR-RSUs) to certain executives. These base TSR-RSUs vest, if at all, in full following a three-year service period only if certain total shareholder return (TSR) results relative to the Nasdaq Biotechnology Index comparative companies are achieved. The number of shares that may be earned range between 0% and 200% of the base TSR-RSUs, with a ceiling achievement level of 100% of the base TSR-RSUs in the event the Company's absolute TSR multiplier is above the 50th percentile but the Company's TSR multiplier is negative on an absolute basis. The Company utilized a Monte Carlo simulation model to determine the grant date fair value of $112.12 per base TSR-RSU. Compensation expense for awards with market conditions is recognized over the service period using the straight-line method and is not reversed if the market condition is not met.

Restricted Stock Unit Awards with Performance Conditions

In March 2020, the Compensation Committee and Board approved the grant of 63,400 RSUs with performance-based vesting conditions (base RSUs) and a grant date fair value of $73.82 per RSU. This award is contingent upon the achievement of a three-year Non-GAAP income target and the awarded RSUs, if any, vest ratably over a three-year service period. The Company evaluated the target in the context of its current long-range financial plan and determined that attainment of the target was probable for accounting purposes commencing in the first quarter of 2020. The number of shares that may be earned range between 50% and 200% of the base RSUs.

In March 2020, the Compensation Committee and Board approved the grant of 63,400 RSUs with performance-based vesting conditions (base RSUs) and a grant date fair value of $73.82 per RSU. This award is contingent upon the achievement of a three-year strategic goal target and the awarded RSUs, if any, vest ratably over a three-year service period. The Company evaluated the target in the context of its product candidate development pipeline and planned regulatory activity and determined that attainment of the target was probable for accounting purposes commencing in the first quarter of 2020. The number of shares that may be earned range between 50% and 200% of the base RSUs.

(16) NET INCOME (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 Share Purchase Plan (ESPP), unvested RSUs, common stock held by the NQDC and contingent issuances of common stock related to convertible debt.

The following table sets forth the computation of basic and diluted earnings per common share (in thousands of common shares):

	Three Months Ended March 31,	
	2020	2019
Numerator:		
Net Income (Loss), basic	$ 81,381	$ (56,473)
Add: Interest on 2024 notes	936	—
Net Income (Loss), diluted	$ 82,317	$ (56,473)
Denominator:		
Weighted-average common shares outstanding, basic	179,898	178,271
Effect of dilutive securities:		
Options to purchase common stock	1,708	—
Common stock issuable under the 2024 notes	3,970	—
Unvested RSUs	1,037	—
Common stock potentially issuable for ESPP purchases	346	—
Common shares held by the NQDC	204	—
Weighted-average common shares outstanding, diluted	187,163	178,271
Net Income (Loss) per common share, basic	$ 0.45	$ (0.32)
Net Income (Loss) per common share, diluted	$ 0.44	$ (0.32)

In addition to the equity instruments included in the table above, the table below presents potential shares of common stock that were excluded from the computation of diluted earnings per common share as they were anti-dilutive (in thousands):

	Three Months Ended March 31,	
	2020	2019
Options to purchase common stock	6,063	7,749
Common stock issuable under the 2020 Notes	3,983	3,983
Common stock issuable under the 2024 Notes	—	3,970
Unvested RSUs	3,811	4,164
Common stock potentially issuable for ESPP purchases	232	417
Common stock held by the NQDC	—	202
Total number of potentially issuable shares	14,089	20,485

The potential effect of the capped call transactions with respect to the 2020 Notes was excluded from the diluted net income (loss) per share as of March 31, 2020 and 2019, respectively, as the Company's closing stock price on March 31, 2020 and 2019, respectively, did not exceed the conversion price of $94.15 per share. There is no similar capped call transaction associated with the 2024 Notes. 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, 2019 for additional information related to the Company's convertible debt and capped call transaction.

(17) 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 or 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 March 31, 2020, the Company was subject to contingent payments totaling approximately $355.4 million upon achievement of certain development and regulatory activities and commercial sales milestones, if they occur
before certain dates in the future. Of this amount, $66.0 million relates to the acquisition of certain rights and other assets with respect to Kuvan and Palynziq from a third party and $243.1 million relates to programs that are no longer being developed.

As of March 31, 2020, the Company recorded a total of $50.5 million of contingent liabilities. See Note 9 to these Condensed Consolidated Financial Statements for further information regarding the fair value of the Company's contingent consideration.

Other Commitments

In the normal course of business, the Company enters into various firm purchase commitments primarily related to active pharmaceutical ingredients, certain inventory-related items and certain third-party R&D services. As of March 31, 2020, such commitments and other minimum contractual obligations for clinical and post-marketing services were estimated at approximately $113.4 million.

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 risk factor related to the impact of the coronavirus pandemic, "The coronavirus, or COVID-19, pandemic could materially adversely affect our business, results of operations and financial condition." described in "Risk Factors" in Part II, Item 1A in this Quarterly Report on Form 10-Q, amongst the other risk factors. 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. Our Condensed Consolidated Financial Statements have been prepared in accordance with United States (U.S.) generally accepted accounting principles (U.S GAAP) and are presented in U.S. Dollars (USD).

(In millions, except as otherwise disclosed)

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 preclinical product candidates. A summary of our major commercial products, as of March 31, 2020, is provided below:

Major Commercial Products	Indication	U.S. Orphan Drug Exclusivity Expiration [1]	U.S. Biologic Exclusivity Expiration [2]	EU Orphan Drug Exclusivity Expiration [1]
Aldurazyme (laronidase)	MPS I [3]	Expired	Expired	Expired
Brineura (cerliponase alfa)	CLN2 [4]	2024	2029	2027
Kuvan (sapropterin dihydrochloride)	PKU [5]	Expired	Not Applicable	2020 [6]
Naglazyme (galsulfase)	MPS VI [7]	Expired	Expired	Expired
Palynziq (pegvaliase-pqpz)	PKU [8]	2025	2030	2029
Vimizim (elosulfase alpha)	MPS IVA [9]	2021	2026	2024

(1) See "Government Regulation—Orphan Drug Designation" in Part I, Item 1 of our Annual Report on Form 10-K for the year ended December 31, 2019, filed with the SEC on February 27, 2020 (Annual Report) for further discussion

(2) See "Government Regulation— Healthcare Reform" in Part I, Item 1 of our Annual Report for further discussion

(3) For the treatment of Mucopolysaccharidosis I (MPS I)

(4) For the treatment of late infantile neuronal ceroid lipofuscinosis type 2 (CLN2)

(5) For the treatment of phenylketonuria (PKU)

(6) Kuvan, a small molecule therapy, has been granted orphan drug status in the European Union (EU), which together with pediatric exclusivity, confers 12 years of market exclusivity in the EU that expires in December 2020

(7) For the treatment of Mucopolysaccharidosis VI (MPS VI)

(8) For adult patients with PKU

(9) For the treatment of Mucopolysaccharidosis IV Type A (MPS IVA)

A summary of our ongoing major development programs, as of March 31, 2020, is provided below:

Major Product Candidates in Development	Target Indication	U.S. Orphan Designation	EU Orphan Designation	Stage
Valoctocogene roxaparvovec	Severe Hemophilia A	Yes	Yes	Clinical Phase 3
Vosoritide	Achondroplasia	Yes	Yes	Clinical Phase 3
BMN 307	PKU	Yes	Yes	Clinical Phase 1/2 [1]

(1) We expect to start dosing patients in a Phase 1/2 study later in 2020. See "Major Product Candidates - BMN 307" in Part I, Item 1 of our Annual Report further discussion

Uncertainty Relating to the COVID-19 Pandemic

The outbreak of novel coronavirus disease (COVID-19) will continue to affect economies and business around the world. Although we did not see a significant impact on our net product revenues, total revenues or overall business operations in the first quarter of 2020, we anticipate near term impact on our financial results as well as ongoing and future effects of COVID-19 (or any future pandemic) on all aspects of our operations. The extent and duration of such effects are highly uncertain and difficult to predict. We are actively monitoring and managing our response and assessing actual and potential impacts to our operating results and financial condition, as well as adverse developments in our business, which could further impact the developments, trends and expectations described below.

Business Developments

We continued to grow our commercial business and advance our product candidate pipeline during the first quarter of 2020. 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 during the three months ended March 31, 2020:

Continued Emphasis on Research and Development

- Vosoritide - In April 2020, we announced plans to submit marketing applications for vosoritide with the U.S Food and Drug Administration (FDA) and the European Medicines Agency (EMA) in the third quarter of 2020 for vosoritide based on recent meetings with the health authorities.

  The marketing applications are based on positive final results from the randomized, double-blind, placebo-controlled, Phase 3 study evaluating the efficacy and safety of vosoritide. The study enrolled 121 children aged 5 to 14 with achondroplasia, the most common form of disproportionate short stature. The placebo-adjusted increased change from baseline in growth velocity after one year of treatment with vosoritide, the primary endpoint, was 1.6cm/yr ($p<0.0001$). The results were consistent across the broad patient population studied. Vosoritide was generally well tolerated with no clinically significant blood pressure changes.

