UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended June 30, 2022

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 001-14895

SAREPTA THERAPEUTICS, INC.

(Exact name of registrant as specified in its charter)

Delaware	**93-0797222**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
215 First Street, Suite 415 Cambridge, MA	**02142**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (617) 274-4000

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

Title of each class	Trading Symbol	Name of exchange on which registered
Common Stock, $0.0001 par value per share	SRPT	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 ☒

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

Common Stock with $0.0001 par value	**87,567,857**
(Class)	**(Outstanding as of July 29, 2022)**

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Item 1. Financial Statements

SAREPTA THERAPEUTICS, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(unaudited, in thousands, except share and per share amounts)

	As of June 30, 2022	As of December 31, 2021
Assets		
Current assets:		
Cash and cash equivalents	$ 868,565	$ 2,115,869
Short-term investments	1,059,454	—
Accounts receivable	203,854	152,990
Inventory	208,095	186,212
Other current assets	129,332	149,028
Total current assets	2,469,300	2,604,099
Property and equipment, net	183,292	191,156
Intangible assets, net	13,062	14,239
Right of use assets	46,999	45,531
Other non-current assets	284,200	292,949
Total assets	$ 2,996,853	$ 3,147,974
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 56,207	$ 76,741
Accrued expenses	383,699	271,697
Deferred revenue, current portion	89,244	89,244
Other current liabilities	16,416	15,051
Total current liabilities	545,566	452,733
Long-term debt	1,100,873	1,096,876
Lease liabilities, net of current portion	39,368	41,512
Deferred revenue, net of current portion	529,989	574,244
Contingent consideration	43,600	43,600
Other non-current liabilities	11,000	11,000
Total liabilities	2,270,396	2,219,965
Commitments and contingencies (Note 14)		
Stockholders' equity:		
Preferred stock, $0.0001 par value, 3,333,333 shares authorized; none issued and outstanding	—	—
Common stock, $0.0001 par value, 198,000,000 shares authorized; 87,535,299 and 87,126,974 issued and outstanding at June 30, 2022, and December 31, 2021, respectively	9	9
Additional paid-in capital	4,272,187	4,134,768
Accumulated other comprehensive loss, net of tax	(2,485)	(20)
Accumulated deficit	(3,543,254)	(3,206,748)
Total stockholders' equity	726,457	928,009
Total liabilities and stockholders' equity	$ 2,996,853	$ 3,147,974

See accompanying notes to unaudited condensed consolidated financial statements.

SAREPTA THERAPEUTICS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(unaudited, in thousands, except per share amounts)

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
	2022	2021	2022	2021
Revenues:				
Products, net	$ 211,237	$ 141,839	$ 400,062	$ 266,765
Collaboration	22,250	22,250	44,255	44,255
Total revenues	233,487	164,089	444,317	311,020
Cost and expenses:				
Cost of sales (excluding amortization of in-licensed rights)	37,795	19,515	69,238	41,861
Research and development	252,329	239,622	446,579	434,771
Selling, general and administrative	154,316	72,347	226,156	143,478
Settlement and license charges	—	—	—	10,000
Amortization of in-licensed rights	179	179	357	349
Total cost and expenses	444,619	331,663	742,330	630,459
Operating loss	(211,132)	(167,574)	(298,013)	(319,439)
Other (loss) income, net:				
Other expense, net	(16,961)	(16,185)	(34,226)	(31,713)
Gain from sale of Priority Review Voucher	—	102,000	—	102,000
Total other (loss) income, net	(16,961)	85,815	(34,226)	70,287
Loss before income tax expense (benefit)	(228,093)	(81,759)	(332,239)	(249,152)
Income tax expense (benefit)	3,388	(354)	4,267	(497)
Net loss	(231,481)	(81,405)	(336,506)	(248,655)
Other comprehensive loss:				
Unrealized (losses) gains on investments, net of tax	(2,179)	5	(2,465)	(1)
Total other comprehensive loss	(2,179)	5	(2,465)	(1)
Comprehensive loss	$ (233,660)	$ (81,400)	$ (338,971)	$ (248,656)
Net loss per share - basic and diluted	$ (2.65)	$ (1.02)	$ (3.85)	$ (3.12)
Weighted average number of shares of common stock used in computing basic and diluted net loss per share	87,511	79,746	87,383	79,601

See accompanying notes to unaudited condensed consolidated financial statements.

SAREPTA THERAPEUTICS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(unaudited, in thousands)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2021	87,127	$ 9	$ 4,134,768	$ (20)	$ (3,206,748)	$ 928,009
Exercise of options for common stock	18	—	997	—	—	997
Vest of restricted stock units/awards	289	—	—	—	—	—
Issuance of common stock under employee stock purchase plan	62	—	3,993	—	—	3,993
Stock-based compensation	—	—	29,198	—	—	29,198
Unrealized losses from available-for-sale securities, net of tax	—	—	—	(286)	—	(286)
Net loss	—	—	—	—	(105,025)	(105,025)
Balance at March 31, 2022	87,496	$ 9	$ 4,168,956	$ (306)	$ (3,311,773)	$ 856,886
Exercise of options for common stock	11	—	339	—	—	339
Vest of restricted stock units/awards	28	—	—	—	—	—
Stock-based compensation	—	—	102,892	—	—	102,892
Unrealized losses from available-for-sale securities, net of tax	—	—	—	(2,179)	—	(2,179)
Net loss	—	—	—	—	(231,481)	(231,481)
Balance at June 30, 2022	87,535	$ 9	$ 4,272,187	$ (2,485)	$ (3,543,254)	$ 726,457

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Gain (Loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2020	79,374	$ 8	$ 3,609,877	$ 3	$ (2,848,129)	$ 761,759
Cumulative effect of accounting change to adopt ASU 2020-06	—	—	(156,953)	—	60,161	(96,792)
Exercise of options for common stock	108	—	4,683	—	—	4,683
Vest of restricted stock units/awards	204	—	—	—	—	—
Issuance of common stock under employee stock purchase plan	62	—	4,543	—	—	4,543
Stock-based compensation	—	—	28,508	—	—	28,508
Unrealized losses from available-for-sale securities, net of tax	—	—	—	(6)	—	(6)
Net loss	—	—	—	—	(167,250)	(167,250)
Balance at March 31, 2021	79,748	$ 8	$ 3,490,658	$ (3)	$ (2,955,218)	$ 535,445
Exercise of options for common stock	72	—	3,526	—	—	3,526
Vest of restricted stock units/awards	28	—	—	—	—	—
Shares withheld for taxes	(18)	—	(1,432)	—	—	(1,432)
Stock-based compensation	—	—	28,969	—	—	28,969
Unrealized gains from available-for-sale securities, net of tax	—	—	—	5	—	5
Net loss	—	—	—	—	(81,405)	(81,405)
Balance at June 30, 2021	79,830	$ 8	$ 3,521,721	$ 2	$ (3,036,623)	$ 485,108

See accompanying notes to unaudited condensed consolidated financial statements.

SAREPTA THERAPEUTICS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(unaudited, in thousands)

	For the Six Months Ended June 30,	
	2022	**2021**
Cash flows from operating activities:		
Net loss	$ (336,506)	$ (248,655)
Adjustments to reconcile net loss to cash flows from operating activities:		
Depreciation and amortization	20,608	17,377
Reduction in the carrying amounts of the right of use assets	5,514	6,023
Non-cash interest expense	3,988	3,691
Stock-based compensation	132,090	57,477
Loss on disposal of assets	5,370	342
Gain from sale of Priority Review Voucher	—	(102,000)
Other	(991)	3,343
Changes in operating assets and liabilities, net:		
Net increase in accounts receivable	(50,864)	(26,180)
Net increase in inventory	(15,364)	(36,795)
Net decrease in other assets	30,921	73,670
Net decrease in deferred revenue	(44,255)	(44,255)
Net increase in accounts payable, accrued expenses, lease liabilities and other liabilities	81,499	6,445
Net cash used in operating activities	(167,990)	(289,517)
Cash flows from investing activities:		
Purchase of property and equipment	(14,629)	(27,043)
Purchase of available-for-sale securities	(1,137,602)	(29,989)
Maturity and sale of available-for-sale securities	77,151	436,000
Proceeds from sale of Priority Review Voucher	—	102,000
Other	(718)	(3,243)
Net cash (used in) provided by investing activities	(1,075,798)	477,725
Cash flows from financing activities:		
Proceeds from exercise of stock options and purchase of stock under the Employee Stock Purchase Program	5,329	12,752
Taxes paid related to net share settlement of equity awards	—	(6,333)
Net cash provided by financing activities	5,329	6,419
(Decrease) increase in cash, cash equivalents and restricted cash	(1,238,459)	194,627
Cash, cash equivalents and restricted cash:		
Beginning of period	2,125,523	1,511,713
End of period	$ 887,064	$ 1,706,340
Reconciliation of cash, cash equivalents and restricted cash:		
Cash and cash equivalents	$ 868,565	$ 1,697,275
Restricted cash in other assets	18,499	9,065
Total cash, cash equivalents and restricted cash	$ 887,064	$ 1,706,340
Supplemental disclosure of cash flow information:		
Cash paid during the period for interest	$ 27,780	$ 27,780
Supplemental schedule of non-cash investing activities and financing activities:		
Intangible assets and property and equipment included in accounts payable and accrued expenses	$ 5,751	$ 7,760
Lease liabilities arising from obtaining right of use assets	$ 11,407	$ 10,582
Lease liabilities terminated	$ 3,807	$ 19,967
Shares withheld for tax included in accrued expenses	$ —	$ 1,432

See accompanying notes to unaudited condensed consolidated financial statements.

1. ORGANIZATION AND NATURE OF BUSINESS

Sarepta Therapeutics, Inc. (together with its wholly-owned subsidiaries, “Sarepta” or the “Company”) is a commercial-stage biopharmaceutical company focused on helping patients through the discovery and development of unique RNA-targeted therapeutics, gene therapy and other genetic therapeutic modalities for the treatment of rare diseases. Applying its proprietary, highly-differentiated and innovative technologies, and through collaborations with its strategic partners, the Company is developing potential therapeutic candidates for a broad range of diseases and disorders, including Duchenne muscular dystrophy (“Duchenne”), Limb-girdle muscular dystrophies (“LGMDs”) and other neuromuscular and central nervous system (“CNS”) disorders.

The Company's products in the U.S., EXONDYS 51 (eteplirsen) Injection (“EXONDYS 51”), VYONDYS 53 (golodirsen) Injection (“VYONDYS 53”) and AMONDYS 45 (casimersen) Injection (“AMONDYS 45”), were granted accelerated approval by the U.S. Food and Drug Administration (the “FDA”) on September 19, 2016, December 12, 2019 and February 25, 2021, respectively. Indicated for the treatment of Duchenne in patients who have a confirmed mutation of the dystrophin gene that is amenable to exon 51, exon 53 and exon 45 skipping, respectively, EXONDYS 51, VYONDYS 53 and AMONDYS 45 use the Company’s phosphorodiamidate morpholino oligomer (“PMO”) chemistry and exon-skipping technology to skip exon 51, exon 53 and exon 45 of the dystrophin gene. Exon skipping is intended to promote the production of an internally truncated but functional dystrophin protein.

As of June 30, 2022, the Company had approximately $1,946.6 million of cash, cash equivalents, restricted cash and investments, consisting of $868.6 million of cash and cash equivalents, $1,059.5 million of short-term investments and $18.5 million of long-term restricted cash. The Company believes that its balance of cash, cash equivalents, restricted cash and investments as of the date of the issuance of this report is sufficient to fund its current operational plan for at least the next twelve months, though it may pursue raising additional cash resources through public or private debt and equity financings, seek funded research and development arrangements and additional government contracts and establish collaborations with or license its technology to other companies.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation

The accompanying unaudited condensed consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States (“U.S. GAAP”), reflect the accounts of the Company and its wholly-owned subsidiaries. All intercompany transactions between and among its consolidated subsidiaries have been eliminated. Management has determined that the Company operates in one segment: discovering, developing, manufacturing and delivering therapies to patients with rare diseases.

In the opinion of the Company’s management, all adjustments of a normal recurring nature necessary for a fair presentation have been reflected. Certain financial information that is normally included in annual financial statements prepared in accordance with U.S. GAAP, but that is not required for interim reporting purposes, has been omitted. These unaudited condensed consolidated financial statements should be read in conjunction with the consolidated financial statements and related notes for the year ended December 31, 2021 which are contained in the Company’s Annual Report on Form 10-K for the year ended December 31, 2021, filed with the U.S. Securities and Exchange Commission on March 1, 2022. The results for the three and six months ended June 30, 2022 are not necessarily indicative of the results to be expected for the full year.

Estimates and Uncertainties

The preparation of the unaudited condensed consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, equity, revenue, expenses and the disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist of accounts receivable from customers, cash held at financial institutions and cash equivalents and investments.

As of June 30, 2022, the majority of the Company's accounts receivable arose from product sales in the U.S. and all customers have standard payment terms that generally require payment within 60 to 91 days. Outside of the U.S., the majority of the Company's customers have payment terms ranging between 45 and 150 days. Three individual customers accounted for 50%, 32% and 7% of net product revenues for the three months ended June 30, 2022 and 49%, 34% and 7% of net product revenues for the six months ended June 30, 2022. Three individual customers accounted for 46%, 40% and 11% of net product revenues for the three months ended June 30, 2021 and 48%, 40% and 9% of net product revenues for the six months ended June 30, 2021. Three individual customers accounted for 40%, 36% and 7% of accounts receivable from product sales as of June 30, 2022 and 41%, 41% and 10% of accounts receivable from product sales as of December 31, 2021. The Company monitors the financial performance and creditworthiness of its customers so that it can properly assess and respond to changes in its customers' credit profile. As of June 30, 2022, the Company believes that such customers are of high credit quality.

As of June 30, 2022, the Company's cash was concentrated at three financial institutions in the U.S., which potentially exposes the Company to credit risks. However, the Company does not believe that there is significant risk of non-performance by the financial institutions. The Company also purchases commercial paper, government and government agency bonds, corporate bonds and certificates of deposit issued by highly rated corporations, financial institutions and governments and limits the amount of credit exposure to any one issuer. These amounts may at times exceed federally insured limits. The Company has not experienced any credit losses related to these financial instruments and does not believe to be exposed to any significant credit risk related to these instruments.

Significant Accounting Policies

For details about the Company's accounting policies, please read *Note 2, Summary of Significant Accounting Policies and Recent Accounting Pronouncements* of the Annual Report on Form 10-K for the year ended December 31, 2021.

There have not been any material changes to the Company's accounting policies through June 30, 2022.