- Valoctocogene roxaparvovec – In February 2020, we announced that the FDA accepted for priority review our Biologics License Application (BLA) for valoctocogene roxaparvovec for the treatment of adults with severe hemophilia A. The Prescription Drug User Fee Act (PDUFA) target action date for the BLA has been set for August 21, 2020. In December 2019, the EMA validated the Marketing Authorization Application (MAA) for valoctocogene roxaparvovec, which has been in review under accelerated assessment since January 2020.

  Although the MAA remains under accelerated assessment at this time, we expect the review procedure to be extended by at least 3 months due to COVID-19 delays. Further, we believe there is a high possibility that the MAA will revert to the standard review procedure, as is the case with most filings that initially receive accelerated assessment. Because of the combination of these events, we expect an opinion from the Committee for Medicinal Products for Human Use in late 2020/early 2021.

  The marketing applications are based on our Phase 3 interim analysis and the updated three-year Phase 1/2 data of patients treated with valoctocogene roxaparvovec. We believe both submissions represent the first time a gene therapy product for any type of hemophilia indication is under review for marketing authorization by health authorities.

- BMN 307 - In January 2020, both the FDA and the Medicines and Healthcare Products Regulatory Agency in the United Kingdom granted BMN 307 Investigational New Drug (IND) status and approved our Clinical Trial Application (CTA), respectively. The impact of COVID-19 has created uncertainty about when it will be safe for patients to be dosed in PHEARLESS, our Phase 1/2 study of BMN 307. We currently estimate that dosing will begin in the second half of 2020. In the meantime, new sites are currently being prepared to open and enroll patients. All subjects participating in the PHEARLESS study will receive product made at commercial scale from our gene therapy manufacturing facility. Both the FDA and EMA have granted BMN 307 Orphan Drug Status.

- Gene Therapy manufacturing facility - In January 2020, we announced that significant improvements in productivity at our gene therapy facility had increased capacity for up to 10,000 patients per year, depending on dose and product mix.

(In millions, except as otherwise disclosed)

Financial Highlights

Key components of our results of operations include the following:

	Three Months Ended March 31,	
	2020	2019
Total revenues	$ 502.1	$ 400.7
Cost of sales	$ 111.4	$ 89.2
Research and development (R&D) expense	$ 142.3	$ 183.6
Selling, general and administrative (SG&A) expense	$ 187.3	$ 162.2
Intangible asset amortization and contingent consideration	$ 15.7	$ 19.8
Gain on sale of nonfinancial assets	$ (59.5)	$ —
Provision for income taxes	$ 20.0	$ 3.5
Net Income (Loss)	$ 81.4	$ (56.5)

We recognized Net Income for the three months ended March 31, 2020 as compared to a Net Loss for the three months ended March 31, 2019, primarily due to the following:

- increased gross profits driven by higher sales volume for products marketed by us;
- a gain on the sale of nonfinancial assets related to the divestiture and sale of the Firdapse business to a third party;
- decreased R&D expense primarily due to the capitalization of manufacturing related costs for the commercial production of valoctocogene roxaparvovec ; partially offset by
- increased SG&A expense primarily due to pre-commercialization activities related to valoctocogene roxaparvovec and
- an increase in the provision for income taxes.

See "Results of Operations" below for additional information related to the Net Income/(Loss) fluctuations presented above.

Our cash, cash equivalents and investments totaled approximately $1.1 billion as of March 31, 2020, compared to $1.2 billion as of December 31, 2019. 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, Estimates and Judgments

In preparing our Condensed Consolidated Financial Statements in accordance with 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.

The full extent to which the COVID-19 pandemic will directly or indirectly impact our business, results of operations and financial condition, including revenues, expenses, reserves and allowances, manufacturing, clinical trials and research and development costs, will depend on future developments that are highly uncertain at this time. As events continue to evolve and additional information becomes available, our estimates may change materially in future periods.

(In millions, except as otherwise disclosed)

Except as detailed above, there have been no significant changes to our critical accounting policies, estimates and judgments during the three months ended March 31, 2020, compared to the critical accounting policies, estimates and judgments 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, 2019.

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.

Results of Operations

Revenues

Net Product Revenues consisted of the following:

	Three Months Ended March 31,		
	2020	2019	Change
Net product revenues by product:			
Brineura	$ 24.0	$ 12.2	$ 11.8
Firdapse	1.2	5.1	(3.9)
Kuvan	122.0	106.9	15.1
Naglazyme	114.3	86.9	27.3
Palynziq	34.6	12.3	22.4
Vimizim	137.2	125.8	11.4
Total net product revenues marketed by the Company	$ 433.3	$ 349.2	$ 84.1
Aldurazyme net product revenues marketed by Genzyme	55.7	45.3	10.4
Total net product revenues	$ 489.0	$ 394.5	$ 94.5

Net Product Revenues include revenues generated from our approved products. In the U.S., our commercial products, except for Palynziq and Aldurazyme, are generally sold to specialty pharmacies or end-users, such as hospitals, which act as retailers. Palynziq is distributed in the U.S. through certain certified specialty pharmacies under the Palynziq Risk Evaluation and Mitigation Strategy (REMS) program, and Aldurazyme is marketed world-wide by Sanofi Genzyme (Genzyme). Outside the U.S., our commercial products are sold to authorized distributors or directly to government purchasers or hospitals, which act as the end-users. 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.

The increase in Net Product Revenues for the three months ended March 31, 2020 as compared to the three months ended March 31, 2019 was primarily attributed to the following:

- Naglazyme: the increase was primarily attributed to increased sales volume driven by orders from Russia and Brazil;
- Palynziq: the increase was attributed to a combination of revenue from more patients achieving maintenance dosing and new patients initiating therapy in the U.S.;
- Kuvan: the increase was primarily attributed to increased sales primarily in North America
- Vimizim: the increase was primarily attributed to increased sales volume driven by orders from Brazil;
- Brineura: the increase was primarily attributed to growth in the number of patients in all regions; and
- Aldurazyme: the increase was primarily attributed to higher sales volume to Genzyme; partially offset by
- Firdapse: the decrease was primarily attributed to the divestiture and sale of the Firdapse business in January 2020.

(In millions, except as otherwise disclosed)

We anticipate the COVID-19 pandemic will have a near term impact on future Net Product Revenues as many of our products are administered via infusions in a clinic or hospital setting and/or by a healthcare professional. Although we are working with our patients and providers to find alternative arrangements where necessary, like providing infusions at home, we may not be able to accommodate all patients and doses that are missed may never be recouped. See "The coronavirus, or COVID-19, pandemic could materially adversely affect our business, results of operations and financial condition." in "Risk Factors" included in Part II, Item 1A of this Quarterly Report for additional information.

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:

	Three Months Ended March 31,		
	2020	2019	Change
Sales denominated in USD	$ 274.5	$ 235.2	$ 39.3
Sales denominated in foreign currencies	214.5	159.3	55.2
Total Net Product Revenues	$ 489.0	$ 394.5	$ 94.5

The net impact of foreign currency exchange rates on product sales denominated in currencies other than USD during the three months ended March 31, 2020 was unfavorable by $4.6 million, which was primarily driven by weakening of currencies in emerging markets relative to the USD, such as the Brazilian Real, Colombian Peso and Argentinian Peso, partially offset by the Euro compared to an unfavorable impact of $5.4 million for the three months ended March 31, 2019 driven by fluctuations in the Euro.

Royalty and Other Revenues

Royalty and Other Revenues include royalties earned on net sales of products sold and milestones achieved by licensees or sublicensees and rental income associated with the tenants in our facilities.

	Three Months Ended March 31,		
	2020	2019	Change
Royalty and other revenues	$ 13.0	$ 6.3	$ 6.7

The increase in Royalty and Other Revenues for the three months ended March 31, 2020 compared to the same periods in 2019 was primarily due to license revenues earned from the third-party that licensed tralesinidase alfa from us and royalties earned from Catalyst Pharmaceuticals on their net product sales of Firdapse in North America.

We expect to continue to earn royalties from third parties in the future.

Cost of Sales

Cost of Sales includes raw materials, personnel and facility and other costs associated with manufacturing our commercial products. These costs include production materials, production costs at our manufacturing facilities, third-party manufacturing costs, and internal and external final formulation and packaging costs. Cost of Sales also includes royalties payable to third parties based on sales of our products.

The following table summarizes our Cost of Sales and product gross margin:

	Three Months Ended March 31,		
	2020	2019	Change
Total Net Product Revenues	$ 489.0	$ 394.5	$ 94.5
Cost of Sales	$ 111.4	$ 89.2	$ 22.2
Product gross margin	77 %	77 %	— %

Our Cost of Sales increased for the three months ended March 31, 2020 compared to the same periods in 2019 due to increased sales volumes. Product gross profits for the three months ended March 31, 2020 compared to the same period in 2019 remained flat.

(In millions, except as otherwise disclosed)

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 raw materials costs associated with manufacturing clinical product, quality control and assurance, other R&D activities, 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.

We continuously evaluate the recoverability of costs associated with pre-launch or pre-qualification manufacturing activities, and capitalize the costs incurred related to those activities if it is determined that recoverability is highly likely and therefore future revenues are expected. When regulatory approval and the likelihood of future revenues for a product candidate are less certain, the related manufacturing costs are expensed as R&D expenses. Starting in the second quarter of 2019, we have capitalized $52.5 million of manufacturing related costs for the commercial production of valoctocogene roxaparvovec through March 31, 2020 as we believe those costs are likely to be recoverable. See Note 8 to our accompanying Condensed Consolidated Financial Statements for additional information regarding our inventory.

R&D expense consisted of the following:

	Three Months Ended March 31,		
	2020	2019	Change
Valoctocogene roxaparvovec	$ 30.8	$ 53.0	$ (22.2)
Vosoritide	31.1	32.0	(0.9)
PKU gene therapy (BMN 307)	17.5	11.8	5.7
Palynziq	11.4	22.8	(11.4)
Brineura	8.0	10.5	(2.5)
Tralesinidase alfa	0.1	8.8	(8.7)
Other approved products	13.9	17.1	(3.2)
Early stage programs	25.2	16.7	8.5
Other	4.3	10.9	(6.6)
Total	$ 142.3	$ 183.6	$ (41.3)

The decrease in R&D expense for the three months ended March 31, 2020 as compared to 2019 was primarily attributed to the following:

- a decrease in costs related to valoctocogene roxaparvovec, for which capitalization of manufacturing costs began in the second quarter of 2019;
- a decrease in clinical manufacturing costs related to Palynziq due to fewer clinical trials;
- a decrease in tralesinidase alfa clinical manufacturing costs as the program was licensed to a third-party; partially offset by
- an increase in spending on preclinical activities for our early stage development programs.

During 2020, we expect our R&D spending to be generally flat compared to 2019, primarily due to lower development costs on Palynziq and valoctocogene roxaparvovec, along with the out-licensing of tralesinidase alfa; offset by increased spending on preclinical activities for our early stage development programs.

Selling, General and Administrative

Sales and Marketing (S&M) expense primarily consisted of employee-related expenses for our sales group, brand marketing, patient support groups and pre-commercialization expenses related to our product candidates. General and administrative (G&A) expense primarily consisted of corporate support and other administrative expenses, including employee-

(In millions, except as otherwise disclosed)

related expenses.

Selling, General and Administrative (SG&A) expense consisted of the following:

	Three Months Ended March 31,		
	2020	2019	Change
Selling & Marketing expense	$ 94.9	$ 83.5	$ 11.4
General & Administrative expense	92.4	78.7	13.7
Total SG&A expense	$ 187.3	$ 162.2	$ 25.1

	Three Months Ended March 31,		
Selling & Marketing expense by product	2020	2019	Change
PKU Products (Kuvan and Palynziq)	$ 30.8	$ 31.1	$ (0.3)
MPS Products (Aldurazyme, Naglazyme and Vimizim)	28.5	28.9	(0.4)
Brineura	10.2	9.4	0.8
Valoctocogene roxaparvovec	18.1	6.9	11.2
Other	7.3	7.2	0.1
Total Selling & Marketing expense	$ 94.9	$ 83.5	$ 11.4

The increase in S&M expense for the three months ended March 31, 2020 as compared to the same periods in 2019 was primarily a result of an increase in pre-commercialization activities related to valoctocogene roxaparvovec.

The increase in G&A expense was primarily due to impact of revaluation of non-USD denominated foreign currency balance sheet exposures.

We expect SG&A expense to increase in future periods as a result of the continued global expansion of Palynziq and pre-commercialization efforts related to valoctocogene roxaparvovec and vosoritide.

Contingent Consideration, Intangible Asset Amortization and Gain on Sale of Nonfinancial Assets

Changes during the periods presented for Intangible Asset Amortization and Contingent Consideration include:

	Three Months Ended March 31,		
	2020	2019	Change
Changes in the fair value of contingent consideration	$ —	$ 12.3	$ (12.3)
Amortization of intangible assets	15.7	7.5	8.2
Total intangible asset amortization and contingent consideration	$ 15.7	$ 19.8	$ (4.1)
Gain on sale of nonfinancial assets	$ 59.5	$ —	$ 59.5

Fair value of contingent consideration – there was no significant change in the fair value of the contingent consideration for the three months ended March 31, 2020. The changes in the fair value of the contingent consideration for the three months ended March 31, 2019 were attributable to changes in the estimated probability of achieving development milestones, which was primarily related to the continued progress of the Palynziq program toward the anticipated European MAA approval.

Amortization of intangible assets – the increase in the three months ended March 31, 2020 was primarily due to the Palynziq acquired in-process research and development assets that were placed into service following EU marketing approval in May 2019.

Gain on Sale of Nonfinancial Assets – we recognized a gain of $59.5 million in the three months ended March 31, 2020 due to the divestiture and sale of Firdapse. See Note 6 to our accompanying Condensed Consolidated Financial Statements for additional discussion on this transaction.

(In millions, except as otherwise disclosed)

Interest Income

We invest our cash equivalents and investments in U.S. government securities and other high credit quality debt securities in order to limit default and market risk. Interest income was comprised of the following:

	Three Months Ended March 31,		
	2020	2019	Change
Interest income	$ 5.2	$ 6.3	$ (1.1)

The decrease in interest income for the three months ended March 31, 2020 compared to 2019 was primarily due to lower investment balances compared to the prior period.

Interest Expense

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

	Three Months Ended March 31,		
	2020	2019	Change
Total interest expense	$ 6.9	$ 6.7	$ 0.2

The interest expense on convertible debt for the three months ended March 31, 2020 compared to 2019 was flat.

We expect interest expense to remain relatively flat over the next 12 months.

See Note 13 to the Consolidated Financial Statements included in our Annual Report on Form 10-K for the year ended December 31, 2019 for additional information related to our convertible debt.

Provision for Income Taxes

For the three months ended March 31, 2020, we recognized an income tax expense of $20.0 million compared to the three months ended March 31, 2019 when we recognized an income tax expense of $3.5 million. Tax expense was computed using a forecasted annual effective tax rate for the three months ended March 31, 2020 and 2019. Provision for income taxes for 2020 and 2019 consisted of state, federal and foreign current tax expense which was offset by tax benefits related to stock option exercises and deferred tax benefits from federal orphan drug credits and R&D credits.

On March 27, 2020, The Coronavirus Aid, Relief and Economic Security Act (CARES Act) was signed into law which lifts certain limitations originally imposed by the Tax Cuts and Jobs Act of 2017. The CARES Act allows taxpayers to now carryback net operating losses (NOLs) to the prior five years for NOLs originating during 2018 through 2020 and eliminates the 80% limitation allowing taxpayers to fully offset 100% of taxable income in 2018, 2019 or 2020. The CARES Act also allows taxpayers with alternative minimum tax credits to claim a refund in 2020 for the full amount rather than over a period of years. Taxpayers may generally deduct interest up to 50% of adjusted taxable income plus business interest income which was previously limited to 30% for tax years beginning January 1, 2019 and 2020. The CARES Act also raises the charitable deduction limit to 25% of taxable income and reinstates qualified improvement property eligible for 15-year classification and 100% bonus depreciation. The enactment of the CARES Act did not result in any material adjustments to our income tax provision for the three months ended March 31, 2020, or to our net deferred tax assets as of March 31, 2020.

Financial Position, Liquidity and Capital Resources

As of March 31, 2020, we had approximately $1.1 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. Our ability to raise additional capital may also be adversely impacted by potential worsening global economic conditions and the recent disruptions to, and volatility in, financial markets in the U.S. and worldwide resulting from the

(In millions, except as otherwise disclosed)

ongoing COVID-19 pandemic.

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. As of March 31, 2020, $185.8 million of our $1.1 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 18 to our Consolidated Financial Statements included in our Annual Report on Form 10-K for the year ended December 31, 2019.

We are mindful that conditions in the current macroeconomic environment could affect our ability to achieve our goals. We sell our products in certain 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 and adverse effects of the impact of the ongoing COVID-19 pandemic 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 March 31, 2020 and December 31, 2019 were as follows:

	March 31, 2020	December 31, 2019	Change
Cash and cash equivalents	$ 476.6	$ 437.4	$ 39.2
Short-term investments	381.8	316.4	65.4
Long-term investments	290.8	412.0	(121.2)
Cash, cash equivalents and investments	$ 1,149.2	$ 1,165.8	$ (16.6)
Convertible debt	$ 852.7	$ 848.1	$ 4.6

Our cash flows for the three months ended March 31, 2020 and 2019 are summarized as follows:

	2020	2019	Change
Cash and cash equivalents at the beginning of the period	$ 437.4	$ 494.0	$ (56.6)
Net cash used in operating activities	(15.2)	(54.9)	39.7
Net cash provided by (used in) investing activities	77.4	(50.5)	127.9
Net cash used in financing activities	(19.7)	(25.0)	5.3
Foreign exchange impact	(3.4)	0.8	(4.2)
Cash and cash equivalents at the end of the period	$ 476.6	$ 364.4	$ 112.2
Short-term and long-term investments	672.6	850.5	(177.9)
Cash, cash equivalents and investments	$ 1,149.2	$ 1,214.9	$ (65.7)

Cash Used in Operating Activities

Cash used in operating activities decreased by $39.7 million to $15.2 million in the three months ended March 31, 2020, compared to $54.9 million in the three months ended March 31, 2019. The decrease is primarily attributed to the timing of cash receipts from customers and payments to vendors partially offset by higher inventory levels.