3. LICENSE AND COLLABORATION AGREEMENTS

F. Hoffman-La Roche Ltd.

For the three and six months ended June 30, 2022 and 2021, the Company recognized $22.3 million and $44.3 million of collaboration revenue associated with the license, collaboration and option agreement (the "Roche Agreement") with F. Hoffman-La Roche Ltd. ("Roche"). As of June 30, 2022, the Company has total deferred revenue of $619.2 million associated with the Roche Agreement, of which $89.2 million is classified as current. The portion of deferred revenue related to the separate material rights for the options to acquire ex-U.S. rights to certain Duchenne-specific programs was $485.0 million as of June 30, 2022 and December 31, 2021.

The costs associated with co-development activities performed under the Roche Agreement are included in operating expenses, with any reimbursement of costs by Roche reflected as a reduction of such expenses when the related expense is incurred. For the three months and six months ended June 30, 2022, costs reimbursable by Roche and reflected as a reduction to operating expenses were $26.4 million and $44.1 million, respectively. For the three and six months ended June 30, 2021, costs reimbursable by Roche and reflected as a reduction to operating expenses were $18.0 million and $31.4 million, respectively. As of June 30, 2022, there was $26.4 million of collaboration receivable included in other current assets.

Lysogene SA and Henogen SA

In October 2018, the Company entered into a license and collaboration agreement to develop and commercialize LYS-SAF302, a gene therapy to treat Mucopolysaccharidosis type IIIA as well as an equity investment agreement with Lysogene SA ("Lysogene"). Under the license and collaboration agreement, in addition to the payment of up-front fees, the Company may be liable for a total of $102.8 million in development, regulatory and sales milestones. Furthermore, the Company may be required to make tiered royalty payments based on net sales of the LYS-SAF302 product subsequent to its commercialization. Beginning January 1, 2020, the Company began to reimburse Lysogene for expenses incurred in connection with development activities of LYS-SAF302. As of June 30, 2022, the Company owns 1,140,728 shares of common stock issued by Lysogene and recorded $0.8 million of equity investment in Lysogene as an other non-current asset in the Company's consolidated balance sheets.

The Company sent a termination notice to Lysogene on January 11, 2022 to notify them of the Company's intent to terminate the license and collaboration agreement. The termination became effective July 11, 2022. The Company is not obligated to pay early termination penalties to Lysogene but has agreed to pay certain research and development reimbursements incurred in the six months following termination, which are not expected to be material.

The Company entered into a development, manufacturing and supply agreement with Henogen SA ("Henogen") in December 2019. Pursuant to the terms of the agreement, Henogen agreed to reserve manufacturing capacity within their facility to develop,

manufacture and supply the Company with LYS-SAF302. On June 9, 2022, the Company and Henogen entered into an agreement to terminate the development, manufacturing and supply agreement. As a result, the Company recorded a charge of $17.1 million during the three months ended June 30, 2022, which was recorded in research and development expenses in the accompanying unaudited condensed consolidated statements of operations and comprehensive loss.

Research and Option Agreements

The Company has research and option agreements with third parties in order to develop various technologies and biologics that may be used in the administration of the Company's genetic therapeutics. The agreements generally provide for research services related to pre-clinical development programs and options to license the technology for clinical development. Prior to the options under these agreements being exercised, the Company may be required to make up to $7.0 million in research milestone payments. Under these agreements, there are $187.1 million in potential option payments to be made by the Company upon the determination to exercise the options. Additionally, if the options for each agreement are executed, the Company would incur additional contingent obligations and may be required to make development, regulatory, and sales milestone payments and tiered royalty payments based on the net sales of the developed products upon commercialization. For the three and six months ended June 30, 2022 and 2021, the Company recognized $6.0 million and $3.0 million of research, option and milestone expense, respectively. As of June 30, 2022, the Company has not exercised any options nor have any additional research milestone payments become probable of occurring.

Milestone Obligations

The Company has license and collaboration agreements in place for which it could be obligated to pay, in addition to the payment of up-front fees upon execution of the agreements, certain milestone payments as a product candidate proceeds from the submission of an investigational new drug application through approval for commercial sale and beyond. As of June 30, 2022, the Company may be obligated to make up to $3.7 billion in future development, regulatory, commercial and up-front royalty milestone payments associated with its license and collaboration agreements. These obligations exclude potential future option and milestone payments for options that have yet to be exercised within agreements entered into by the Company as of June 30, 2022, which are discussed above. For the three months and six months ended June 30, 2022, the Company recognized up-front and development milestone expenses approximately $8.8 million as research and development expense in the accompanying unaudited condensed consolidated statements of operations and comprehensive loss. For the three and six months ended June 30, 2021, the Company recognized up-front, development milestone, settlement and other expenses of $31.7 million and $45.7 million, respectively, as research and development expense in the accompanying unaudited condensed consolidated statements of operations and comprehensive loss.

4. FAIR VALUE MEASUREMENTS

The Company has certain financial assets and liabilities that are recorded at fair value which have been classified as Level 1, 2 or 3 within the fair value hierarchy as described in the accounting standards for fair value measurements.

- Level 1 — quoted prices for identical instruments in active markets;
- Level 2 — quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-derived valuations in which all significant inputs and significant value drivers are observable in active markets; and
- Level 3 — valuations derived from valuation techniques in which one or more significant value drivers are unobservable.

During the six months ended June 30, 2022 and June 30, 2021, there were no transfers into or out of Level 3. The tables below present information about the Company's financial assets and liabilities that are measured and carried at fair value and indicate the level within the fair value hierarchy of valuation techniques it utilizes to determine such fair value:

	Fair Value Measurement as of June 30, 2022			
	Total	Level 1	Level 2	Level 3
	(in thousands)			
Assets				
Money market funds	$ 464,060	$ 464,060	$ —	$ —
Commercial paper	226,674	—	226,674	—
Government and government agency bonds	639,664	—	639,664	—
Corporate bonds	199,103	—	199,103	—
Strategic equity investments	33,234	822	—	32,412
Certificates of deposit	36,950	—	36,950	—
Total assets	$ 1,599,685	$ 464,882	$ 1,102,391	$ 32,412
Liabilities				
Contingent consideration	$ 43,600	$ —	$ —	$ 43,600
Total liabilities	$ 43,600	$ —	$ —	$ 43,600

	Fair Value Measurement as of December 31, 2021			
	Total	Level 1	Level 2	Level 3
	(in thousands)			
Assets				
Money market funds	$ 1,562,358	$ 1,562,358	$ —	$ —
Strategic equity investments	34,892	2,480	—	32,412
Certificates of deposit	250	250	—	—
Total assets	$ 1,597,500	$ 1,565,088	$ —	$ 32,412
Liabilities				
Contingent consideration	$ 43,600	$ —	$ —	$ 43,600
Total liabilities	$ 43,600	$ —	$ —	$ 43,600

The Company's assets with fair value categorized as Level 1 within the fair value hierarchy include money market funds and the Company's strategic investment in Lysogene.

The Company's assets with fair value categorized as Level 2 within the fair value hierarchy consist of commercial paper, government and government agency bonds, corporate bonds and certificates of deposit. These assets have been initially valued at the transaction price and subsequently valued at the end of each reporting period utilizing third-party pricing services. The pricing services use observable market inputs to determine value, which primarily consist of reportable trades. Certain of the government and government agency bonds with original maturities of less than three months are presented as cash equivalents on the unaudited condensed consolidated balance sheets as of June 30, 2022.

The Company's assets with fair value categorized as Level 3 within the fair value hierarchy consist of a strategic investment in Series A preferred stock of Lacerta Therapeutics, Inc. ("Lacerta") and strategic investments in two other private biotechnology companies. For more information related to Lacerta, please read *Note 3, License and Collaboration Agreements* of the Company's Annual Report on Form 10-K for the year ended December 31, 2021. The fair value of the Lacerta investment was initially based on a cost approach corroborated by the Black-Scholes-Merton option-pricing model. The most significant assumptions in the option pricing model include historical volatility of similar public companies, estimated term through Lacerta's potential exit and a risk-free rate based on certain U.S. Treasury rates. The investments in the other two private companies are recorded at fair value at the time of purchase as measured by their respective investment cost. At the end of each reporting period, the fair value of the Company's strategic investments will be adjusted if the issuers are to issue similar or identical equity securities or when there is a triggering event for impairment. There were no valuation measurement events related to the fair value of the strategic investments during the six months ended June 30, 2022 and 2021, respectively, as no impairment indicators were identified nor were similar securities issued.

The Company's contingent consideration liability with fair value categorized as Level 3 within the fair value hierarchy relates to the regulatory-related contingent payments to Myonexus Therapeutics, Inc. ("Myonexus") selling shareholders as well as to two academic institutions under separate license agreements that meet the definition of a derivative. For more information related to Myonexus, please read *Note 3, License and Collaboration Agreements* of the Company's Annual Report on Form 10-K for the year ended December 31, 2021. The contingent consideration liability was estimated using an income approach based on the probability-weighted expected cash flows that incorporated industry-based probability adjusted assumptions relating to the achievement of the

milestone and thus the likelihood of making the payments. This fair value measurement was based upon significant inputs not observable in the market and therefore represented a Level 3 measurement. Significant changes which increase or decrease the probabilities of achieving the milestone or shorten or lengthen the time required to achieve the milestone would result in a corresponding increase or decrease in the fair value of the liability. At the end of each reporting period, the fair value is adjusted to reflect the most current assumptions through earnings.

For the six months ended June 30, 2022 and 2021, there have been no changes to the fair value of the contingent consideration liability. As of June 30, 2022, the contingent consideration was recorded as a non-current liability on the Company's unaudited condensed consolidated balance sheets.

The fair value of the senior notes due on November 15, 2024 (the "2024 Notes") is based on open market trades and is classified as Level 1 in the fair value hierarchy. For more information related to the 2024 Notes, please read *Note 13, Indebtedness* of the Company's Annual Report on Form 10-K for the year ended December 31, 2021. As of June 30, 2022 and December 31, 2021, the fair value of the 2024 Notes was approximately $726.2 million and $846.1 million, respectively. The fair value of the December 13, 2019 term loan (the "December 2019 Term Loan") is classified as Level 2 in the fair value hierarchy and is determined using a discounted cash flow analysis with market interest rates adjusted for credit risk as a significant input. As of June 30, 2022 and December 31, 2021, the fair value of the December 2019 Term Loan was approximately $548.4 million and $576.1 million, respectively. The carrying values of the 2024 Notes and December 2019 Term Loan were $564.7 million and $536.1 million as of June 30, 2022 and $563.7 million and $533.2 million as of December 31, 2021, respectively.

The carrying amounts reported in the unaudited condensed consolidated balance sheets for cash and cash equivalents, accounts receivable and accounts payable approximated fair value because of the short-term maturity of these financial instruments.

5. CASH, CASH EQUIVALENTS AND MARKETABLE SECURITIES

The following table summarizes the Company's financial assets with maturities of less than 90 days from the date of purchase included in cash equivalents in the unaudited condensed consolidated balance sheets for each of the periods indicated:

	As of June 30, 2022	As of December 31, 2021
	(in thousands)	
Money market funds	$ 464,060	$ 1,562,358
Government and government agency bonds	42,937	—
Total	$ 506,997	$ 1,562,358

It is the Company's policy to mitigate credit risk in its financial assets by maintaining a well-diversified portfolio that limits the amount of exposure as to maturity and investment type. The weighted average maturity of the Company's available-for-sale securities as of June 30, 2022 was approximately four months. The Company did not hold any short-term investments classified as available-for-sale securities as of December 31, 2021.

The following tables summarize the Company's cash, cash equivalents and short-term investments as of the periods indicated:

	As of June 30, 2022			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(in thousands)			
Cash and money market funds	$ 825,628	$ —	$ —	$ 825,628
Commercial paper	226,674	—	—	226,674
Government and government agency bonds	641,219	5	(1,560)	639,664
Corporate bonds	200,013	2	(912)	199,103
Certificates of deposit	36,950	—	—	36,950
Total cash, cash equivalents and investments	$ 1,930,484	$ 7	$ (2,472)	$ 1,928,019
As reported:				
Cash and cash equivalents	$ 868,574	$ —	$ (9)	$ 868,565
Short-term investments	1,061,910	7	(2,463)	1,059,454
Total cash, cash equivalents and investments	$ 1,930,484	$ 7	$ (2,472)	$ 1,928,019

	As of December 31, 2021			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(in thousands)			
Cash and money market funds	$ 2,115,869	$ —	$ —	$ 2,115,869
Total cash and cash equivalents	$ 2,115,869	$ —	$ —	$ 2,115,869
As reported:				
Cash and cash equivalents	$ 2,115,869	$ —	$ —	$ 2,115,869
Total cash and cash equivalents	$ 2,115,869	$ —	$ —	$ 2,115,869

6. ACCOUNTS RECEIVABLE AND RESERVES FOR PRODUCT SALES

As of June 30, 2022 and December 31, 2021, the Company's accounts receivable were $203.9 million and $153.0 million, respectively, both of which were related to products sales receivable, net of discounts and allowances.

The following tables summarize an analysis of the change in reserves for discounts and allowances for each of the periods indicated:

	Chargebacks	Rebates	Prompt Pay	Other Accruals	Total
			(in thousands)		
Balance, as of December 31, 2021	$ 799	$ 60,506	$ 2,798	$ 6,363	$ 70,466
Provision	5,642	50,361	6,192	19,416	81,611
Payments/credits	(6,232)	(43,293)	(5,639)	(11,460)	(66,624)
Balance, as of June 30, 2022	$ 209	$ 67,574	$ 3,351	$ 14,319	$ 85,453

	Chargebacks	Rebates	Prompt Pay	Other Accruals	Total
			(in thousands)		
Balance, as of December 31, 2020	$ 2,281	$ 41,771	$ 1,949	$ 4,969	$ 50,970
Provision	5,665	33,221	4,005	6,848	49,739
Payments/credits	(6,887)	(26,992)	(3,533)	(7,236)	(44,648)
Balance, as of June 30, 2021	$ 1,059	$ 48,000	$ 2,421	$ 4,581	$ 56,061

The following table summarizes the total reserves included in the Company’s unaudited condensed consolidated balance sheets for the periods indicated:

	As of June 30, 2022	As of December 31, 2021
	(in thousands)	
Reduction to accounts receivable	$ 17,092	$ 8,321
Component of accrued expenses	68,361	62,145
Total reserves	$ 85,453	$ 70,466

7. INVENTORY

The following table summarizes the components of the Company’s inventory for the periods indicated:

	As of June 30, 2022	As of December 31, 2021
	(in thousands)	
Raw materials	$ 42,398	$ 58,822
Work in progress	253,200	230,194
Finished goods	35,499	26,717
Total inventory	$ 331,097	$ 315,733

There were no material inventory reserves as of June 30, 2022 or December 31, 2021. Non-current inventory, which consists of raw materials and work in progress inventory, is included in other non-current assets in the Company's unaudited condensed consolidated balance sheets. Non-current inventory is anticipated to be consumed beyond our normal operating cycle.