Cash Provided by (Used in) Investing Activities

Net cash provided by investing activities increased by $127.9 million to $77.4 million in the three months ended March 31, 2020, compared to cash used in investing activities of $50.5 million during the three months ended March 31, 2019. The increase is primarily attributable to the receipt of $67.2 million in cash due to the divestiture and sale of Firdapse assets to a third party and higher net maturities of available-for-sale debt securities.

Cash Used in Financing Activities

Net cash used in financing activities decreased by $5.3 million to $19.7 million used in the three months ended March 31, 2020, compared to $25.0 million used during the three months ended March 31, 2019. The decrease is primarily attributed to an increase in proceeds from the exercise of awards under our equity incentive plans.

Other Information

Our $870.0 million (undiscounted) of total convertible debt as of March 31, 2020 will impact our liquidity due to the semi-annual cash interest payments. As of March 31, 2020, our indebtedness consisted of the 2020 Notes and the 2024 Notes (together with the 2020 Notes, the Notes), which, if not converted, will be required to be repaid in cash at maturity in October 2020 and August 2024, respectively. We will need cash not only to pay the ongoing interest due on the Notes during their term, but also to repay the principal amount of the Notes if not converted.

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 may use the remaining balance 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 2020 Notes. We may 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, particularly in light of the ongoing uncertainty due to the COVID-19 pandemic. We have reclassified all of the outstanding principal of the 2020 Notes as a current liability as there are fewer than twelve months remaining until maturity.

In October 2018, we entered into an unsecured revolving credit facility of $200.0 million (the 2018 Credit Facility). The 2018 Credit Facility includes a letter of credit subfacility and a swingline loan subfacility and is also intended to finance ongoing working capital needs and for other general corporate purposes. Borrowings under the 2018 Credit Facility bear interest, at our option, at a rate equal to either (a) the LIBOR rate, or LIBOR successor rate, plus an applicable margin ranging from 1.00% to 1.95% per annum, based upon our net leverage ratio and EBITDA for each of the two most recently ended four-quarter measurement periods, or (b) the Base Rate, generally the prime lending rate, plus an applicable margin ranging from 0.00% to 0.95%, based upon our net leverage ratio and EBITDA for each of the two most recently ended four-quarter measurement periods. Our obligations under the Credit Facility are guaranteed by our direct subsidiary, California Corporate Center Acquisition LLC, and such obligations may in the future be guaranteed from time to time by certain other material domestic subsidiaries. Commitment fees payable on the undrawn amount range from 0.15% to 0.35% per annum based upon our net leverage ratio and EBITDA for each of the two most recently ended four-quarter measurement periods. The 2018 Credit Facility matures on October 19, 2021 at which time all outstanding amounts become due and payable, except that if at least $100.0 million aggregate principal amount of the 2020 Notes remain outstanding on August 1, 2020 and certain other conditions have not been met, we may be required to repay all amounts borrowed under the 2018 Credit Facility on August 1, 2020. The 2018 Credit Facility contains financial covenants requiring us to maintain a minimum interest coverage ratio and a minimum liquidity requirement. As of March 31, 2020, there were no outstanding amounts due on nor any usage of the 2018 Credit Facility.

For additional discussion about our debt, see Note 13 - *Debt* included in our Annual Report on Form 10-K for the year ended December 31, 2019.

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:

- *The coronavirus, or COVID-19, pandemic could materially adversely affect our business, results of operations, and financial condition*
- *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 product candidates to produce sufficient quantities at acceptable costs, we may be unable to support a clinical trial or be forced to terminate a program, or if we are unable to produce sufficient quantities of our products at acceptable costs, we may be unable to meet commercial demand, 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.*
- *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.*

(In millions, except as otherwise disclosed)

Our investment in our product development programs and continued development of our existing commercial products has a major impact on our operating performance. Our R&D expenses for the period since inception as of March 31, 2020 were as follows:

		Since Program Inception
Palynziq	$	700.8
Valoctocogene roxaparvovec	$	624.6
Vosoritide	$	471.0
Brineura	$	334.5
PKU gene therapy	$	124.8
Other approved products	$	1,129.0

We may need or elect to increase our spending above our current long-term plans to be able 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; preclinical studies and clinical trials for our 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:

- 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 the manufacture of materials for use in such studies and trials);
- 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; and
- the progress of research programs carried out by us.

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, leases and other obligations related to R&D activities, purchase commitments, licenses and sales royalties with annual minimums.

As of March 31, 2020, we were also subject to contingent payments totaling approximately $355.4 million upon achievement of certain development and regulatory activities and commercial sales milestones if they occur before certain dates in the future. Of this amount, $66.0 million related to the acquisition of certain rights and other assets with respect to Kuvan and Palynziq from Merck Serono and $243.1 million related to programs that are no longer being developed.

As of March 31, 2020, we recorded $50.5 million of contingent consideration on our Condensed Consolidated Balance Sheets, all of which was long-term.

Other than as set forth above, there have been no material changes to our contractual and commercial obligations during the three months ended March 31, 2020, as compared to the obligations disclosed in Management's Discussion and Analysis in our Annual Report on Form 10-K for the year ended December 31, 2019.

See Note 17 to our accompanying Condensed Consolidated Financial Statements for additional discussion on our commitments.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Our market risks during the three months ended March 31, 2020 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, 2019.

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 Acting 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 Acting Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of March 31, 2020.

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 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, 2019, which was filed with the SEC on February 27, 2020.

Risks Related to Our Business

***The coronavirus, or COVID-19, pandemic could materially adversely affect our business, results of operations, and financial condition.**

On January 30, 2020, the World Health Organization (the WHO) declared that the recent novel coronavirus disease (COVID-19) outbreak was a public health emergency of international concern, and on March 11, 2020, the WHO declared the COVID-19 outbreak a pandemic. The outbreak of COVID-19 has resulted in travel restrictions, quarantines, “work-at-home” and “shelter-in-place” orders and extended shutdown of certain businesses around the world, including in many countries in which we operate. Although we did not see a material impact on our product revenues in the first quarter of 2020, we are expecting an impact on our near-term financial results, and other parts of our business have been, and continue to be, impacted by the outbreak. Ongoing and future effects of COVID-19 (or any future pandemic) on all aspects of our operations, and the duration of such effects, are highly uncertain and difficult to predict. We anticipate that COVID-19 will likely have a significant adverse impact on our business, results of operations, and financial condition.

The continued spread of COVID-19 could adversely affect our product development programs, including preclinical study and clinical trial operations. We may be unable to initiate or continue conducting clinical trials as planned due to the prioritization of hospital resources toward the outbreak, difficulty in recruiting and retaining healthcare providers and staff due to their diversion toward treating COVID-19 patients or their heightened exposure to COVID-19, potential unwillingness of patients to enroll or continue in trials for fear of exposure to COVID-19 at sites, or the inability of patients to comply with clinical trial protocols as quarantines or travel restrictions impede patient movement or otherwise interrupt healthcare services. For example, we are expecting delays in certain clinical trials and have had to reevaluate expected timelines for those trials. In addition, we rely on independent clinical investigators, contract research organizations (CROs) and other third-party service providers to assist us in managing, monitoring and otherwise carrying out our preclinical studies and clinical trials, and the outbreak may affect their ability to devote sufficient time and resources to our programs or to travel to sites to perform work for us. Additionally, COVID-19 could postpone necessary interactions with regulators regarding our products in development and could delay review or approval of our regulatory submissions. For example, we expect European Medicines Agency (EMA) action dates to be extended by at least three months due to COVID-19 delays and, as is the case with most filings that initially receive accelerated assessment, we believe there is a high possibility that our Marketing Authorization Application (MAA) for valoctocogene roxaparvovec will revert to a standard review. Because of the combination of these events, we now expect an EMA approval decision in late 2020 or early 2021, rather than earlier in 2020.

COVID-19 could adversely affect our ability to source materials and supplies and successfully manufacture and distribute our product candidates and products. The outbreak could result in reduced operations of third-party suppliers of raw materials and supplies upon whom we rely or otherwise limit our ability to obtain sufficient materials and supplies necessary for production of our therapies. Our manufacturing facilities and those of our contract manufacturers are located in areas impacted by COVID-19, which may result in delays or disruptions in our ability to produce product candidates and products. If we or any third party in our supply or distribution chain are adversely impacted by the COVID-19 outbreak, including required closures, staffing shortages, production slowdowns and disruptions in delivery systems, our operations may be disrupted, limiting our ability to manufacture and distribute our product candidates for clinical trials and research and development operations and our products for commercial sales.

Our commercial operations also may be adversely impacted by the COVID-19 pandemic. Many of our products are administered via infusions in a clinic or hospital setting and/or by a healthcare professional. Treating COVID-19 patients has become the priority for many healthcare facilities and workers, so it has become, and may continue to be, difficult for some of our patients to receive our therapies that are administered by infusion. Although we are working with our patients and providers to find alternative arrangements where necessary, like providing infusions at home, we may not be able to accommodate all patients and doses that are missed may never be recouped. Moreover, some patients may choose to skip infusions because they do not want to risk exposure to COVID-19 by having a healthcare provider administer the therapy at a healthcare facility or at home. The pandemic has also hindered our ability to find new patients and start treating newly found patients, and it has limited our sales force's ability to promote our products to distributors, hospitals, clinics, doctors and pharmacies, which could adversely affect our revenues and results of operations.

In addition, COVID-19 could adversely affect our workforce and the employees of companies with which we do business, thereby disrupting our business operations. We have implemented work-at-home policies for employees whose jobs do not require them to be onsite. Increased reliance by us and the companies with which we do business on personnel working from home may negatively impact productivity, increase cyber security risk, create data accessibility issues, increase the risk for communication disruptions, or otherwise disrupt or delay normal business operations. For our employees whose jobs require them to be onsite, we have taken precautions to avoid the spread of COVID-19 among our employees, but we cannot guarantee our workforce will not face an outbreak that could adversely impact our operations.

While the long-term economic impact and the duration of the COVID-19 outbreak may be difficult to predict, the widespread pandemic has resulted in, and may continue to result in, significant disruption of global financial markets, which could reduce our ability to access capital and could negatively affect our liquidity and the liquidity and stability of markets for our common stock and convertible notes. In addition, a recession, further market correction or depression resulting from the spread of COVID-19 could materially adversely affect our business and the value of our common stock and convertible notes.

To the extent the COVID-19 pandemic adversely affects our business and financial results, it may also have the effect of heightening many of the other risks described in this Risk Factors section, such as those relating to our conducting a significant amount of our sales and operations outside of the United States (U.S.), exposure to changes in foreign exchange rates, our substantial indebtedness, our need to generate sufficient cash flows to service our indebtedness and finance our operations, our ability to comply with the covenants contained in the agreements that govern our indebtedness and the volatility of our stock price.

If we fail to obtain and maintain 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 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. Similarly, regulatory authorities may approve a product candidate for fewer or more limited indications than requested or may grant approval subject to the performance of post-marketing studies. In addition, regulatory authorities may not approve the labeling claims that are necessary or desirable for the successful commercialization of our product candidates.

We have had fewer interactions with regulatory authorities outside the U.S. and the European Union (EU) as compared to our interactions with the FDA and EMA. The approval procedures vary among countries and can involve additional clinical testing, and the time required to obtain approval may differ from that required to obtain FDA or EMA approval. Moreover, clinical trials conducted in one country may not be accepted by regulatory authorities in other countries. Approval by the FDA or EMA does not ensure approval by regulatory authorities in other countries, and approval by one or more foreign regulatory authorities does not ensure approval by regulatory authorities in other foreign countries or by the FDA or EMA. However, a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory process in others. The foreign regulatory approval process may include all of the risks associated with obtaining FDA or EMA approval. We may not obtain foreign regulatory approvals on a timely basis, if at all. We may not be able to file for regulatory approvals and even if we file we may not receive necessary approvals to commercialize our product candidates in any market.

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 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.

Although the FDA and the EMA have programs to facilitate expedited development and 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. Moreover, if original FDA approval for one of our product candidates is granted via the accelerated approval pathway, we may be required to conduct a post-marketing confirmatory trial to verify and describe the clinical benefit in support of full approval. An unsuccessful post-marketing study or failure to complete such a study with due diligence could result in the withdrawal of the FDA's marketing approval for a product candidate. If we fail to obtain and maintain regulatory approval for our product candidates, we will be unable to market and sell those product candidates, which would have a negative effect on our business and financial condition.

With respect to valoctocogene roxaparvovec, we may experience challenges specific to gene therapy 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, the FDA has only approved a very small number of vector-based gene therapy products 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 valoctocogene roxaparvovec 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.

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 are not well-established areas, 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 development and 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, and Palynziq has received regulatory approval to be commercially marketed in the U.S. and 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, import and export requirements and record keeping.

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. The requirement for a REMS program can materially affect the potential market for and profitability of a drug. 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. In particular, a product may not be promoted for uses that are not approved by the FDA as reflected in the product’s approved labeling. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant civil, criminal and administrative penalties. 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 available if a sponsor can establish: that the medicine is intended for the diagnosis, prevention or treatment of (1) a life-threatening or chronically debilitating condition affecting no more than five in 10,000 people in the EU, which is equivalent to around 250,000 people or fewer or (2) a life-threatening, seriously debilitating or serious and chronic condition in the EU and that without incentives it is unlikely that the marketing of the medicinal product in the EU would generate sufficient return to justify the necessary investment. For either of these conditions, the applicant must demonstrate that there exists no satisfactory method of diagnosis, prevention or treatment of the condition in question that has been authorized in the EU or, if such method exists, the medicinal product will be of significant benefit to those affected by that condition. 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. In addition, the FDA may approve another drug during a period of orphan drug exclusivity if the second drug is found to be clinically superior to the first drug. In the EU, a ten-year period of market exclusivity (extendable to twelve years for medicines that have complied with an agreed pediatric investigation plan pursuant to Regulation 1901/2006) is available. Orphan drug marketing exclusivity may be lost in the EU if a manufacturer is unable to supply sufficient quantities and marketing authorization may also be granted to a similar medicinal product with the same orphan indication if this medicinal product is safer, more effective or otherwise clinically superior to the original orphan medicinal product. The period of market exclusivity may, in addition, be reduced to six years if, at the end of the fifth year, it can be demonstrated on the basis of available evidence that the criteria for its designation as an orphan medicine are no longer satisfied, for example if the original orphan medicinal product has become sufficiently profitable not to justify maintenance 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 certain biologics and gene therapies, it is uncertain how similarity between product candidates designed to treat the same rare disease or condition may affect such product candidates' orphan drug exclusivities. 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 Biologics License Application (BLA) and approval by the FDA prior to being marketed in the U.S. 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. A similar abridged marketing authorization process is available to biosimilar products in the EU. 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. The BPCIA establishes a period of 12 years of exclusivity for reference products. In Europe, a medicinal product containing a new active substance benefits from eight years of data exclusivity, during which biosimilar applications referring to the data of that product may not be accepted by the regulatory authorities, and a further two years of market exclusivity, during which such biosimilar products may not be placed on the market. The two-year period may be extended to three years if during the first eight years a new therapeutic indication with significant clinical benefit over existing therapies is approved. Our products approved under BLAs in the U.S. or MAAs in Europe, as well as products in development that may be approved under those regimes 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. Likewise, preliminary, initial or interim data from clinical trials should be considered carefully and with caution since the final data may be materially different from the preliminary, initial or interim data, particularly as more patient data become available.

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. The number of preclinical studies and clinical trials that regulatory authorities require varies 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. From time to time, we have and may in the future publish or report preliminary, initial or interim data from our clinical trials, such as the data we have announced from the GENEr-8-1 study for valoctocogene roxaparvovec. Preliminary, initial or interim data from our clinical trials may not be indicative of the final results of the trial and are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and/or more patient data become available. In this regard, such data may show initial evidence of clinical benefit, but as patients continue to be followed and more patient data become available, there is a risk that any therapeutic effects will not be durable in patients and/or will decrease over time or cease entirely. Preliminary, initial or interim data also remain subject to audit and verification procedures that may result in the final data being materially different from such preliminary, initial or interim data. As a result, preliminary, initial or interim data should be considered carefully and with caution until the final data are available.

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 preclinical 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 program is based on a gene therapy approach, which, as a novel technology, presents additional development and treatment 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 more traditional pharmaceutical drugs, there are additional, unique development and treatment 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 little or too much of the desired protein or RNA. Although a one-time administration of a gene therapy product like our product candidate valoctocogene roxaparvovec is intended to correct an inborn genetic defect for the entire lifetime of a patient, there is a risk that the therapeutic effect will not be durable and production of the desired protein or RNA will decrease over time or cease entirely. Because the treatment is irreversible, there may be challenges in managing side effects, particularly those caused by potential overproduction of the desired protein. 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.

As compared to our other, more traditional products, our gene therapy product candidate valoctocogene roxaparvovec, if approved, may present additional problems with respect to the pricing, coverage, and reimbursement and acceptance of the product candidate.

In addition to the risks set forth in this Risk Factors section associated with commercializing more traditional pharmaceutical drugs, there are additional, unique commercial risks associated with gene therapy products like our product candidate valoctocogene roxaparvovec. Due to the relative novelty of gene therapy and the potential to provide extended duration therapeutic treatment with a one-time administration, we 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 sufficient revenues from our investment in the development of valoctocogene roxaparvovec.

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 third-party 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. Moreover, physicians and patients may delay acceptance of valoctocogene roxaparvovec until the product candidate has been on the market for a certain amount of time. Negative public opinion or more restrictive government regulations could have a negative effect on our business and financial condition and may delay or impair the successful commercialization of, and demand for, valoctocogene roxaparvovec

We have implemented a data access plan for valoctocogene roxaparvovec, which restricts our management's review of emerging data from these trials. Without access to ongoing data, management does not have the ability to adjust the trials based on such emerging data, which could adversely impact the ultimate outcome of these trials.