The following table summarizes the balance sheet classification of the Company's inventory for each of the periods indicated:

	As of June 30, 2022	As of December 31, 2021
	(in thousands)	
Balance sheet classification		
Inventory	$ 208,095	$ 186,212
Other non-current assets	123,002	129,521
Total inventory	$ 331,097	$ 315,733

8. OTHER ASSETS

The following table summarizes the Company’s other current assets for each of the periods indicated:

	As of June 30, 2022	As of December 31, 2021
	(in thousands)	
Manufacturing-related deposits and prepaids	$ 69,502	$ 93,656
Collaboration receivable	26,421	18,647
Prepaid clinical and pre-clinical expenses	10,707	12,667
Prepaid maintenance services	7,644	8,452
Prepaid insurance	3,280	5,282
Prepaid research expenses	1,973	3,082
Other	9,805	7,242
Total other current assets	$ 129,332	$ 149,028

The following table summarizes the Company’s other non-current assets for each of the periods indicated:

	As of June 30, 2022	As of December 31, 2021
	(in thousands)	
Non-current inventory	$ 123,002	$ 129,521
Manufacturing-related deposits and prepaids	103,819	112,765
Strategic investments	33,234	34,892
Restricted cash and investments	18,499	9,904
Prepaid clinical expenses	2,103	2,007
Other	3,543	3,860
Total other non-current assets	$ 284,200	$ 292,949

9. ACCRUED EXPENSES

The following table summarizes the Company's accrued expenses for each of the periods indicated:

	As of June 30, 2022	As of December 31, 2021
	(in thousands)	
Accrued contract manufacturing costs	$ 204,867	$ 104,311
Product revenue related reserves	68,361	62,145
Accrued clinical and pre-clinical costs	33,832	25,955
Accrued employee compensation costs	32,191	48,299
Accrued royalties	14,746	11,965
Accrued professional fees	13,574	9,381
Accrued collaboration cost sharing	2,868	2,887
Accrued income taxes	2,485	216
Accrued sponsored research agreements	1,651	3,377
Accrued fixed assets	1,462	127
Accrued interest expense	1,092	1,045
Other	6,570	1,989
Total accrued expenses	$ 383,699	$ 271,697

10. STOCK-BASED COMPENSATION

The following table summarizes the Company's stock awards granted for each of the periods indicated:

	For the Three Months Ended June 30,				For the Six Months Ended June 30,			
	2022		2021		2022		2021	
	Grants	Weighted Average Grant Date Fair Value	Grants	Weighted Average Grant Date Fair Value	Grants	Weighted Average Grant Date Fair Value	Grants	Weighted Average Grant Date Fair Value
Stock options	207,583	$ 43.40	72,110	$ 39.79	1,499,120	$ 46.49	1,431,747	$ 48.87
Restricted stock units*	147,075	$ 72.99	37,240	$ 75.30	859,510	$ 78.78	726,607	$ 86.53

*Included in 2022 RSUs are 38,500 shares with performance conditions which are related to regulatory approval of certain of the Company's product candidates. As of June 30, 2022, none of the performance conditions are probable of being achieved. If the performance milestones are achieved within the required time frame, the Company may recognize up to $3.1 million of stock-based compensation related to these grants. Stock options and the remaining RSUs granted during the periods presented in the table have only service-based criteria and vest over four years.

Grant Modification

In June 2017, the Company granted its Chief Executive Officer 3,300,000 options with service and market conditions which were subject to a five-year cliff vesting schedule. On April 19, 2022 (the "Effective Date"), the Company entered into an agreement with its Chief Executive Officer to modify the vesting conditions of the options. Under the agreement, one-third of the options vested (the "Vested Tranche") on the Effective Date with no required service or market conditions. Subject to the Chief Executive Officer's continued service through each applicable vesting date and the compound annual growth rate of the Company's common stock exceeding that of the Nasdaq Biotech Index in varying percentages, the remaining two-thirds of the options (the "Unvested Tranche") shall vest in varying increments at any time between the Effective Date and June 26, 2025 (the "Measurement Period") when (and if) the average of the closing price of the Company's common stock during any consecutive 20 trading day period during the Measurement Period reaches certain pre-determined target stock prices. Additionally, the Chief Executive Officer is subject to a one-year post-exercise restriction to sell, transfer or dispose shares acquired upon the exercise of any options that vest after deduction of any shares withheld or sold to pay the applicable aggregate exercise price and/or withholding taxes.

To determine the incremental compensation cost of the modification, the fair value of the modified awards was compared to the fair value of the original awards measured immediately before its terms or conditions were modified. As the Vested Tranche became immediately vested on the Effective Date, the Vested Tranche does not have service or market conditions. As such, the post-modification fair value for the Vested Tranche is based on the Black-Scholes-Merton option-pricing model, while the pre-modification fair value is based on a lattice model with Monte Carlo simulations. The incremental compensation cost of $43.9 million was immediately recognized as stock-based compensation expense in the three months ended June 30, 2022.

The Unvested Tranche represents awards with market conditions only. Both the pre- and post-modification fair values for the Unvested Tranche are determined by a lattice model with Monte Carlo simulations. As a result of the modification, the Company is expected to recognize incremental compensation cost of $82.1 million associated with the Unvested Tranche. The incremental costs related to varying increments of the Unvested Tranche will be recognized as stock-based compensation expense over their respective derived service periods, an output from the Monte Carlo simulation, and will be fully recognized over approximately 1.3 years. For the three months ended June 30, 2022, the Company recorded $29.8 million of stock-based compensation expense related to the Unvested Tranche.

Stock-based Compensation Expense

For the three months ended June 30, 2022 and 2021, total stock-based compensation expense was $102.9 million and $29.0 million, respectively. For the six months ended June 30, 2022 and 2021, total stock-based compensation expense was $132.1 million and $57.5 million, respectively. The following table summarizes stock-based compensation expense by function included within the unaudited condensed consolidated statements of operations and comprehensive loss:

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
	2022	2021	2022	2021
	(in thousands)			
Research and development	$ 14,467	$ 12,860	$ 27,535	$ 23,986
Selling, general and administrative	88,425	16,109	104,555	33,491
Total stock-based compensation expense	$ 102,892	$ 28,969	$ 132,090	$ 57,477

The following table summarizes stock-based compensation expense by grant type included within the unaudited condensed consolidated statements of operations and comprehensive loss:

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
	2022	2021	2022	2021
	(in thousands)			
Stock options	$ 89,155	$ 17,587	$ 105,561	$ 34,606
Restricted stock awards/units	12,378	10,573	23,743	20,504
Employee stock purchase plan	1,359	809	2,786	2,367
Total stock-based compensation expense	$ 102,892	$ 28,969	$ 132,090	$ 57,477

11. OTHER (LOSS) INCOME, NET

The following table summarizes other loss, net for the periods indicated:

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
	2022	2021	2022	2021
	(in thousands)			
Interest expense	$ (16,028)	$ (15,831)	$ (31,824)	$ (31,482)
Interest income	2,409	52	2,582	111
Gain from sale of Priority Review Voucher	—	102,000	—	102,000
Other expense, net	(3,342)	(406)	(4,984)	(342)
Total other (loss) income, net	$ (16,961)	$ 85,815	$ (34,226)	$ 70,287

In February 2021, the Company the Company entered into an agreement to sell the rare pediatric disease Priority Review Voucher (“PRV”) it received from the FDA in connection with the approval of AMONDYS 45. Following the termination of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, in April 2021, the Company completed its sale of the PRV and received proceeds of $102.0 million, with no commission costs, which was recorded as a gain from sale of the PRV as it did not have a carrying value at the time of the sale. For more information related to the PRV, please read *Note 4, Gain from Sale of Priority Review Voucher* of the Company’s Annual Report on Form 10-K for the year ended December 31, 2021.

12. LEASES

The Company has real estate operating leases in Cambridge, Andover and Burlington, Massachusetts, Dublin and Columbus, Ohio, and Durham, NC that provide for scheduled annual rent increases throughout each lease’s term. The Company has also

identified a lease embedded in certain of its manufacturing and supply agreements as the Company determined that it controls the use of the facilities and related equipment therein. For more information related to manufacturing and supply agreements with Thermo Fisher Scientific, Inc. (“Thermo”) and Catalent, Inc. (“Catalent”), please read *Note 21, Commitments and Contingencies* of the Company's Annual Report on Form 10-K for the year ended December 31, 2021.

Bedford, Massachusetts

On April 22, 2022, the Company entered into a lease agreement (the “Bedford Lease”) for 288,000 square feet of to-be-constructed research and development and manufacturing space in Bedford, Massachusetts. The term of the Bedford Lease commences upon the landlord’s completion of the initial construction of the core and shell of the building, at which time the Company will obtain control of the premises and commence internal construction activities. The lease is expected to commence prior to December 31, 2022. The Company is not involved in the initial construction of the core and shell of the building and will record the lease liability and right-of-use (“ROU”) asset on its unaudited condensed consolidated balance sheets when it obtains control of the premises, which is currently expected to be during the second half of 2022. The initial term of the Bedford Lease is anticipated to be 15 years commencing at the earlier of (i) date the certificate of occupancy is issued; or (ii) January 1, 2024, representing the commencement of the Company’s obligation to pay rent for the premises. The Company has two options to extend the lease for a period of ten years each, exercisable under certain conditions and at a market rate determined in accordance with the lease agreement.

Undiscounted rent payments due over the 15-year term of the lease aggregate to $307.4 million. Additionally, the Company is responsible for reimbursing the landlord for the Company’s share of the property’s operating expenses and property taxes. The Bedford lease also provides for a tenant improvement allowance of $72.0 million to be used towards costs incurred by the Company in the design and construction of the premises.

In May 2022, in connection with the execution of the Bedford Lease, the Company issued a letter of credit collateralized by cash deposits of approximately $8.4 million, which was included in the other non-current assets of the Company’s unaudited condensed consolidated balance sheets. Such letter of credit shall be reduced to approximately $5.6 million at the commencement of the fourth rent year, provided certain conditions set forth in the Bedford Lease are satisfied.

Columbus, Ohio

On December 22, 2018, the Company entered into a lease agreement for a research and development facility in Columbus, Ohio (the “Columbus Lease”). On May 19, 2022 (the "Columbus Lease Amendment Date"), the Company entered into an amendment to the Columbus Lease to expand the footprint and extend the lease term (the “Columbus Amendment”). The Columbus Amendment expands from its current form of approximately 78,000 square feet to 167,000 square feet through a series of expansion spaces commencing at various periods through January 1, 2025.

Each expansion space commences on the date which approximates when the landlord will deliver control of that space for the Company to carry out design and construction activities (the “Columbus Commencement Date”). The Company is obligated to pay rent on each expansion space nine months after the Columbus Commencement Date. The Columbus Lease and Columbus Amendment expire on December 31, 2036, and the Company has options to extend the lease by five years in both 2036 and 2041. Each option is exercisable under certain conditions and at a market rate determined in accordance with the lease agreement. Undiscounted rent payments due over the 15-year term from the Columbus Lease Amendment Date aggregate to $38.9 million.

On June 1, 2022, the Company commenced design and constructions activities on an area of the premises of approximately 18,000 square feet (the “Second Expansion Space”) and, therefore, it was determined that the lease related to the Second Expansion Space had commenced on that date. As a result, the Company recorded an additional ROU asset and lease liability of $7.3 million related to the extended term of the lease of the original facility as of June 30, 2022.

13. NET LOSS PER SHARE

Basic net loss per share is computed by dividing net loss by the weighted-average number of shares of common stock outstanding. Diluted net loss per share is computed by dividing net loss by the weighted-average number of shares of common stock and dilutive common stock equivalents outstanding. For the three and six months ended June 30, 2022 and 2021, there were no differences between basic and diluted net loss per share since the effect of common stock equivalents would be anti-dilutive due to the net loss position and, therefore, would be excluded from the diluted net loss per share calculation.

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
	2022	2021	2022	2021
	(in thousands, except per share amounts)		(in thousands, except per share amounts)	
Net loss	$ (231,481)	$ (81,405)	$ (336,506)	$ (248,655)
Weighted-average common shares outstanding - basic	87,511	79,746	87,383	79,601
Effect of dilutive securities*	—	—	—	—
Weighted-average common shares outstanding - diluted	87,511	79,746	87,383	79,601
Net loss per share - basic and diluted	$ (2.65)	$ (1.02)	$ (3.85)	$ (3.12)

* For the three and six months ended June 30, 2022 and 2021, stock options, RSAs, RSUs, and ESPP to purchase 11.3 million and 9.8 million shares of the Company's common stock, respectively, were excluded from the diluted net loss per share calculation as their effect would have been anti-dilutive. The Company accounts for the effect of its 2024 Notes on diluted net earnings per share ("EPS") using the if-converted method as this obligation may be settled in cash or shares at the Company's option. The effect of potential share settlement is included in the diluted EPS calculation if the effect is more dilutive. During the three and six months ended June 30, 2022 and June 30, 2021, respectively, the inclusion of the potential share settlement of the 2024 Notes was anti-dilutive. Accordingly, the potential conversion of 7,763,552 shares has been excluded from the computation of diluted net loss per share as of June 30, 2022 and June 30, 2021, respectively.

14. COMMITMENTS AND CONTINGENCIES

Manufacturing Obligations

The following table summarizes the aggregate non-cancelable contractual obligations arising from the Company's manufacturing obligations:

	As of June 30, 2022
	(in thousands)
2022 (July-December)	$ 529,689
2023	321,520
2024	135,285
2025	98,798
2026	54,720
Thereafter	109,440
Total manufacturing commitments*	$ 1,249,452

* Total manufacturing commitments includes the Catalent Inc. manufacturing and supply agreement, for which the Company has right of use assets and lease liabilities recorded on the unaudited condensed consolidated balance sheets as of June 30, 2022. For more information, please read *Note 21, Commitments and Contingencies* of the Company's Annual Report on Form 10-K for the year ended December 31, 2021.

Additionally, should the Company obtain regulatory approval for any drug product candidate produced as a part of the Company's manufacturing obligations above, additional minimum batch requirements with the respective manufacturing parties would be required.

Thermo Fisher Scientific, Inc.

Under the development, commercial manufacturing, and supply agreement (as amended) with Thermo Fisher Scientific, Inc. ("Thermo"), the Company has committed to annual guaranteed purchases on a take-or-pay basis regardless of whether services or goods are ordered. During the three months ended June 30, 2022, the Company determined that it is probable that it will not satisfy the total guaranteed purchase requirements by December 31, 2022 based on work orders executed to date and the time remaining in the

fiscal year 2022 to complete development work. As such, the Company recognized a loss of approximately $53.0 million during the three months ended June 30, 2022, reflecting the estimated shortfall related to the annual guaranteed purchase requirement for the manufacturing and supply of gene therapy materials. The loss has been classified as research and development expense in the accompanying unaudited condensed consolidated statement of operations and comprehensive loss.