In order to preserve the scientific integrity of the valoctocogene roxaparvovec trials and to allow us to only report on data at intervals that we believe will be meaningful to investors, we have implemented a data access plan related to the ongoing open label trials, which is designed to significantly mirror blinded trials. Pursuant to this plan, the ongoing emerging data are generally not collected by us, with the exception that certain specific data points are collected and reviewed by a small group of medical personnel monitoring and managing the trial, and then, only to the extent necessary to allow them to perform their monitoring responsibilities. As we disclose and publicly discuss prior data from these trials, such discussions do not incorporate any of the currently emerging data that are being collected and reviewed by personnel monitoring the trial and, accordingly, this prior data may differ significantly from more recent data that are only available to such personnel. Further, since our management does not have access to any of the ongoing data and does not have the ability to adjust the trials based on such emerging data, the data access plan could adversely impact the ultimate outcome of the trials.

If we continue to incur operating losses or are unable to sustain positive cash flows 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. 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 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 March 31, 2020, we had cash, cash equivalents and investments totaling $1.1 billion and long-term debt obligations of $870.0 million (undiscounted), which consisted of 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 2020 Notes, the Notes), which, if not converted, will be required to be repaid in cash at maturity in October 2020 and August 2024, respectively. We will need cash not only to pay the ongoing interest due on the Notes during their term, but also to repay the principal amount of the Notes if not converted.

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 make certain payments to Merck Serono if sales and development milestones are achieved. The remaining milestone payments that may become payable include up to a maximum of €60 million, in cash, if future sales milestones are met with respect to Kuvan and Palynziq.

We may require additional financing to fund the repayment of the 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 Kuvan and Palynziq milestones under the termination agreements with Merck Serono;
- 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;

- Sanofi Genzyme's (Genzyme) 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 March 31, 2020, we had $870.0 million (undiscounted) principal amount of indebtedness, including $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 October 2018, we also entered into an unsecured credit agreement (the 2018 Credit Facility) with Bank of America, N.A., as the administrative agent, swingline lender and a lender, Citibank N.A. as letter of credit issuer and each of Merrill Lynch, Pierce, Fenner & Smith Incorporated, Citibank, N.A. and Wells Fargo Securities, LLC as joint lead arrangers and joint bookrunners, providing up to $200.0 million in revolving loan commitments. 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 2018 Credit Facility contains, 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 2018 Credit Facility, the outstanding borrowings thereunder could become immediately due and payable, the 2018 Credit Facility 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 the 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 2018 Credit Facility.

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 2020 Notes and 2024 Notes, which, if not converted, will be required to be repaid in cash at maturity in October 2020 and August 2024, respectively. In addition, 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, and the 2020 Notes will be freely convertible on or after July 15, 2020. We may 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.

We were required under applicable accounting rules to reclassify the outstanding principal of the 2020 Notes as a current rather than long-term liability (because there are 12 months or less remaining until maturity), which resulted in a material reduction of our net working capital.

In addition, we also may borrow up to $200.0 million in revolving loans under the 2018 Credit Facility, which would be required to be repaid in cash at maturity on October 19, 2021, except that if at least $100.0 million aggregate principal amount of the 2020 Notes remains outstanding on August 1, 2020 and certain other conditions have not been met, we may be required to repay all amounts borrowed under the 2018 Credit Facility on August 1, 2020.

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 for the manufacture of Palynziq, and it has been approved by the FDA, the European Commission (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 product candidates to produce sufficient quantities at acceptable costs, we may be unable to support a clinical trial or be forced to terminate a program, or if we are unable to produce sufficient quantities of our products at acceptable costs, we may be unable to meet commercial demand, lose potential revenue, have reduced margins or be forced to terminate a program.

Due to the complexity of manufacturing our product candidates and products, we may not be able to manufacture sufficient quantities. Our inability to produce enough of our product candidate at acceptable costs may result in the delay or termination of development programs. With respect to our commercial portfolio, we may not be able to manufacture our 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.

With respect to valoctocogene roxaparvovec, gene therapy products are relatively novel and complex 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. We invested a considerable amount of capital building our own commercial gene therapy manufacturing facility, which may be subject to significant impairment if our gene therapy programs are unsuccessful. As we develop, seek to optimize and operate the valoctocogene roxaparvovec manufacturing process, we will likely face technical and scientific challenges, considerable capital costs, and potential difficulty in recruiting and hiring experienced, qualified personnel. There may also be unexpected technical or operational issues during clinical or commercial manufacturing campaigns. As a result, we could experience manufacturing delays that prevent us from completing our clinical studies in a timely manner, if at all, or commercializing valoctocogene roxaparvovec on a profitable basis, if at all.

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, Palynziq 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.

We have entered into contractual relationships with third-party manufacturers to produce active ingredients in Kuvan and Palynziq. If those manufacturers are unwilling or unable to fulfill their contractual obligations, we may be unable to meet demand for Kuvan and Palynziq, 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 Kuvan and Palynziq. We also currently rely on third parties for portions of the manufacture of Aldurazyme, Brineura, Naglazyme, Palynziq 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 and adversely affect our financial results and financial condition.

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. Obtaining coverage and adequate reimbursement for our products may be particularly difficult because of the higher prices often associated with drugs administered under the supervision of a physician. 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 and may continue to 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. With respect to valoctocogene roxaparvovec, if the product candidate is approved, we will face a highly developed and competitive market for hemophilia A treatments. As we commercialize valoctocogene roxaparvovec, if approved, we may face intense competition from large pharmaceutical companies with extensive resources and established relationships in the hemophilia A community. 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 in all the markets in which we sell our products. 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 and enacted legislation 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. Further, Congress and the executive branch have each indicated that they will continue to seek new legislative and/or administrative measures to control drug costs. 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 and continue to propose revenue caps limiting the annual volume of sales of our products. Some of these caps are significantly below the actual demand in certain countries, and if the trend regarding revenue caps continues, 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. In 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, it has enacted laws that modify certain provisions of the PPACA such as removing penalties for not complying with the PPACA's individual mandate to carry health insurance, delaying the implementation of certain ACA-mandated fees, and increasing the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D. Additionally, on December 14, 2018, a Texas U.S. District Court Judge ruled that the PPACA is unconstitutional in its entirety because the individual mandate was repealed by Congress as part of the Tax Cuts & Jobs Act. While the Texas U.S. District Court Judge, as well as the current U.S. Presidential administration and the Centers for Medicare and Medicaid Services (CMS), have stated that the ruling will have no immediate effect pending appeal of the decision, it is unclear how this decision, subsequent appeals, and other efforts to repeal and replace the PPACA will impact the PPACA and our business. 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 in the U.S. or abroad, 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 in countries worldwide over the manner in which manufacturers set prices for their marketed products.

In the U.S., there have been several recent congressional inquiries and proposed and enacted federal and state legislation 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. For example, at the federal level, the U.S. Presidential administration's budget proposal for the fiscal year 2021 includes a $135.0 billion allowance to support legislative proposals seeking to reduce drug prices, increase competition, lower out-of-pocket drug costs for patients, and increase patient access to lower-cost generic and biosimilar drugs. Moreover, the U.S. Presidential administration previously 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. Although a number of these and other measures may require additional authorization 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. Moreover, 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.

Likewise, in many EU countries, legislators and other policymakers continue to propose and implement healthcare cost-containing measures in response to the increased attention being paid to healthcare costs in the EU. Certain of these changes could impose limitations on the prices we will be able to charge for our products and any approved product candidates or the amounts of reimbursement available for these products from governmental and private third-party payers, may increase the tax obligations on pharmaceutical companies or may facilitate the introduction of generic competition with respect to our products. Further, an increasing number of EU countries and other foreign countries use prices for medicinal products established in other countries as "reference prices" to help determine the price of the product in their own territory. Consequently, a downward trend in prices of medicinal products in some countries could contribute to similar downward trends elsewhere. Moreover, in order to obtain reimbursement for our products in some countries, we may be required to conduct clinical trials that compare the cost-effectiveness of our products to other available therapies.

Legally mandated price controls on payment amounts by governmental and private third-party payers or other restrictions could harm our business, results of operations, financial condition and prospects. 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, 2019, filed with the SEC on February 27, 2020.

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 healthcare laws or privacy and data protection laws, we may be required to pay penalties, be subjected to scrutiny by regulators or governmental entities, or be suspended from participation in government healthcare programs, which may adversely affect our business, financial condition and results of operations.

We are subject to various healthcare laws and regulations in the U.S. and internationally, including anti-kickback laws, false claims laws, data privacy and security laws, and laws related to ensuring compliance. In the U.S., 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.

In addition, recent healthcare reform legislation has strengthened these laws in the U.S. 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 civil False Claims Act.

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, integrity, availability, 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. The global data protection landscape is rapidly evolving, and implementation standards and enforcement practices are likely to remain uncertain for the foreseeable future. In the United States, California recently enacted the California Consumer Privacy Act (CCPA), which took effect on January 1, 2020. The CCPA gives California residents expanded rights to access and delete their personal information, opt out of certain personal information sharing, and receive detailed information about how their personal information is used. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation. The CCPA has increased our compliance costs and may increase our potential liability. Some observers have noted that the CCPA could mark the beginning of a trend toward more stringent privacy legislation in the U.S., which could increase our potential liability and adversely affect our business.

The European Regulation 2016/679, known as the General Data Protection Regulation (GDPR), as well as EU Member State implementing legislations, apply to the collection and processing of personal data, including health-related information, by companies located in the EU, or in certain circumstances, by companies located outside of the EU and processing personal information of individuals located in the EU. These laws impose strict obligations on the ability to process personal data, including health-related information, in particular in relation to their collection, use, disclosure and transfer. These include several requirements relating to (i) obtaining, in some situations, the consent of the individuals to whom the personal data relates, (ii) the information provided to the individuals about how their personal information is used, (iii) ensuring the security and confidentiality of the personal data, (iv) the obligation to notify regulatory authorities and affected individuals of personal data breaches, (v) extensive internal privacy governance obligations, and (vi) obligations to honor rights of individuals in relation to their personal data (for example, the right to access, correct and delete their data). The GDPR prohibits the transfer of personal data to countries outside of the European Economic Area (EEA), such as the United States, which are not considered by the European Commission to provide an adequate level of data protection. Switzerland has adopted similar restrictions. Although there are legal mechanisms to allow for the transfer of personal data from the EEA and Switzerland to the United States, they are subject to legal challenges and uncertainty about compliance with EU data protection laws remains.

Potential pecuniary fines for noncompliant companies may be up to the greater of €20 million or 4% of annual global revenue. The GDPR has increased our responsibility and liability in relation to personal data that we process, and we may be required to put in place additional potential mechanisms to ensure compliance with the new EU data protection rules.

Substantial new laws and regulations affecting compliance have also been adopted in the U.S. and certain foreign countries, which may require us to modify our business practices with healthcare practitioners. For example, in the U.S., 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. Effective January 1, 2022, manufacturers will also be required to report on payments or transfers of value to physician assistants, nurse practitioners or clinical nurse specialists, certified registered nurse anesthetists, and certified nurse-midwives. In addition, there has been a recent trend of increased state regulation of payments made to physicians. Certain states and/or local jurisdictions 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, the registration of pharmaceutical sales representatives and/or the tracking and reporting of gifts, compensation and other remuneration to physicians, marketing expenditures, and drug pricing. Likewise, in many foreign countries there is an increasing focus on the relationship between drug companies and healthcare practitioners. Recently enacted foreign legislation creates reporting obligations on payments, gifts and benefits made to these professionals; however, implementing regulations enacting such laws are still pending and subject to varying interpretations by courts and government agencies. The shifting regulatory environment and the need to implement systems to comply with multiple jurisdictions with different compliance and/or reporting requirements increases the costs of maintaining compliance and the possibility that we may violate one or more of the requirements and be subject to fines or sanctions.

Due to the breadth of the healthcare and privacy and data protection laws described above, 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. If we are found in violation of one of these laws, we may be subject to significant 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, and debarment, suspension or exclusion from participation in government 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, Brineura, Kuvan, Naglazyme and Vimizim are generated from countries other than the U.S. Similarly, we expect a significant portion of the sales of Palynziq 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
- rapidly evolving global laws and regulations relating to data protection and the privacy and security of 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.

The U.K.'s withdrawal from the EU may have a negative effect on global economic conditions, financial markets and our business, which could adversely affect our revenue and results of operations.

In June 2016, a majority of the eligible members of the electorate in the United Kingdom (U.K.) voted to withdraw from the EU in a national referendum (Brexit). On March 29, 2017, the U.K.'s Prime Minister formally delivered the notice of withdrawal. After significant negotiation between the U.K. and the EU, the withdrawal of the U.K. from the EU took effect on January 31, 2020. There is now a transition period while the U.K. and EU negotiate additional arrangements, including their future trading terms. The U.K. has stated that it wants the transition period to expire, and the future trading terms to be agreed, by December 31, 2020.

The uncertainties regarding the U.K.'s future relationship with the EU, have had and may continue to have an adverse effect on global economic conditions and the stability of global financial markets. In particular, depending on what terms are agreed between the U.K. and the EU, if any, it could lead to a period of considerable uncertainty in relation to global financial and banking markets, as well as on regulatory processes in Europe and the EEA. Lack of clarity about future U.K. laws and regulations as the U.K. determines which EU rules and regulations to replace or replicate, including financial laws and regulations, tax and free trade agreements, intellectual property rights, supply chain logistics, environmental, health and safety laws and regulations, immigration laws and employment laws, could decrease foreign direct investment in all markets, increase costs, depress economic activity and restrict access to capital.

If the U.K. and the EU are unable to negotiate acceptable future trading terms or if other EU countries pursue withdrawal, barrier-free access between the U.K. and other EU or EEA countries could be diminished or eliminated, which could make our doing business in the EU more difficult. As a result of Brexit, we may face disruptions in our supply chain, inventory management, manufacturing process and product distribution network, which could adversely affect our business and results of operations. Moreover, Brexit may also lead to new regulatory costs and challenges that could have a material adverse effect on our operations. The EMA has issued guidance to marketing authorization holders of centrally authorized medicinal products regarding certain requirements that need to be considered as part of Brexit, such as the requirement for the marketing authorization holder of a product centrally approved by the EC to be established in the EU, and the requirement for some activities relating to centrally approved products, such as batch release and pharmacovigilance, be performed in the EU. Furthermore, there are few indications of the effect Brexit will have on the pathway to obtaining marketing approval for any of our product candidates in the U.K.

U.S. export control and economic sanctions may adversely affect our business, financial condition and operating results. Moreover, compliance with such regulatory requirements may increase our costs and negatively impact our ability to sell our products and collect cash from customers.

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 hinder our 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 could be subject to substantial civil or criminal penalties, including the possible loss of export or import privileges and fines.

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.

Moreover, U.S. export control and economic sanctions may make operating in certain countries more difficult and expensive. For example, we may be unable to find distributors or financial institutions willing to facilitate the sale of our products and collection of cash from such sales in a cost-effective manner, if at all.

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 U.K. 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.

Moreover, there has been enhanced scrutiny of company-sponsored patient assistance programs, including insurance premium and co-pay assistance programs and donations to third-party charities that provide such assistance. There has also been enhanced scrutiny by governments on reimbursement support offerings, clinical education programs and promotional speaker programs. If we, our third-party agents or donation recipients are deemed to have failed to comply with laws, regulations or government guidance in any of these areas, we could be subject to criminal or civil sanctions. Any similar violations by our competitors could also negatively impact our industry reputation and increase scrutiny over our business and our products

Changes in funding for the FDA, the EMA and other government agencies or government shutdowns could hinder the ability of such agencies to hire and retain key leadership and other personnel or otherwise prevent those agencies from performing normal functions on which the operation of our business may rely, which could negatively impact our business.

Changes in funding levels of government agencies can affect their ability to hire and retain key personnel and carry out their normal functions that support our business. For example, the ability of the FDA to timely review and approve INDs or marketing authorizations for our product candidates may be hindered by a lack of resources and qualified personnel. In addition, funding of other government agencies on which our operations rely, including those that fund research and development activities, is subject to the political budget process, which is inherently fluid and unpredictable.

Government shutdowns could also impact the ability of government agencies to function normally and support our operations. For example, the U.S. federal government has shut down repeatedly since 1980, including for a period of 35 days beginning on December 22, 2018. During a shutdown, certain regulatory agencies, such as the FDA, have had to furlough key personnel and stop critical activities. If a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

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 Great British Pound, the Canadian Dollar and several other currencies, changes in those currencies relative to the U.S. Dollar (USD) will impact our revenues and expenses. If the USD 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 USD 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 USD, changes in currency exchange rates between the USD 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 certain 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) has 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.
- Patents have limited duration and expire. For example, certain of our patents related to Aldurazyme expired in November 2019 and the other patents related to Aldurazyme expire in 2020.
- 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.
- 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 our 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 depend 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, 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.

The sale of generic versions of Kuvan by generic manufacturers may adversely affect our revenue and results of operations.

The Drug Price Competition and Patent Term Restoration Act of 1984, known as the Hatch-Waxman Act, permits the FDA to approve abbreviated new drug applications (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.

Between 2014 and 2016 we received paragraph IV notice letters from two pharmaceutical companies notifying us that each had filed ANDAs seeking approval of proposed generic versions of Kuvan. We filed lawsuits alleging patent infringement against each company, and between 2015 and 2017 we entered into settlement agreements with the companies that resolved the patent litigation in the U.S. The settlement agreements granted the companies non-exclusive licenses to our Kuvan-related patents to allow them to market generic versions of sapropterin dihydrochloride in the U.S. for the indications approved for Kuvan beginning on October 1, 2020, or earlier under certain circumstances. We expect generic versions of Kuvan to first become available in the U.S. in the fourth quarter of 2020.

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 any ANDA filer we bring suit against 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 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 there is a process equivalent to the ANDA process under Article 10 of Directive 2001/83/EC in the EU. 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 systems and any failure, inadequacy, interruption or security lapse of that technology, including any cybersecurity incidents, could harm our ability to operate our business effectively and have a material adverse effect on our business, reputation, financial condition, and results of operations.