For more information related to Thermo, please read *Note 21, Commitments and Contingencies* of the Annual Report on Form 10-K for the year ended December 31, 2021.

Litigation

In the normal course of business, the Company from time to time is named as a party to various legal claims, actions and complaints, which have included or may include matters involving securities, employment, intellectual property, arising from the use of therapeutics utilizing its technology, or others. We record a loss contingency reserve for a legal proceeding when we consider the potential loss probable and we can reasonably estimate the amount of the loss or determine a probable range of loss. We provide disclosure when we consider a loss reasonably possible or when we determine that a loss in excess of a reserve is reasonably possible. We provide an estimate of such reasonably possible losses or an aggregate range of such reasonably possible losses, unless we believe that such an estimate cannot be made. The Company has not recorded any material accruals for loss contingencies and in management's opinion no material range of loss is estimable for the matters described below as of June 30, 2022.

On September 15, 2020, REGENXBIO INC. (“RegenX”) and the Trustees of the University of Pennsylvania filed a lawsuit against the Company and Sarepta Therapeutics Three, LLC (together, “Sarepta”), in the U.S. District Court for the District of Delaware. The plaintiffs assert patent infringement of U.S. Patent No. 10,526,617 (“the ‘617 Patent”) under 35 U.S.C.§§ 271(a)-(c) based on Sarepta’s alleged direct or indirect manufacture and use of the patented cultured host cell technology allegedly used to make adeno-associated virus (“AAV”) gene therapy products, including SRP-9001. Specifically, the Complaint essentially includes the allegation that Sarepta’s use, and the use by its contract manufacturers on its behalf, of a host cell containing a recombinant acid molecule that encodes a capsid protein having at least 95% amino acid identity to AAVrh10 infringes upon the ‘617 Patent asserted by RegenX. Plaintiffs seek injunctive relief, a judgment of infringement and willful infringement, an unspecified amount of damages that is no less than a reasonable royalty (treble damages), attorneys’ fees and costs, and such other relief as the court deems just and proper. On January 4, 2022, the Court denied Sarepta’s motion to dismiss the case pursuant to Federal Rule of Civil Procedure 12(b)(6) based on the Safe Harbor provision of non-infringement contained in 35 U.S.C. § 271(e)(1). Sarepta answered the Complaint on January 18, 2022, and a case schedule has been set with a trial commencing on January 29, 2024.

On July 13, 2021, Nippon Shinyaku Co., Ltd. (“Nippon Shinyaku” or “NS”) filed a lawsuit against the Company in the U.S. District Court for the District of Delaware. NS asserts a claim for breach of contract arising from Sarepta filing seven petitions for Inter Partes Review (“IPR Petitions”) with the Patent Trial and Appeal Board at the USPTO (PTAB Case Nos. IPR2021-01134, IPR2021-01135, IPR2021-01136, IPR2021-01137, IPR2021-01138, IPR2021-01139, IPR2021-01140) in which Sarepta sought to invalidate certain NS patents concerning exon 53 skipping technology (U.S. Patent Nos. 9,708,361, 10,385,092, 10,407,461, 10,487,106, 10,647,741, 10,662,217, and 10,683,322, respectively, and collectively the “NS Patents”). In addition, NS asserts claims for patent infringement and willful infringement of each of the NS Patents allegedly arising from Sarepta’s activities, including the sale of, its exon 53 skipping product, VYONDYS 53 (golodirsen). NS further seeks a determination of non-infringement by NS alleged to arise from NS’s activities, including the sale of, its exon 53 skipping product, Viltepso (viltolarsen) and invalidity of certain patents licensed to the Company from University of Western Australia (“UWA”) (U.S. Patent Nos. 9,994,851, 10,227,590, and 10,266,827, collectively the “UWA Patents”). NS is seeking legal fees and costs, an unspecified amount of monetary relief (treble damages) attributed to Sarepta’s alleged infringement, and such other relief as the court deems just and proper. In January 2022, the PTAB granted institution of all claims of all NS Patents in response to Sarepta’s IPR Petitions and determined that Sarepta has demonstrated a reasonable likelihood of success in proving that the NS Patents are unpatentable. NS filed a motion for preliminary injunction solely seeking Sarepta’s withdrawal of the IPR Petitions, which was ultimately granted after the U.S. Court of Appeals for the Federal Circuit reversed and remanded to the district court on February 8, 2022. Sarepta subsequently withdrew the IPRs, which were terminated on June 14, 2022

On December 27, 2021, the district court partially granted and denied the motion to dismiss by Sarepta and ordered NS to file a Second Amended Complaint (“SAC”), which it did on January 14, 2022. In the SAC, NS maintains all claims of the original complaint of July 13, 2021, except a determination of non-infringement of the UWA Patents. On January 28, 2022, Sarepta filed its answer to the SAC, with defenses and counterclaims against NS and NS Pharma Inc. that include infringement of the UWA Patents allegedly arising from their activities concerning, including the sale of, its exon 53 skipping product, Viltepso (viltolarsen) and breach of contract. Sarepta is also seeking a determination of invalidity of the NS Patents. Sarepta is seeking an award of relief in its defenses to NS’ allegations, a judgment of breach of contract, a determination of invalidity of the NS Patents, a judgment of infringement and willful infringement of the UWA Patents, legal fees and costs, an unspecified amount of monetary relief (treble damages) attributable to NS’ alleged infringement, and such other relief as the court deems just and proper. On July 29, 2022, the Court ordered the parties to submit a further updated proposed scheduling order. Case scheduling in district court, including a trial date, will follow.

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

The purpose of Management's Discussion and Analysis of Financial Condition and Results of Operations is to provide an understanding of the financial condition, changes in financial condition and results of operations of Sarepta Therapeutics, Inc. This section should be read in conjunction with our unaudited condensed consolidated financial statements and related notes included in Part I, Item 1 of this Quarterly Report on Form 10-Q and the section contained in our Annual Report on Form 10-K for the year ended December 31, 2021 under the caption "Part II-Item 7 — Management's Discussion and Analysis of Financial Condition and Results of Operations". This discussion contains certain forward-looking statements, which are often identified by words such as "believe," "anticipate," "expect," "intend," "plan," "will," "may," "estimate," "could," "continue," "ongoing," "predict," "potential," "likely," "seek" and other similar expressions, as well as variations or negatives of these words. These statements relate to our future plans, objectives, expectations, intentions and financial performance and the assumptions that underlie these statements. These forward-looking statements include, but are not limited to:

- *the expected or potential impact of the ongoing COVID-19 pandemic on our business, including our commercial sales, ongoing and planned clinical trials, manufacturing and operations;*
- *our belief that our proprietary technology platforms and collaborations can be used to develop potential therapeutic candidates to treat a broad range of diseases;*
- *our expectation that our partnerships with manufacturers will support our clinical and commercial manufacturing capacity for our Duchenne muscular dystrophy gene therapy programs and Limb-girdle muscular dystrophy programs, while also acting as a manufacturing platform for potential future gene therapy programs, and our belief that our current network of manufacturing partners are able to fulfil the requirements of our commercial plan;*
- *our plan to continue building out our network for commercial distribution in jurisdictions in which our products are approved;*
- *estimated timelines and milestones for 2022 and beyond, including submitting an accelerated approval biologics license application in the fall of 2022 for SRP-9001 and releasing GMP product for SRP-9003 in 2022 and engaging with the FDA to discuss our next steps for the program;*
- *our plan to expand our pipeline through internal research and development and through strategic transactions;*
- *the timely completion and satisfactory outcome of our post-marketing requirements and commitments, including verification of a clinical benefit for our products in confirmatory trials;*
- *our ability to further secure long-term supply of our commercial products and our product candidates to satisfy our planned commercial, early access programs ("EAP") and clinical needs;*
- *our plan to evaluate activities and future engagement with the European Medicines Agency (the "EMA") and other regulatory authorities outside of the U.S. on potential next steps for our products and product candidates;*
- *the possible impact of regulations and regulatory decisions by the Food and Drug Administration (the "FDA") and other regulatory agencies on our business, as well as the development of our product candidates and our financial and contractual obligations;*
- *the possible impact of any competing products on the commercial success of our products and our product candidates and our ability to compete against such products;*
- *our ability to enter into research, development or commercialization alliances with universities, hospitals, independent research centers, non-profit organizations, pharmaceutical and biotechnology companies and other entities for specific molecular targets or selected disease indications and our ability to selectively pursue opportunities to access certain intellectual property rights that complement our internal portfolio through license agreements or other arrangements;*
- *our expectations regarding the potential benefits of the partnership, licensing and/or collaboration arrangements and other strategic arrangements and transactions we have entered into or may enter into in the future; our plans and ability to file and progress to issue additional patent applications to enhance and protect our new and existing technologies and programs;*
- *our estimates regarding how long our currently available cash and cash equivalents will be sufficient to finance our operations and business plans and statements about our future capital needs;*
- *our estimates regarding future revenues, research and development expenses, other expenses, capital requirements and payments to third parties;*

- *our expectation regarding the impact of environmental laws and regulations on our business; and*
- *our beliefs and expectations regarding milestone, royalty or other payments that could be due to third parties under existing agreements.*

We undertake no obligation to update any of the forward-looking statements contained in this Quarterly Report on Form 10-Q after the date of this report, except as required by law or the rules and regulations of the U.S. Securities and Exchange Commission (the "SEC"). *We caution readers not to place undue reliance on forward-looking statements. Our actual results could differ materially from those discussed in this Quarterly Report on Form 10-Q. The forward-looking statements contained in this Quarterly Report on Form 10-Q, and other written and oral forward-looking statements made by us from time to time, are subject to certain risks and uncertainties that could cause actual results to differ materially from those anticipated in the forward-looking statements, including the risks, uncertainties and assumptions identified under the heading "Risk Factors" in this Quarterly Report on Form 10-Q.*

Overview

We are a commercial-stage biopharmaceutical company focused on helping patients through the discovery and development of unique RNA-targeted therapeutics, gene therapy and other genetic therapeutic modalities for the treatment of rare diseases. Applying our proprietary, highly-differentiated and innovative technologies, and through collaborations with our strategic partners, we are developing potential therapeutic candidates for a broad range of diseases and disorders, including Duchenne muscular dystrophy ("Duchenne"), Limb-girdle muscular dystrophies ("LGMDs"), and other neuromuscular and central nervous system ("CNS") related disorders.

We commercialize three products, all of which were granted accelerated approval by the FDA:

- EXONDYS 51 (eteplirsen) Injection ("EXONDYS 51"), approved by the FDA on September 19, 2016, is indicated for the treatment of Duchenne in patients who have a confirmed mutation of the dystrophin gene that is amenable to exon 51 skipping. EXONDYS 51 uses our phosphorodiamidate morpholino oligomer ("PMO") chemistry and exon-skipping technology to skip exon 51 of the dystrophin gene.
- VYONDYS 53 (golodirsen) Injection ("VYONDYS 53"), approved by the FDA on December 12, 2019, is indicated for the treatment of Duchenne in patients who have a confirmed mutation of the dystrophin gene that is amenable to exon 53 skipping. VYONDYS 53 uses our PMO chemistry and exon-skipping technology to skip exon 53 of the dystrophin gene.
- AMONDYS 45 (casimersen) Injection ("AMONDYS 45"), approved by the FDA on February 25, 2021, is indicated for the treatment of Duchenne in patients who have a confirmed mutation of the dystrophin gene that is amenable to exon 45 skipping. AMONDYS 45 uses our PMO chemistry and exon-skipping technology to skip exon 45 of the dystrophin gene.

We are in the process of conducting various EXONDYS 51, VYONDYS 53 and AMONDYS 45 clinical trials, including studies that are required to comply with our post-marketing FDA requirements/commitments to verify and describe the clinical benefit of these products.

A summary description of our key product candidates, including those in collaboration with our strategic partners, is as follows:

- *SRP-5051* uses our next-generation chemistry platform, PPMO, and our exon-skipping technology to skip exon 51 of the dystrophin gene. SRP-5051, a peptide conjugated PMO, is designed to bind to exon 51 of dystrophin pre-mRNA, resulting in exclusion of this exon during mRNA processing in patients with genetic mutations that are amenable to exon 51 skipping. Exon skipping is intended to promote the production of an internally truncated but functional dystrophin protein. In the fourth quarter of 2017, we commenced a first-in-human, single ascending dose, study for the treatment of Duchenne in patients who are amenable to exon 51 skipping. In 2019, we commenced Study 5051-201. In December 2020, we announced an interim analysis on clinical results from the 10 mg/kg and 20 mg/kg dose cohorts of Part A of Study 5051-201. In May 2021, we announced results from the 30 mg/kg cohort of Part A of Study 5051-201. We initiated Part B of Study 5051-201 in the fourth quarter of 2021. In July 2022, the FDA placed Study 5051-201 on clinical hold following a serious adverse event of hypomagnesemia.

- *SRP-9001* (Duchenne gene therapy program) aims to express a smaller but still functional version of dystrophin. A unique, engineered dystrophin is used because naturally-occurring dystrophin is too large to fit in an adeno-associated virus ("AAV") vector. In the fourth quarter of 2017, an investigational new drug ("IND") application for SRP-9001 was cleared by the FDA, and a Phase 1/2a clinical trial in individuals with Duchenne was initiated (Study 101). In October 2018, Nationwide Children's Hospital ("Nationwide") presented results from the Phase 1/2a clinical trial in four individuals with Duchenne enrolled in the trial. In March 2019, we presented nine-month functional and creatine kinase ("CK") data from baseline from these four individuals, and twelve-month CK data from baseline from one of these individuals. In June 2020, we announced that functional, safety and tolerability data at twelve-months from baseline from these four individuals had been published in JAMA Neurology. In September 2020, we presented functional, safety and tolerability data at 24 months from these four individuals. In the fourth quarter of 2018, we commenced a randomized, double-blind, placebo-controlled trial of SRP-9001 with the goal to establish the functional benefits of SRP-9001 protein expression (Study 102). In January 2021, we released top-line results for Part 1 of Study 102 (the 48-week assessment of 41 participants) and interim expression results from Part 2 of Study 102 (the crossover phase). We announced topline results for Part 2 of Study 102 in January 2022. We have completed dosing in the first cohort in Study 103, an open-label study evaluating the safety and expression of commercially representative material for SRP-9001. In May 2021, we announced 12-week expression and safety results from the first 11 participants enrolled in Study 103. In October 2021, we announced functional data from the first 11 patients and tolerability data for all 32 patients enrolled in Study 103. We also initiated our pivotal trial (Study 301) in October 2021 and are currently enrolling patients. In July 2022, we announced additional data from our Studies 102 and 103 and that we intend to submit an accelerated approval biologics license application in the fall of 2022.
- *SRP-9003* (LGMD, gene therapy program). We are developing gene therapy programs for various forms of LGMDs. The most advanced of our LGMD product candidates, SRP-9003, is designed to transfer a gene that codes for and restores beta-sarcoglycan protein with the goal of restoring the dystrophin associated protein complex. It utilizes the AAVrh.74 vector system, the same vector used in our SRP-9001 gene therapy program. A Phase 1/2a trial of SRP-9003 was commenced in the fourth quarter of 2018. In February 2019, we announced positive two-month biopsy data from the first three-patient low-dose cohort dosed in the SRP-9003 trial, and in October 2019, we announced positive nine-month functional data from these three patients. We have dosed one additional cohort of three patients at a higher dose per the study protocol. In June 2020, we announced safety and expression results from three clinical trial participants in the high-dose cohort measured at 60 days, and one-year functional data from three clinical trial participants in the low-dose cohort. In September 2020, we announced six-month functional data from three clinical trial participants in the high-dose cohort, and eighteen-month functional data from three clinical trial participants in the low-dose cohort. In March 2021, we announced 24-month functional and expression data from the three clinical trial participants in the low-dose cohort and twelve-month functional data from the three clinical trial participants in the high-dose cohort. In March 2022, we announced 36-month functional data from three clinical trial participants in the low-dose cohort and 24-month functional data from two clinical trial participants in the high-dose cohort. We expect to release GMP product for SRP-9003 in 2022 and will engage with the FDA to discuss our next steps for the program.

Our pipeline includes more than 40 programs in various stages of pre-clinical and clinical development, reflecting our multifaceted approach and expertise in precision genetic medicine to make a profound difference in the lives of patients suffering from rare diseases.

Manufacturing, Supply and Distribution

We have developed proprietary state-of-the-art Chemistry, Manufacturing and Controls ("CMC") capabilities that allow manufacturing and testing of our products and product candidates to support both clinical development as well as commercialization. We continue to refine and optimize our manufacturing processes and test methods. We have entered into certain manufacturing and supply arrangements with third-party suppliers which will in part utilize these capabilities to support production of certain of our product candidates and their components. We have also opened facilities over the past several years which significantly enhanced our research and development manufacturing capabilities. However, we currently do not have internal Good Manufacturing Practices ("GMP") manufacturing capabilities to produce our products and product candidates for commercial and/or clinical use. For our current and future manufacturing needs, we have entered into supply agreements with specialized contract manufacturing organizations (each a "CMO") to produce custom raw materials, the active pharmaceutical ingredients ("APIs"), drug product and finished goods for our products and product candidates for both commercial and clinical use. All of our CMO partners have extensive technical expertise, GMP experience and experience manufacturing our specific technology.

For our commercial Duchenne program, we have worked with our existing CMOs to increase product capacity from mid-scale to large-scale. While there are a limited number of companies that can produce raw materials and APIs in the quantities and with the quality and purity that we require for our commercial products, based on our diligence to date, we believe our current network of CMOs are able to fulfill these requirements, and are capable of expanding capacity as needed. Additionally, we have, and will

continue to evaluate further relationships with additional suppliers to increase overall capacity as well as further reduce risks associated with reliance on a limited number of suppliers for manufacturing.

Our commercial products are distributed in the U.S. through a limited network of home infusion specialty pharmacy providers that deliver the medication to patients and a specialty distributor that distributes our products to hospitals and hospital outpatient clinics. With respect to the pre-commercial distribution of our products to patients outside of the U.S., we have contracted with third party distributors and service providers to distribute our products in certain countries through our EAPs. We plan to continue building out our network for commercial distribution in jurisdictions in which our products are approved.

Our gene therapy manufacturing capabilities have been greatly enhanced through partnerships with Thermo Fisher Scientific Inc. (“Thermo”), Catalent, Inc. (“Catalent”) and Aldevron LLC (“Aldevron”). We have adopted a hybrid development and manufacturing strategy in which we have built internal process development expertise relative to all aspects of AAV-based manufacturing, including gene therapy and gene editing supply, while closely partnering with first-in-class manufacturing partners to expedite development and commercialization of our gene therapy programs. We expect that our partnerships with Thermo and Catalent will support our clinical and commercial manufacturing capacity for our SRP-9001 Duchenne program and LGMD programs, while also acting as a manufacturing platform for potential future gene therapy programs. The collaboration integrates process development, clinical production and testing, and commercial manufacturing. Aldevron is expected to provide GMP-grade plasmid for our SRP-9001 Duchenne program and LGMD programs, as well as plasmid source material for future gene therapy programs, such as Charcot-Marie-Tooth disease ("CMT") and other neuromuscular and CNS related disorders.

Manufacturers and suppliers of our commercial products and product candidates are subject to the FDA’s current GMP (“cGMP”) requirements and other rules and regulations prescribed by foreign regulatory authorities. We depend on our third-party partners for continued compliance with cGMP requirements and applicable foreign standards.

Cash, Cash Equivalents, Restricted Cash and Investments

As of June 30, 2022, we had approximately $1,946.6 million of cash, cash equivalents, restricted cash and investments, consisting of $868.6 million of cash and cash equivalents, short-term investments of $1,059.5 million and $18.5 million of long-term restricted cash. We believe that our balance of cash, cash equivalents, restricted cash and investments is sufficient to fund our current operational plan for at least the next twelve months.

The likelihood of our long-term success must be considered in light of the expenses, difficulties and delays frequently encountered in the development and commercialization of new pharmaceutical products, competitive factors in the marketplace, the risks associated with government sponsored reimbursement programs and the complex regulatory environment in which we operate.

COVID-19 Pandemic

The COVID-19 pandemic has presented a substantial public health and economic challenge around the world. Our business operations and financial condition and results have been impacted to varying degrees, and we expect the impact will continue in future quarters.

We are continuing to assess the impact of the COVID-19 pandemic on our business, operations and financial condition and results. Despite careful tracking and planning, however, we are unable to accurately predict the extent of the impact of the pandemic on our business, results of operations and financial condition due to the uncertainty of future developments. The full extent to which the COVID-19 pandemic will directly or indirectly impact our business, results of operations and financial condition will depend on future developments that are highly uncertain and cannot be accurately predicted, including new information that may emerge concerning COVID-19, the actions taken to contain it or treat its impact and the economic impact on local, regional, national and international markets. For additional information on the various risks posed by the COVID-19 pandemic, refer to the Risk Factors of this Quarterly Report on Form 10-Q.

Critical Accounting Policies and Estimates

The discussion and analysis of our financial condition and results of operations is based upon our unaudited condensed consolidated financial statements included elsewhere in this report. The preparation of our unaudited condensed consolidated financial statements in accordance with accounting principles generally accepted in the U.S. requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses and related disclosure of contingent assets and liabilities for the periods presented. Some of these judgments can be subjective and complex and, consequently, actual results may differ from these estimates. We believe that the estimates and judgments upon which we rely are reasonable based upon historical experience and information available to us at the time that we make these estimates and judgments. To the extent there are material differences between these estimates and actual results, our unaudited condensed consolidated financial statements will be affected. Although we believe that our judgments and estimates are appropriate, actual results may differ from these estimates. We believe the following accounting policies to be the most critical to the judgments and estimates used in the preparation of our unaudited condensed consolidated financial statements:

- inventory;
- income tax; and
- stock-based compensation.

There have been no material changes to our critical accounting policies and estimates as detailed in our Annual Report on Form 10-K for the year ended December 31, 2021, except for those noted below, which reflect our more significant judgements and estimates used in the preparation of our unaudited condensed consolidated financial statements.

Stock-Based Compensation for Awards with Market Conditions

We use the fair value method to determine stock-based compensation expense. The fair value for stock-based awards with market conditions is based on a lattice model with Monte Carlo simulations. The lattice model requires the use of subjective assumptions which include the award's expected term and the price volatility of the underlying stock. The assumptions used in calculating the fair value of stock-based compensation expense for awards with market conditions represent management's best estimates, but these estimates involve inherent uncertainties and the application of management judgment. As a result, if factors change and we use different assumptions, our stock-based compensation expense could be materially different in the future.

Results of Operations for the Three and Six Months Ended June 30, 2022 and 2021

The following tables set forth selected unaudited condensed consolidated statements of operations data for each of the periods indicated:

	For the Three Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands, except per share amounts)		$	%
Revenues:				
Products, net	$ 211,237	$ 141,839	$ 69,398	49 %
Collaboration	22,250	22,250	—	(—)%
Total revenues	233,487	164,089	69,398	42 %
Cost and expenses:				
Cost of sales (excluding amortization of in-licensed rights)	37,795	19,515	18,280	94 %
Research and development	252,329	239,622	12,707	5 %
Selling, general and administrative	154,316	72,347	81,969	113 %
Amortization of in-licensed rights	179	179	—	(—)%
Total cost and expenses	444,619	331,663	112,956	34 %
Operating loss	(211,132)	(167,574)	(43,558)	26 %
Other (loss) income, net:				
Other expense, net	(16,961)	(16,185)	(776)	5 %
Gain from sale of Priority Review Voucher	—	102,000	(102,000)	(100)%
Total other (loss) income, net	(16,961)	85,815	(102,776)	(120)%
Loss before income tax expense (benefit)	(228,093)	(81,759)	(146,334)	179 %
Income tax expense (benefit)	3,388	(354)	3,742	NM*
Net loss	$ (231,481)	$ (81,405)	$ (150,076)	184 %
Net loss per share - basic and diluted	$ (2.65)	$ (1.02)	$ (1.63)	160 %

	For the Six Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands, except per share amounts)		$	%
Revenues:				
Products, net	$ 400,062	$ 266,765	$ 133,297	50 %
Collaboration	44,255	44,255	—	(—)%
Total revenues	444,317	311,020	133,297	43 %
Cost and expenses:				
Cost of sales (excluding amortization of in-licensed rights)	69,238	41,861	27,377	65 %
Research and development	446,579	434,771	11,808	3 %
Selling, general and administrative	226,156	143,478	82,678	58 %
Settlement and license charges	—	10,000	(10,000)	(100)%
Amortization of in-licensed rights	357	349	8	2 %
Total cost and expenses	742,330	630,459	111,871	18 %
Operating loss	(298,013)	(319,439)	21,426	(7)%
Other (loss) income, net:				
Other expense, net	(34,226)	(31,713)	(2,513)	8 %
Gain from sale of Priority Review Voucher	—	102,000	(102,000)	(100)%
Total other (loss) income, net	(34,226)	70,287	(104,513)	(149)%
Loss before income tax expense (benefit)	(332,239)	(249,152)	(83,087)	33 %
Income tax expense (benefit)	4,267	(497)	4,764	NM*
Net loss	$ (336,506)	$ (248,655)	$ (87,851)	35 %
Net loss per share - basic and diluted	$ (3.85)	$ (3.12)	$ (0.73)	23 %

* NM: not meaningful

Revenues

Revenues from product sales are recorded at the net sales price (transaction price), which includes estimates of variable consideration for which reserves are established and which result from Medicaid rebates, governmental chargebacks including Public Health Services chargebacks, prompt pay discounts, co-pay assistance and distribution fees. These reserves are based on the amounts

earned or to be claimed on the related sales and are classified as reductions of accounts receivable (if no payments are required of us) or a current liability (if a payment is required of us). Our estimates take into consideration current contractual and statutory requirements. The amount of variable consideration included in the transaction price may be constrained and is included in the net sales price only to the extent that it is probable that a significant reversal in the amount of the cumulative revenue recognized will not occur in a future period. Actual amounts of consideration ultimately received or paid may differ from our estimates. If actual results in the future vary from our estimates, we will adjust these estimates, which would affect net product revenue and net loss in the period such variances become known.

The following tables summarize the components of our net product revenues, by product, for the periods indicated:

	For the Three Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
EXONDYS 51	$ 126,377	$ 112,461	$ 13,916	12%
AMONDYS 45	54,676	6,936	47,740	NM*
VYONDYS 53	30,184	22,442	7,742	34%
Products, net	$ 211,237	$ 141,839	$ 69,398	49%

	For the Six Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
EXONDYS 51	$ 243,510	$ 219,646	$ 23,864	11%
AMONDYS 45	98,290	7,129	91,161	NM*
VYONDYS 53	58,262	39,990	18,272	46%
Products, net	$ 400,062	$ 266,765	$ 133,297	50%

* NM: not meaningful

Net product revenues for our products for the three and six months ended June 30, 2022 increased by $69.4 million and $133.3 million, respectively, compared with the three and six months ended June 30, 2021. These increases primarily reflect increasing demand for our products in the U.S. and a full period of AMONDYS 45 sales during the six months ended June 30, 2022 given its commercial launch in February 2021.

Collaboration revenue relates to our collaboration arrangement with F. Hoffman-La Roche Ltd. (“Roche”). For both the three and six months ended June 30, 2022 and 2021, we recognized $22.3 million and $44.3 million of collaboration revenue, respectively. For more information, please read *Note 3, Collaboration and License Agreements* within our Annual Report on Form 10-K for the year ended December 31, 2021.

Cost of sales (excluding amortization of in-licensed rights)

Our cost of sales (excluding amortization of in-licensed rights) primarily consists of royalty payments to BioMarin Pharmaceuticals, Inc. ("BioMarin") and the University of Western Australia ("UWA"), inventory costs that relate to sales of our products and the related overhead costs. Prior to receiving regulatory approval for EXONDYS 51, VYONDYS 53, and AMONDYS 45 by the FDA in September 2016, December 2019, and February 2021, respectively, we expensed such manufacturing and material costs as research and development expenses. For AMONDYS 45 sold in the three and six months ended June 30, 2022 and 2021, the majority of related manufacturing costs incurred had previously been expensed as research and development expenses, as such costs were incurred prior to the FDA approval of the products. For EXONDYS 51 and VYONDYS 53 sold in the three and six months ended June 30, 2021, only part of the related manufacturing costs incurred had previously been expensed as research and development expenses. If product related costs had not previously been expensed as research and development expenses prior to receiving FDA approval, the incremental inventory costs related to our products sold would have been approximately $6.7 million and $14.2 million for the six months ended June 30, 2022 and 2021, respectively.

The following tables summarize the components of our cost of sales for each of the periods indicated:

	For the Three Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
Inventory costs related to products sold	$ 23,050	$ 10,309	$ 12,741	124%
Royalty payments	14,745	9,206	5,539	60%
Total cost of sales	$ 37,795	$ 19,515	$ 18,280	94%

	For the Six Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
Inventory costs related to products sold	$ 41,513	$ 24,638	$ 16,875	68%
Royalty payments	27,725	17,223	10,502	61%
Total cost of sales	$ 69,238	$ 41,861	$ 27,377	65%

The cost of sales for the three and six months ended June 30, 2022 increased by $18.3 million, or 94% and $27.4 million, or 65%, respectively, compared with the same periods in 2021. The changes for both periods primarily reflect increasing demand for our products as well as the write-offs of certain batches of our products not meeting our quality specifications for the three and six months ended June 30, 2022, as well as the six months ended June 30, 2021, with no similar activity for the three months ended June 30, 2021.