We rely significantly on our information technology systems to effectively manage and maintain our operations, 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 or attacks, could harm our ability to operate our business effectively. Our ability to manage and maintain our operations, 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 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 operations, inventory and internal reports, and result in delays in product fulfillment and reduced efficiency of our operations.

As part of our business, we collect, store and transmit large amounts of confidential information, proprietary data, intellectual property and personal data. The information and data processed and stored in our technology systems, and those of our research collaborators, CROs, contract manufacturers, suppliers, distributors, or other third parties for which we depend to operate our business, may be vulnerable to loss, damage, denial-of-service, unauthorized access or misappropriation. Such cybersecurity breaches may be the result of unauthorized activity by our employees or contractors or malware, hacking, business email compromise, phishing or other cyberattacks directed by third parties. While we have implemented measures to protect our information and data, our efforts may not be successful.

We have experienced and may continue to experience cybersecurity incidents. Although to our knowledge we have not experienced any material incident or interruption to date, if such an event were to occur it could result in a material disruption of our development programs and commercial operations, including due to a loss, corruption or unauthorized disclosure of our trade secrets, personal data or other proprietary or sensitive information. Moreover, the costs to us to investigate and mitigate cybersecurity incidents could be significant. For example, the loss of clinical trial data could result in delays in our product development or regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Any security breach that results in the unauthorized access, use or disclosure of personal data may require us to notify individuals, governmental authorities, credit reporting agencies, or other parties pursuant to privacy and security laws and regulations or other obligations. Such a security compromise could harm our reputation, erode confidence in our information security measures, and lead to regulatory scrutiny. To the extent that any disruption or security breach resulted in a loss of, or damage to, our data or systems, or inappropriate disclosure of confidential, proprietary or personal information, we could be exposed to a risk of loss, enforcement measures, penalties, fines, indemnification claims, litigation and potential civil or criminal liability, which could materially adversely affect our business, financial condition and results of operations.

If a natural disaster, terrorist or criminal activity or other unforeseen event caused significant damage to our facilities or those of our third-party manufacturers and suppliers or significantly disrupted our operations or those 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.

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 the ability for us or our third-party manufacturers to manufacture our products and product candidates. Our Galli Drive facility, located in Novato, California, is currently our only manufacturing facility for Aldurazyme, Naglazyme and Palynziq and is one of two manufacturing facilities for Brineura and Vimizim. Our gene therapy manufacturing facility is also located in Novato, California, and it is currently our only manufacturing facility to support valoctocogene roxaparvovec clinical development activities and the anticipated commercial demand for valoctocogene roxaparvovec, if approved. These facilities are located in the San Francisco Bay Area near known earthquake fault zones and are 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, 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 our products, or to have our products manufactured, could be seriously, or potentially completely, impaired, and our commercialization efforts and revenue could be seriously impaired.

Moreover, other unforeseen events, such as power outages, could significantly disrupt our operations or those of our third-party manufacturers and suppliers, which could result in significant delays in the manufacture of our products and adversely impact our commercial operations and revenues. Pacific Gas and Electric Company, the electric utility in the San Francisco Bay Area where many of our facilities are located, commenced widespread blackouts during the fall of 2019 to avoid and contain wildfires sparked during strong wind events by downed power lines or equipment failures. While we have not experienced damage to our facilities or material disruption to our operations as a result of these power outages, ongoing blackouts, particularly if prolonged or frequent, could impact our business going forward. 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.

***Changes in tax laws or regulations that are applied adversely to us or our customers may have a material adverse effect on our business and financial condition.**

New tax laws or regulations could be enacted at any time, and existing tax laws or regulations could be interpreted, modified or applied in a manner that is adverse to us or our customers, which could adversely affect our business and financial condition. For example, legislation enacted in 2017, informally titled the Tax Cuts and Jobs Act (TCJA), enacted many significant changes to the U.S. tax laws, including changes in corporate tax rates, the application of certain tax credits (including a reduction of tax credits under the Orphan Drug Act), the deductibility of expenses, the utilization of net operating losses (NOLs) and other deferred tax assets, and the taxation of foreign earnings. Future guidance from the Internal Revenue Service and other tax authorities with respect to the TCJA may affect us, and certain aspects of the TCJA could be repealed or modified in future legislation. For example, the Coronavirus Aid, Relief, and Economic Security Act, or CARES Act, enacted on March 27, 2020, modified certain provisions of the TCJA, including provisions relating to NOL utilization. In addition, it is uncertain if and to what extent various states will conform to the TCJA, the CARES Act, or any newly enacted federal tax legislation. The impact of changes under the TCJA, the CARES Act, or future reform legislation could increase our future U.S. tax expense and could have a material adverse impact on our business and financial condition.

Moreover, changes in the tax laws of foreign jurisdictions could arise as a result of the base erosion and profit shifting (BEPS) project that was undertaken by the Organization for Economic Co-operation and Development (OECD). The OECD, which represents a coalition of member countries, recommended changes to numerous long-standing tax principles related to transfer pricing. These changes, as adopted by countries, may increase tax uncertainty and may adversely affect our provision for income taxes, results of operations and cash flows. It is not uncommon for taxing authorities in different countries to have conflicting views, for instance, with respect to, among other things, the manner in which the arm's length standard is applied for transfer pricing purposes, or with respect to the valuation of intellectual property. If tax authorities successfully challenge our transfer prices as not reflecting arm's length transactions, they could require us to adjust our transfer prices and thereby reallocate our income to reflect these revised transfer prices, resulting in a higher tax liability. In addition, if a country from which income is reallocated does not agree with the reallocation, both that country and the other country to which the income was allocated could tax the same income, potentially resulting in double taxation. If tax authorities were to allocate income to a higher tax jurisdiction, subject our income to double taxation or assess interest and penalties, it would increase our consolidated tax liability, which could adversely affect our business, financial condition, results of operations and cash flows.

Furthermore, in April 2020, we became aware of a tax regulation in a foreign jurisdiction that could be interpreted to apply to certain of our previous transactions. We are evaluating whether the interpretation of this regulation could apply to our facts and circumstances, and, upon conclusion of our analysis, we may establish a reserve related to this matter during the second quarter of 2020. If a reserve is required, we do not expect that the exposure will be material to our results of operations, cash flows or financial position.

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 tablets and powder relating to our settlements with the two pharmaceutical companies described above in this Risk Factors section 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;
- changes in the structure of healthcare payment systems;
- 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 orders 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 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 2020 Notes, we entered into capped call transactions with respect to 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 2020 Notes and are expected generally to reduce potential dilution to the common stock upon conversion of the 2020 Notes in excess of the principal amount of such converted 2020 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 2020 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 2020 Notes (and are likely to do so during the settlement averaging period under the capped call transactions, which precedes the maturity date of the 2020 Notes, and on or around any earlier conversion date related to a conversion of the 2020 Notes).

The effect, if any, of any of these transactions and activities on the market price of our common stock or the 2020 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 2020 Notes and the value of our common stock, if any, that 2020 Note holders receive upon any conversion of the 2020 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 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 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 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; 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 would not apply to suits brought to enforce a duty or liability created by the Securities Act of 1933, as amended, the Exchange Act or any other claim for which the U.S. federal courts have exclusive jurisdiction, and 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 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.
2.3	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., previously filed with the SEC on September 24, 2018 as Exhibit 3.1 to the Company's Current Report on Form 8-K (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 Acting 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 Acting 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 - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Link Document
104	XBRL tags for the cover page from the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, are embedded within the Inline XBRL 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 March 31, 2020 and December 31, 2019, (ii) Condensed Consolidated Statements of Comprehensive Income (Loss) for the three months ended March 31, 2020 and 2019, (iii) Condensed Consolidated Statement of Stockholders' Equity for the three months ended March 31, 2020 and 2019, (iv) Condensed Consolidated Statements of Cash Flows for the three months ended March 31, 2020 and 2019, 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: May 1, 2020

By /S/ BRIAN R. MUELLER

Brian R. Mueller
Senior Vice President, Finance and
Acting Chief Financial Officer

Exhibit 31.1

CERTIFICATION

I, Jean-Jacques Bienaimé, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of BioMarin Pharmaceutical Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 1, 2020

/s/ JEAN-JACQUES BIENAIMÉ

Jean-Jacques Bienaimé
Chief Executive Officer

Exhibit 31.2

CERTIFICATION

I, Brian R. Mueller, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of BioMarin Pharmaceutical Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 1, 2020

/S/ BRIAN R. MUELLER

Brian R. Mueller
Senior Vice President, Finance and
Acting Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

We, Jean-Jacques Bienaimé and Brian R. Mueller, hereby certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that BioMarin Pharmaceutical Inc.'s Quarterly Report on Form 10-Q for the period ended March 31, 2020, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and the information contained in such Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of BioMarin Pharmaceutical Inc.

/s/ JEAN-JACQUES BIENAIMÉ

Jean-Jacques Bienaimé
Chief Executive Officer

Date: May 1, 2020

/S/ BRIAN R. MUELLER

Brian R. Mueller
Senior Vice President, Finance and
Acting Chief Financial Officer

Date: May 1, 2020

This certification accompanies the Quarterly Report on Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of BioMarin Pharmaceutical Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Quarterly Report on Form 10-Q), irrespective of any general incorporation language contained in such filing.