Research and development expenses

Research and development expenses consist of costs associated with research activities as well as costs associated with our product development efforts, conducting pre-clinical trials, clinical trials and manufacturing activities. Direct research and development expenses associated with our programs include clinical trial site costs, clinical manufacturing costs, costs incurred for consultants, up-front fees and milestones paid to third parties in connection with technologies that have not reached technological feasibility and do not have an alternative future use, and other external services, such as data management and statistical analysis support, and materials and supplies used in support of clinical programs. Indirect costs of our clinical programs include salaries, stock-based compensation and allocation of our facility- and technology-related costs.

Research and development expenses represent a substantial percentage of our total operating expenses. We do not maintain or evaluate and, therefore, do not allocate internal research and development costs on a project-by-project basis. As a result, a significant portion of our research and development expenses are not tracked on a project-by-project basis, as the costs may benefit multiple projects.

The following tables summarizes our research and development expenses by project for each of the periods indicated:

	For the Three Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
SRP-9001	$ 130,583	$ 94,236	$ 36,347	39 %
Other gene therapies	19,382	35,995	(16,613)	(46)%
Eteplirsen (exon 51)	14,693	10,568	4,125	39 %
Up-front, milestone and other expenses	11,300	31,677	(20,377)	(64)%
PPMO platform	11,156	11,407	(251)	(2)%
Casimersen (exon 45)	9,574	6,300	3,274	52 %
Golodirsen (exon 53)	3,365	5,785	(2,420)	(42)%
Collaboration cost-sharing	1,474	578	896	155 %
Other projects	6,150	4,141	2,009	49 %
Internal research and development expenses	70,947	56,960	13,987	25 %
Roche collaboration reimbursement	(26,295)	(18,025)	(8,270)	46 %
Total research and development expenses	$ 252,329	$ 239,622	$ 12,707	5 %

	For the Six Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
SRP-9001	$ 222,144	$ 153,609	$ 68,535	45 %
Other gene therapies	35,259	69,950	(34,691)	(50)%
PPMO platform	26,122	20,497	5,625	27 %
Eteplirsen (exon 51)	23,749	17,078	6,671	39 %
Casimersen (exon 45)	17,413	19,801	(2,388)	(12)%
Up-front, milestone and other expenses	11,300	35,677	(24,377)	(68)%
Golodirsen (exon 53)	8,171	19,279	(11,108)	(58)%
Collaboration cost-sharing	2,558	6,778	(4,220)	(62)%
Other projects	7,749	8,778	(1,029)	(12)%
Internal research and development expenses	136,022	114,477	21,545	19 %
Roche collaboration reimbursement	(43,908)	(31,153)	(12,755)	41 %
Total research and development expenses	$ 446,579	$ 434,771	$ 11,808	3 %

The following tables summarize our research and development expenses by category for each of the periods indicated:

	For the Three Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
Manufacturing expenses	$ 150,279	$ 119,769	$ 30,510	25 %
Compensation and other personnel expenses	34,450	28,697	5,753	20 %
Clinical trial expenses	28,817	25,978	2,839	11 %
Facility- and technology-related expenses	20,258	16,914	3,344	20 %
Stock-based compensation	14,467	12,860	1,607	12 %
Up-front, milestone and other expenses	11,300	31,677	(20,377)	(64)%
Professional services	5,332	3,168	2,164	68 %
Collaboration cost-sharing	1,474	578	896	155 %
Pre-clinical expenses	898	5,746	(4,848)	(84)%
Research and other	11,349	12,260	(911)	(7)%
Roche collaboration reimbursement	(26,295)	(18,025)	(8,270)	46 %
Total research and development expenses	$ 252,329	$ 239,622	$ 12,707	5 %

Research and development expenses for the three months ended June 30, 2022 increased by $12.7 million, or 5%, compared with the three months ended June 30, 2021. The increase is primarily driven by the following:

- $30.5 million increase in manufacturing expenses primarily due to the $53.0 million shortfall payment accrual related to the gene therapy manufacturing and supply agreement with Thermo, partially offset by a decrease in gene therapy manufacturing costs incurred pursuant to the terms of the third amendment to the Thermo manufacturing and supply agreement, which removed capacity access fees and reduced the total number of manufacturing batches in 2022;
- $5.8 million increase in compensation and other personnel expenses primarily due to a net increase in headcount;
- $2.8 million increase in clinical trial expenses primarily due to a continuing ramp-up of our SRP-9001 gene therapy programs including our EMBARK program;
- $3.3 million increase in facility- and technology-related expenses primarily due to our continuing expansion efforts;
- $1.6 million increase in stock-based compensation expense primarily due to changes in headcount and stock price;
- $20.4 million decrease in up-front, milestone and other expenses primarily due to a $28.7 million increase of an accrued sublicense fee to Nationwide and a $3.0 million expense incurred as a result of a milestone achievement in a research and license agreement during the three months ended June 30, 2021, offset by $2.8 million of up-front payments as a result of the execution of certain research and license agreements, $4.0 million of expense incurred as a result of milestone achievements in certain research and license agreements and $4.5 million of option and termination expenses during the same period of 2022;
- $2.2 million increase in professional service expenses primarily due to an increase in reliance on third-party research and development contractors;
- $4.8 million decrease in pre-clinical expenses primarily due to a decrease in toxicology study activity in our PPMO platform; and
- $8.3 million increase in the offset to expense associated with a collaboration reimbursement from Roche due to continuing development of our SRP-9001 gene therapy programs.

	For the Six Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
Manufacturing expenses	$ 246,568	$ 209,090	$ 37,478	18%
Compensation and other personnel expenses	66,646	58,893	7,753	13%
Clinical trial expenses	59,255	54,569	4,686	9%
Facility- and technology-related expenses	40,772	34,100	6,672	20%
Stock-based compensation	27,535	23,986	3,549	15%
Up-front, milestone and other expenses	11,300	35,677	(24,377)	(68)%
Professional services	9,172	5,816	3,356	58%
Pre-clinical expenses	5,866	10,982	(5,116)	(47)%
Collaboration cost-sharing	2,558	6,778	(4,220)	(62)%
Research and other	20,815	26,033	(5,218)	(20)%
Roche collaboration reimbursement	(43,908)	(31,153)	(12,755)	41%
Total research and development expenses	$ 446,579	$ 434,771	$ 11,808	3%

Research and development expenses for the six months ended June 30, 2022 increased by $11.8 million, or 3%, compared with the six months ended June 30, 2021. The increase is primarily driven by the following:

- $37.5 million increase in manufacturing expenses primarily due to the $53.0 million shortfall payment accrual related to the gene therapy manufacturing and supply agreement with Thermo, partially offset by a decrease in gene therapy manufacturing costs incurred pursuant to the third amendment to the Thermo manufacturing and supply agreement, which removed capacity access fees and reduced the total number of manufacturing batches in 2022;
- $7.8 million increase in compensation and other personnel expenses primarily due to a net increase in headcount;
- $4.7 million increase in clinical trial expenses primarily due to a continuing ramp-up of our SRP-9001 gene therapy programs including our EMBARK program;
- $6.7 million increase in facility- and technology-related expenses primarily due to our continuing expansion efforts;
- $3.5 million increase in stock-based compensation expense primarily due to changes in headcount and stock price;

- $24.4 million decrease in up-front and milestone expenses primarily due to a $28.7 million increase of an accrued sublicense fee to Nationwide and $7.0 million of expense incurred as a result of milestone achievements in certain research and license agreements during the six months ended June 30, 2021, offset by $2.8 million of up-front payments as a result of the execution of certain research and license agreements, $4.0 million of expense incurred as a result of milestone achievements in certain research and license agreements and $4.5 million of option and termination expenses during the same period of 2022;
- $3.4 million increase in professional service expenses primarily due to an increase in reliance on third-party research and development contractors;
- $5.1 million decrease in pre-clinical expenses primarily due to due to a decrease in toxicology study activity in our PPMO platform;
- $4.2 million decrease in collaboration cost sharing primarily due to the termination of the Lysogene S.A. license and collaboration agreement and timing of expense incurred related to Genethon's micro-dystrophin drug candidate;
- $5.2 million decrease in research and other expenses primarily driven by decreases in sponsored research with academic institutions during the six months ended June 30, 2022; and
- $12.8 million increase in the offset to expense associated with a collaboration reimbursement from Roche due to continuing development of our SRP-9001 gene therapy programs.

Selling, general and administrative expenses

Selling, general and administrative expenses consist of salaries, benefits, stock-based compensation and related costs for personnel in our executive, finance, legal, information technology, business development, human resources, commercial and other general and administrative functions. Other general and administrative expenses include an allocation of our facility- and technology-related costs and professional fees for legal, consulting and accounting services.

The following tables summarize our selling, general and administrative expenses by category for each of the periods indicated:

	For the Three Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
Stock-based compensation	$ 88,425	$ 16,109	$ 72,316	NM*
Compensation and other personnel expenses	28,622	26,225	2,397	9%
Professional services	25,772	20,039	5,733	29%
Facility- and technology-related expenses	8,253	7,527	726	10%
Other	3,370	2,436	934	38%
Roche collaboration reimbursement	(126)	11	(137)	NM*
Total selling, general and administrative expenses	$ 154,316	$ 72,347	$ 81,969	113%

* NM: not meaningful

Selling, general and administrative expenses for the three months ended June 30, 2022 increased by $82.0 million, or 113%, compared with the three months ended June 30, 2021. This increase was primarily driven by the following:

- $72.3 million increase in stock-based compensation expense primarily due to the CEO grant modification agreement executed during the three months ended June 30, 2022;
- $2.4 million increase in compensation and other personnel expenses primarily due to a net increase in headcount; and
- $5.7 million increase in professional service expenses primarily due to an increase in reliance on third-party selling, general and administrative contractors.

	For the Six Months Ended June 30,			
	2022	2021	Change	Change
	(in thousands)		$	%
Stock-based compensation	$ 104,555	$ 33,491	$ 71,064	212%
Compensation and other personnel expenses	56,075	54,354	1,721	3%
Professional services	43,066	35,557	7,509	21%
Facility- and technology-related expenses	16,406	14,877	1,529	10%
Other	6,289	5,422	867	16%
Roche collaboration reimbursement	(235)	(223)	(12)	5%
Total selling, general and administrative expenses	$ 226,156	$ 143,478	$ 82,678	58%

Selling, general and administrative expenses for the six months ended June 30, 2022 increased by $82.7 million, or 58%, compared with the six months ended June 30, 2021. This increase was primarily driven by the following:

- $71.1 million increase in stock-based compensation expense primarily due to the CEO grant modification executed during the three months ended June 30, 2022;
- $1.7 million increase in compensation and other personnel expenses primarily due to a net increase in headcount;
- $7.5 million increase in professional service expenses primarily due to an increase in reliance on third-party selling, general and administrative contractors; and
- $1.5 million increase in facility- and technology-related expenses primarily due to our continuing expansion efforts.

Settlement and license charges

In February 2021, we recognized a $10.0 million settlement charge related to contingent settlement payments to BioMarin as a result of the approval of AMONDYS 45 in the U.S. This was a result of a settlement and license agreement with BioMarin executed in July 2017. This amount, which was expensed to operations as incurred, is separately presented as settlement and license charges in the Company's unaudited condensed consolidated statements of operations and comprehensive loss for the six months ended June 30, 2021. There was no such expense recognized during the same period of 2022.

Amortization of in-licensed rights

Amortization of in-licensed rights relates to the agreements we entered into with BioMarin and UWA in July 2017 and April 2013, respectively. Each in-licensed right is being amortized on a straight-line basis over the remaining life of the patent from the first commercial sale of each product. For both the three months ended June 30, 2022 and 2021, we recorded amortization of in-licensed rights of approximately $0.2 million. For the six months ended June 30, 2022 and 2021, we recorded amortization of in-licensed rights of approximately $0.4 million and $0.3 million, respectively.

Other expense, net

Other expense, net, primarily consists of interest income on our cash, cash equivalents and investments, interest expense on our debt facilities, amortization of investment discount, and unrealized gain or loss from our investment in our strategic investments. Our cash equivalents and investments consist of money market funds, commercial paper, government and government agency debt securities, corporate bonds and certificates of deposit. Interest expense includes interest accrued on our convertible notes and term loan.

For the three and six months ended June 30, 2022, other expense, net, increased by approximately $0.8 million and $2.5 million, respectively, compared with the three and six months ended June 30, 2021. The increases are primarily due to losses on disposal of assets, an increase in the mark-to-market adjustment of our Level 1 strategic investment, offset by an increase in interest income due to the investment mix of our investment portfolio.

Gain from sale of Priority Review Voucher

In February 2021, we entered into an agreement to sell the rare pediatric disease Priority Review Voucher (“PRV”) we received from the FDA in connection with the approval of AMONDYS 45. Following the termination of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, in April 2021, we completed our sale of the PRV and

received proceeds of $102.0 million, with no commission costs, which was recorded as a gain from sale of the PRV as it did not have a carrying value at the time of the sale. There was no similar activity during the six months ended June 30, 2022.

Income tax expense (benefit)

Income tax expense for the three and six months ended June 30, 2022 was approximately $3.4 million and $4.3 million, respectively. Income tax benefit for the three and six months ended June 30, 2021 was approximately $0.4 million and $0.5 million, respectively. Income tax expense (benefit) for all periods presented relates to state and foreign taxes.

Liquidity and Capital Resources

There have been no material changes to our obligations under debt arrangements as reported in our Form 10-K for the year ended December 31, 2021. Refer to *Note 12, Leases* to the unaudited condensed consolidated financial statements contained in Item 1 for a discussion of materials changes to our leasing obligations.

The following table summarizes our financial condition for each of the periods indicated:

	As of June 30, 2022	As of December 31, 2021	Change	Change
	(in thousands)		$	%
Financial assets:				
Cash and cash equivalents	$ 868,565	$ 2,115,869	$ (1,247,304)	(59)%
Short-term investments	1,059,454	—	1,059,454	NM*
Restricted cash and investments	18,499	9,904	8,595	87%
Total cash, cash equivalents and investments	$ 1,946,518	$ 2,125,773	$ (179,255)	(8)%
Borrowings:				
Term loan	$ 536,125	$ 533,203	$ 2,922	1%
Convertible debt	564,748	563,673	1,075	(—)%
Total borrowings	$ 1,100,873	$ 1,096,876	$ 3,997	(—)%
Working capital				
Current assets	$ 2,469,300	$ 2,604,099	$ (134,799)	(5)%
Current liabilities	545,566	452,733	92,833	21%
Total working capital	$ 1,923,734	$ 2,151,366	$ (227,632)	(11)%

* NM: not meaningful

For the periods ended June 30, 2022 and December 31, 2021, our principal sources of liquidity were primarily derived from sales of our products, our collaboration arrangement with Roche, net proceeds from sale of the priority review voucher, and net proceeds from our common stock offering. Our principal uses of cash are research and development expenses, selling, general and administrative expenses, investments, capital expenditures, business development transactions and other working capital requirements. The changes in our working capital primarily reflect use of cash in operating activities. While our contractual obligations, commitments and debt service requirements over the next several years are significant, we intend to continue to fund our short-term financing needs and working capital requirements from cash flows of operating activities as well as cash on hand, and such sources are anticipated to be adequate to fund working capital requirements for at least twelve months from the date these unaudited condensed consolidated financial statements were issued.

Beyond June 30, 2023, our cash requirements will depend extensively on our ability to advance our research, development and commercialization programs. We expect to seek additional financings primarily from, but not limited to, the sale and issuance of equity and debt securities, the licensing or sale of our technologies, additional government contracts and/or funded research and development agreements. Our future expenditures and long-term capital requirements may be substantial and will depend on many factors, including but not limited to the following:

- our ability to continue to generate revenues from sales of EXONDYS 51, VYONDYS 53, AMONDYS 45 and potential future products;
- the timing and costs associated with our expansion efforts;
- the timing and costs of building out our manufacturing capabilities;

- the timing of advanced payments related to our future inventory commitments and manufacturing obligations;
- the timing and costs associated with our existing lease obligations and new obligations expected to be entered into during the year;
- the timing and costs associated with our clinical trials and pre-clinical trials;
- the attainment of milestones and our obligations to make milestone payments to Myonexus Therapeutics, Inc.'s selling shareholders, StrideBio Inc., BioMarin, Lacerta Therapeutics, Inc., Nationwide, UWA and other institutions;
- repayment of outstanding debt; and
- the costs of filing, prosecuting, defending and enforcing patent claims and our other intellectual property rights.

We cannot provide assurances that financing will be available when and as needed or that, if available, the financings will be on favorable or acceptable terms. If we are unable to obtain additional financing when and if we require, this would have a material adverse effect on our business and results of operations. To the extent we issue additional equity securities, our existing stockholders could experience substantial dilution.

In our continuing operations, we have entered into long-term contractual arrangements from time to time for our facilities, the provision of goods and services, and issuance of debt securities, among others. As of June 30, 2022, total obligations under debt, lease, and manufacturing arrangements were $1.2 billion, $72.2 million, and $1.2 billion, respectively with $55.9 million, $20.0 million and $758.9 million due in less than one year, and approximately $1.2 billion, $52.2 million and $490.6 million due in greater than one year. Additional information regarding our obligations under leasing arrangements and manufacturing arrangements is provided in *Note 12, Leases* and *Note 14, Commitments and Contingencies*, to the unaudited condensed consolidated financial statements contained in Item 1. There have been no material changes to our obligations under debt arrangements as reported in our Form 10-K for the year ended December 31, 2021.

For product candidates that are currently in various research and development stages, we may be obligated to make up to $3.7 billion of future development, regulatory, commercial and up-front royalty and sales milestone payments associated with our license and collaboration agreements. Payments under these agreements generally become due and payable upon achievement of certain development, regulatory or commercial milestones. Because the achievement of these milestones is not probable, and payment is not required as of June 30, 2022, such contingencies have not been recorded in our unaudited condensed consolidated financial statements. Amounts related to contingent milestone payments are not yet considered contractual obligations as they are contingent on the successful achievement of certain development, regulatory approval and commercial milestones.

Cash flows

	For the Six Months Ended June 30,		Change	Change
	2022	2021	$	%
	(in thousands)			
Cash (used in) provided by				
Operating activities	$ (167,990)	$ (289,517)	$ 121,527	(42)%
Investing activities	(1,075,798)	477,725	(1,553,523)	NM*
Financing activities	5,329	6,419	(1,090)	(17)%
(Decrease) increase in cash and cash equivalents	$ (1,238,459)	$ 194,627	$ (1,433,086)	NM*

* NM: not meaningful

Operating Activities

Cash used in operating activities, which consists of our net loss adjusted for non-cash items and changes in net operating assets and liabilities, totaled $168.0 million and $289.5 million for the six months ended June 30, 2022 and 2021, respectively. Cash used in operating activities for the six months ended June 30, 2022 was primarily driven by the net loss of $336.5 million, adjusted for the following:

- $132.1 million in stock-based compensation expense;
- $20.6 million in depreciation and amortization expense; and
- $13.9 million in other in non-cash items.

The net cash outflow from changes in our operating assets and liabilities was primarily driven by the following:

- $50.9 million increase in accounts receivable due to an increase in the demand of our products;
- $44.3 million decrease in deferred revenue related to the collaboration with Roche; and
- $15.4 million increase in inventory due to our continuing build-up of inventory corresponding to the increase in demand for our products.

These amounts were partially offset by a $30.9 million decrease in other assets primarily due to lower consumption of manufacturing-related deposits during the period and an increase of $81.5 million in accounts payable, accrued expenses, lease liabilities and other liabilities, primarily due to an accrual for the estimated shortfall payment to Thermo and the timing and invoicing of payments.

Cash used in operating activities for the six months ended June 30, 2021 was primarily driven by the net loss of $248.7 million, adjusted for the following:

- $57.5 million in stock-based compensation expense;
- $17.4 million in depreciation and amortization expense; and
- $13.4 million in other non-cash items.

These amounts were offset by the gain of $102.0 million recorded from the sale of the PRV.

The net cash outflow from changes in our operating assets and liabilities was primarily driven by the following:

- $44.3 million decrease in deferred revenue related to the collaboration with Roche;
- $36.8 million increase in inventory due to our continuing build-up of inventory corresponding to the increase in demand for our products; and
- $26.2 million increase in accounts receivable due to the increase in demand for our products.

These changes were partially offset by a $73.7 million decrease in other assets due to lower balances in manufacturing-related deposits and prepaids and collaboration receivable balance and a $6.4 million decrease in accounts payable, accrued expenses, lease liabilities and other liabilities due to the timing and invoicing of payments.

Investing Activities

Cash used in investing activities was $1,075.8 million for the six months ended June 30, 2022, compared to $477.7 million of cash provided for the six months ended June 30, 2021. Cash used in investing activities for the six months ended June 30, 2022 primarily consisted of $1,137.6 million of purchases of available-for-sale securities and $14.6 million of purchases of property and equipment, partially offset by proceeds of $77.2 million from the maturity of available-for-sale securities.

Cash provided by investing activities for the six months ended June 30, 2021 primarily consisted of $436.0 million of maturities and sales of available-for-sale securities and $102.0 million of proceeds from the sale of Priority Review Voucher, partially offset by the following:

- $30.0 million of purchases of available-for-sale securities; and
- $27.0 million of purchases of property and equipment due to the continuing build-out of our facilities.

Financing Activities

Cash provided by financing activities was $5.3 million and $6.4 million for the six months ended June 30, 2022 and 2021, respectively. Cash provided by financing activities for the six months ended June 30, 2022 consisted of $5.3 million in proceeds from exercise of options and purchase of stock under our Employee Stock Purchase Program.

Cash provided by financing activities for the six months ended June 30, 2021 consisted of $12.8 million of proceeds from exercises of options and purchase of stock under our Employee Stock Purchase Program, offset by $6.3 million of taxes paid related to net share settlement of equity awards.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

Our current investment policy is to maintain a diversified investment portfolio consisting of money market investments, commercial paper, certificates of deposit, government and government agency bonds and high-grade corporate bonds with maturities of 36 months or less. Our cash is deposited in and invested through highly rated financial institutions in the U.S. As of June 30, 2022, we had approximately $1,946.6 million of cash, cash equivalents, restricted cash and investments, comprised of $868.6 million of cash and cash equivalents, $1,059.5 of short-term investments and $18.5 million long-term restricted cash. The fair value of cash equivalents and short-term investments is subject to change as a result of potential changes in market interest rates. The potential change in fair value for interest rate sensitive instruments has been assessed on a hypothetical 10 basis point adverse movement across all maturities. As of June 30, 2022, we estimate that such hypothetical 10 basis point movement would result in a hypothetical loss in fair value of approximately $0.4 million to our interest rate sensitive instruments.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

We carried out an evaluation as of the end of the period covered by this Quarterly Report on Form 10-Q for the period ended June 30, 2022, under the supervision and with the participation of our management, including our principal executive officer and our principal financial officer, of the effectiveness of our disclosure controls and procedures pursuant to paragraph (b) of Rules 13a-15 and 15d-15 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”). The purpose of this evaluation was to determine whether as of the evaluation date our disclosure controls and procedures were effective to provide reasonable assurance that the information we are required to disclose in our filings with the SEC under the Exchange Act (i) is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and (ii) is accumulated and communicated to our management, including our principal executive officer and our principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. Based on that evaluation, management has concluded that as of June 30, 2022, our disclosure controls and procedures were effective.

Changes in Internal Control over Financial Reporting

During the quarterly period ended June 30, 2022, there were no changes in our internal controls over financial reporting that have materially affected or are reasonably likely to materially affect our internal control over financial reporting.

PART II — OTHER INFORMATION

Item 1. Legal Proceedings

For material legal proceedings, please read *Note 14, Commitments and Contingencies* to our unaudited condensed consolidated financial statements included in this report.

Item 1A. Risk Factors.

Set forth below and elsewhere in this report and in other documents we file with the SEC are descriptions of risks and uncertainties that could cause actual results to differ materially from the results contemplated by the forward-looking statements contained in this report. Because of the following factors, as well as other variables affecting our operating results, past financial performance should not be considered a reliable indicator of future performance and investors should not use historical trends to anticipate results or trends in future periods. The risks and uncertainties described below are not the only ones facing us. Other events that we do not currently anticipate or that we currently deem immaterial also affect our results of operations and financial condition.

Risks Related to Our Business

We are highly dependent on the commercial success of our products in the U.S. and we may not be able to meet expectations with respect to sales of our products or attain profitability and positive cash-flow from operations.

The FDA granted accelerated approval for EXONDYS 51, VYONDYS 53 and AMONDYS 45, as therapeutic treatments for Duchenne in patients who have a confirmed mutation in the dystrophin gene that is amenable to exon 51, exon 53 and exon 45 skipping, respectively. EXONDYS 51 is currently commercially available in the U.S. and Israel only, and VYONDYS 53 and AMONDYS 45 are currently commercially available in the U.S. only, although they are available in additional countries through our EAP. The commercial success of our products continues to depend on a number of factors attributable to one of our products or the products of our competitors, including, but not limited to:

- the effectiveness of our sales, managed markets, marketing efforts and support for our products;
- the generation and dissemination of new data analyses and the consistency of any new data with prior results, whether they support a favorable safety, efficacy and effectiveness profile of our products and any potential impact on our FDA accelerated approval status and/or FDA package insert for our products;
- the effectiveness of our ongoing commercialization activities, including negotiating and entering into any additional commercial, supply and distribution contracts, ongoing manufacturing efforts and hiring any additional personnel as needed to support commercial efforts;
- our ability to timely comply with FDA post-marketing requirements and commitments, including through successfully conducting additional studies that confirm clinical efficacy, effectiveness and safety of our products and acceptance of the same by the FDA and medical community since continued approval may be contingent upon verification of a clinical benefit in confirmatory trials;
- the occurrence of any side effects, adverse reactions or misuse, or any unfavorable publicity in these areas;
- the generation of evidence describing payers, patients and/or societal value of our products;
- whether we can consistently manufacture our products and product candidates at acceptable costs;
- the rate and consistency with which our products are prescribed by physicians, which depends on physicians' views on the safety, effectiveness and efficacy of our products;
- our ability to secure and maintain adequate reimbursement for our products, including the duration of the prior-authorization as well as the number and duration of re-authorization processes required for patients who initially obtained coverage by third parties, including by government payors, managed care organizations and private health insurers;
- our ability to obtain and maintain patent protection for our products, to preserve our trade secrets, to prevent third parties from infringing on our proprietary rights and to operate without infringing on the proprietary rights of third parties;
- the development, commercialization or pricing of competing products or therapies for the treatment of Duchenne, or its symptoms, and the existence of competing clinical trials;

- our ability to increase awareness of the importance of genetic testing and knowing/understanding Duchenne mutations, and identifying and addressing procedural barriers to obtaining therapy;
- our ability to remain compliant with laws and regulations that apply to us and our commercial activities;
- the actual market-size, ability to identify patients and the demographics of patients eligible for our products, which may be different than expected;
- the sufficiency of our drug supply to meet commercial and clinical demands and standards, which are negatively impacted by various factors, including when our projections on the potential number of amenable patients and their average weight are inaccurate; the potential impacts of the COVID-19 pandemic; if regulatory requirements increase our drug supply needs; if our current drug supply is destroyed or negatively impacted at our manufacturing sites, storage sites or in transit; failure to meet cGMP requirements; or if we encounter delays expanding the number of patients on our products and portions of our products' supply expire before sale;
- our ability to obtain regulatory approvals to commercialize our product candidates, and to commercialize our products in markets outside of the U.S.;
- the process leading to a patient's first infusion of our products may be slower for certain patients. For example, the time to first infusion may take longer if a patient chooses to put in an intravenous port, which eases access to the vein. Delays in the process prior to first infusion could negatively impact the sales of our products; and
- the exercise by Roche of its option to obtain an exclusive license to commercialize one or more of our Duchenne products beyond SRP-9001 outside of the U.S. and Roche's subsequent commercialization efforts.

In addition, the ongoing COVID-19 pandemic has presented challenges and risks. For example, the response to COVID-19 by healthcare providers has made it difficult for some patients to receive infusions or initiate treatment with our commercial products. The need to prioritize rated orders issued by the Federal Emergency Management Agency pursuant to the U.S. Defense Production Act could also impact the manufacturing, supply chain and distribution of our products and product candidates. For this and other reasons, such as delays in processing reauthorizations and modifications to program benefits by insurers, we expect that COVID-19 will reduce our revenue from commercial product sales.

We experience significant fluctuations in sales of our products from period to period and, ultimately, we may never generate sufficient revenues from our products to reach or maintain profitability or sustain our anticipated levels of operations.

Even though EXONDYS 51, VYONDYS 53 and AMONDYS 45 have received accelerated approval from the FDA, they face future post-approval development and regulatory requirements, which present additional challenges we will need to successfully navigate.

The accelerated approvals for EXONDYS 51, VYONDYS 53 and AMONDYS 45 granted by the FDA were based on an increase in the surrogate biomarker of dystrophin in skeletal muscles observed in some patients treated with these products. These products are subject to ongoing FDA requirements governing labeling, packaging, storage, advertising, promotion and recordkeeping, and we are required to submit additional safety, efficacy and other post-marketing information to the FDA.

Under the accelerated approval pathway, continued approval may be contingent upon verification of a clinical benefit in confirmatory trials. These post-approval requirements and commitments may not be feasible and/or could impose significant burdens and costs on us; could negatively impact our development, manufacturing and supply of our products; and could negatively impact our financial results. Failure to meet post-approval commitments and requirements, including completion of enrollment and in particular, any failure to obtain positive safety and efficacy data from our ongoing and planned studies of our products, would lead to negative regulatory action from the FDA and/or withdrawal of regulatory approval of EXONDYS 51, VYONDYS 53 or AMONDYS 45.

Manufacturers of drug products and their facilities are subject to continual review and periodic inspections by the FDA and other regulatory authorities for compliance with cGMP regulations. Drug product manufacturers are required to continuously monitor and report adverse events from clinical trials and commercial use of the product. If we or a regulatory agency discover previously unknown adverse events or events of unanticipated severity or frequency, a regulatory agency may require labeling changes, implementation of risk evaluation and mitigation strategy program, or additional post-marketing studies or clinical trials. If we or a regulatory agency discover previously unknown problems with a product, such as problems with a facility where the API or drug product is manufactured or tested, a regulatory agency may impose restrictions on that product and/or the manufacturer, including removal of specific product lots from the market, withdrawal of the product from the market, suspension of manufacturing or suspension of clinical trials using the same manufacturing materials. Sponsors of drugs approved under FDA accelerated approval provisions also are required to submit to the FDA, at least 30 days before initial use, all promotional materials intended for use after the first 120 days following marketing approval. Failure by us or the manufacturing facilities for our products to comply with applicable regulatory requirements, may lead a regulatory agency to:

- issue warning letters or untitled letters;

- seek an injunction or impose civil or criminal penalties or monetary fines;
- suspend or withdraw or alter the conditions of our marketing approval;
- mandate modifications to promotional materials or require us to provide corrective information to healthcare practitioners;
- suspend any ongoing clinical trials;
- require us to enter into a consent decree, which can include imposition of various fines, reimbursements for inspection costs, required due dates for specific actions and penalties for noncompliance;
- refuse to approve pending applications or supplements to applications submitted by us;
- suspend or impose restrictions on operations, including costly new manufacturing requirements;
- seize or detain products, refuse to permit the import or export of products or require us to initiate a product recall; or
- refuse to allow us to enter into supply contracts, including government contracts.

We are subject to uncertainty relating to reimbursement policies which, if not favorable, could hinder or prevent the commercial success of our products and/or product candidates.

Our ability to successfully maintain and/or increase sales of our products in the U.S. depends in part on the coverage and reimbursement levels set by governmental authorities, private health insurers and other third-party payors. Third party payors are increasingly challenging the effectiveness of and prices charged for medical products and services. We may not be able to obtain or maintain adequate third-party coverage or reimbursement for our products, and/or we may be required to provide discounts or rebates on our products in order to obtain or maintain adequate coverage.

We expect that private insurers will continue to consider the efficacy, effectiveness, cost-effectiveness and safety of our products, including any new data and analyses that we are able to collect and make available in a compliant manner, in determining whether to approve reimbursement for our products and at what levels. If there are considerable delays in the generation of new evidence or if any new data and information we collect is not favorable, third party insurers may make coverage decisions that negatively impact sales of our products. We continue to have discussions with payors, some of which may eventually deny coverage. We may not receive approval for reimbursement of our products from additional insurers on a satisfactory rate or basis, in which case our business would be materially adversely affected. In addition, obtaining these approvals can be a time consuming and expensive process. Our business would be materially adversely affected if we are not able to maintain favorable coverage decisions and/or fail to receive additional favorable coverage decisions from third party insurers, in particular during re-authorization processes for patients that have already initiated therapy. Our business could also be adversely affected if government health programs, private health insurers, including managed care organizations, or other reimbursement bodies or payors limit the indications for which our products will be reimbursed or fail to recognize accelerated approval and surrogate endpoints as clinically meaningful.

In addition, the impact of the ongoing COVID-19 pandemic has resulted in delays in processing reauthorizations and modifications to program benefits by insurers, making it difficult for patients to obtain or maintain favorable coverage decisions for our products. Furthermore, we cannot predict to what extent the COVID-19 pandemic, depending on its scale and duration, may disrupt global healthcare systems and access to our products or result in a widespread loss of individual health insurance coverage due to unemployment or trends in employee attrition, a shift from commercial payor coverage to government payor coverage, or an increase in demand for patient assistance and/or free drug programs, any of which would adversely affect access to our products and our net sales.

In some foreign countries, particularly Canada and the countries of Europe, Latin America and Asia Pacific, the pricing of prescription pharmaceuticals is subject to strict governmental control. In these countries, pricing negotiations with governmental authorities can take 12 to 24 months or longer after the receipt of regulatory approval and product launch. In order to obtain favorable reimbursement for the indications sought or pricing approval in some countries, we may be required to collect additional data, including conducting additional studies. Furthermore, several countries around the world have implemented government measures to either freeze or reduce pricing of pharmaceutical products. If reimbursement for our products is unavailable in any country in which reimbursement is sought, limited in scope or amount, or if pricing is set at unsatisfactory levels, our business could be materially harmed. In addition, many foreign countries reference other countries' official public list price, hence an unsatisfactory price level in one country could consequently impinge negatively upon overall revenue.

We expect to experience pricing pressures in connection with the sale of our current and future products due to a number of factors, including current and future healthcare reforms and initiatives by government health programs and private insurers (including

managed care plans) to reduce healthcare costs, the scrutiny of pharmaceutical pricing, the ongoing debates on reducing government spending and additional legislative proposals. These healthcare reform efforts or any future legislation or regulatory actions aimed at controlling and reducing healthcare costs, including through measures designed to limit reimbursement, restrict access or impose unfavorable pricing modifications on pharmaceutical products, could impact our and our partners' ability to obtain or maintain reimbursement for our products at satisfactory levels, or at all, which could materially harm our business and financial results.

Additionally, our gene therapy product candidates represent novel approaches to treatment that will call for new levels of innovation in both pricing, reimbursement, payment and drug access strategies. Current reimbursement models may not accommodate the unique factors of our gene therapy product candidates, including high up-front costs, lack of long-term efficacy and safety data and fees associated with complex administration, dosing and patient monitoring requirements. Hence, it may be necessary to restructure approaches to payment, pricing strategies and traditional payment models to support these therapies.

The downward pressure on healthcare costs in general has become intense. As a result, increasingly high barriers are being erected to the entry of new products. If we are unable to obtain adequate levels of reimbursement, our ability to successfully market and sell our products and product candidates will be harmed. The manner and level at which reimbursement is provided for services related to our products and product candidates (e.g., for administration of our products to patients) is also important. Inadequate reimbursement for such services may lead to physician resistance and limit our ability to market or sell our products.

Healthcare policy reform and other governmental and private payor initiatives may have an adverse effect upon, and could prevent commercial success of our products and product candidates.

The U.S. government and individual states continue to aggressively pursue healthcare reform, as evidenced by efforts in recent years to modify or repeal the Affordable Care Act and ongoing attempts to control and/or lower the cost of prescription drugs and biologics. The Affordable Care Act substantially changed the way healthcare is financed by both governmental and private insurers and contains a number of provisions that affect coverage and reimbursement of drug products and/or that could potentially reduce the demand for pharmaceutical products such as increasing drug rebates under state Medicaid programs for brand name prescription drugs and extending those rebates to Medicaid managed care and assessing a fee on manufacturers and importers of brand name prescription drugs reimbursed under certain government programs, including Medicare and Medicaid. Other aspects of healthcare reform, such as expanded government enforcement authority and heightened standards that could increase compliance-related costs, could also affect our business. The Affordable Care Act has been subject to modification and additional modifications may occur. There are, and may continue to be, judicial challenges to those efforts. Legislative, Administrative, and private payor efforts to control drug costs span a range of proposals, including drug price negotiation, Medicare Part D redesign, drug price inflation rebates, international mechanisms, generic drug promotion and anticompetitive behavior, manufacturer reporting, and reforms that could impact therapies utilizing the accelerated approval pathway. We cannot predict the ultimate content, timing or effect of any changes to the Affordable Care Act or other federal and state healthcare policy reform efforts including those aimed at drug pricing. There is no assurance that federal or state health care reform will not adversely affect our future business and financial results, and we cannot predict how future federal or state legislative, judicial or administrative changes relating to healthcare policy will affect our business.

Additionally, in recent years, Congress has missed or nearly missed meeting appropriations or statutory deadlines to fund federal agencies or departments, or may fail to timely reauthorize programs at agencies such as the Food and Drug Administration, which has approval jurisdiction over our products. Uncertainty as to whether Congress will authorize or fund FDA activities, for example, could delay product-related approvals or result in other impacts to our business.

The U.S. government, state legislatures and foreign governments have shown significant interest in implementing cost-containment programs to limit the growth of government-paid healthcare costs, including price controls, waiver from Medicaid drug rebate law requirements, restrictions on reimbursement and requirements for substitution of generic products for branded prescription drugs and the introduction of international reference pricing in the U.S. We anticipate that the U.S. Congress, state legislatures and the private sector will continue to consider and may adopt healthcare policies intended to curb rising healthcare costs. These cost containment measures may include implementation or modification of:

- controls on government funded reimbursement for drugs;
- caps or mandatory discounts under certain government sponsored programs;
- controls on healthcare providers;
- challenges to the pricing of drugs or limits or prohibitions on reimbursement for specific products through other means;
- reform of drug importation laws;
- delegation of decision making to state Medicaid agencies and waiver of reimbursement requirements;

- expansion of use of managed care systems in which healthcare providers contract to provide comprehensive healthcare for a fixed cost per person; and
- prohibition on direct-to-consumer advertising or drug marketing practices.

We are unable to predict what additional legislation, regulations or policies, if any, relating to the healthcare industry or third party coverage and reimbursement may be enacted in the future or what effect such legislation, regulations or policies would have on our business. Any cost containment measures, including those listed above, or other healthcare system reforms that are adopted, could significantly decrease the available coverage and the price we might establish for our products and product candidates, which would have an adverse effect on our net revenues and operating results.

Our products may not be widely adopted by patients, payors or healthcare providers, which would adversely impact our potential profitability and future business prospects.

The commercial success of our products, particularly in the U.S., depends upon the level of market adoption by patients, payors and healthcare providers. If our products do not achieve an adequate level of market adoption for any reason, or if market adoption does not persist, our potential profitability and our future business prospects will be severely adversely impacted. The degree of market acceptance of our products depends on a number of factors, including:

- our ability to demonstrate to the medical and payor community, including specialists who may purchase or prescribe our products, the clinical efficacy, effectiveness and safety of our products as the prescription products of choice for their respective indications;
- the effectiveness of our sales and marketing organizations and distribution networks;
- the ability of patients or providers to be adequately reimbursed for our products in a timely manner from government and private payors;
- the ability to timely demonstrate to the satisfaction of payors real world effectiveness and the economic, humanistic and societal benefits of our products;
- the actual and perceived efficacy and safety profile of our products, particularly if unanticipated adverse events related to our products' treatment arise and create safety concerns among potential patients or prescribers or if new data and analyses we obtain for our products do not support, or are interpreted by some parties to not support, the efficacy of our products; and
- the efficacy and safety of our other exon-skipping and gene therapy product candidates and third parties' competitive therapies.

We may not be able to expand the global footprint of our products outside of the U.S.

Even though EXONDYS 51 was approved for marketing in the U.S. and in Israel, and VYONDYS 53 and AMONDYS 45 were approved for marketing in the U.S., we may not receive approval to commercialize these products in additional countries. In November 2016, we submitted a MAA for eteplirsen to the EMA and the application was validated in December 2016. As we announced on June 1, 2018, the CHMP of the EMA adopted a negative opinion for eteplirsen. In September 2018, the CHMP of the EMA confirmed its negative opinion for eteplirsen, and the EC adopted the CHMP opinion in December 2018.

In order to market any product in a country outside of the U.S., we must comply with numerous and varying regulatory requirements for approval in those countries regarding demonstration of evidence of the product's safety and efficacy and governing, among other things, labeling, distribution, advertising, and promotion, as well as pricing and reimbursement of the product. Obtaining marketing approval in a country outside of the U.S. is an extensive, lengthy, expensive and uncertain process, and the regulatory authority may reject an application or delay, limit or deny approval of any of our products for many reasons, including:

- we may not be able to demonstrate to the satisfaction of regulatory authorities outside the U.S. the risk benefit of our products;
- the results of clinical trials may not meet the level of statistical or clinical significance required for approval by regulatory authorities outside the U.S.;
- regulatory authorities outside the U.S. may disagree with the adequacy (number, design, size, controls, conduct or implementation) of our clinical trials prior to granting approval, and we may not be able to generate the required data on a timely basis, or at all;

- regulatory authorities outside the U.S. may conclude that data we submit to them fail to demonstrate an appropriate level of safety or efficacy of our products, or that our products' respective clinical benefits outweigh their safety risks;
- regulatory authorities outside the U.S. may not accept data generated at our clinical trial sites or require us to generate additional data or information;
- regulatory authorities outside the U.S. may impose limitations or restrictions on the approved labeling of our products, thus limiting intended users or providing an additional hurdle for market acceptance of the product;
- regulatory authorities outside the U.S. may identify deficiencies in the manufacturing processes, or may require us to change our manufacturing process or specifications; and
- regulatory authorities outside the U.S. may adopt new or revised approval policies and regulations.

Approval procedures vary among countries and can involve additional product testing and additional administrative review periods. The time required to obtain approval in other countries might differ significantly from that required to obtain approval in the U.S. In particular, in many foreign countries, it is required that a product receives pricing and reimbursement approval before the product can be distributed commercially. Many foreign countries undertake cost-containment measures that could affect pricing or reimbursement of our products. This can result in substantial delays, and the price that is ultimately approved in some countries may be lower than the price for which we expect to offer our products.

Marketing approval in one country does not ensure marketing approval in another, but a failure or delay in obtaining marketing approval in one country may have a negative effect on the approval process in others. Failure to obtain marketing approval in other countries or any delay or setback in obtaining such approval would impair our ability to develop foreign markets for our products and could adversely affect our business and financial condition. In addition, failure to obtain approval in one country or area may affect sales under the EAP in other countries or areas. Even if we are successful in obtaining regulatory approval of our products in additional countries, our revenue earning capacity will depend on commercial and medical infrastructure, pricing and reimbursement negotiations and decisions with third party payors, including government payors.

In addition, we have granted Roche an exclusive option to obtain an exclusive license to commercialize certain products, including eteplirsen, golodirsen and casimersen, outside of the U.S. If this option is exercised, Roche will have sole control over and decision-making authority with respect to the commercialization of such products outside the U.S.

We cannot predict whether historical revenues from eteplirsen, golodirsen and casimersen through our EAP outside the U.S. will continue or whether we will be able to continue to distribute eteplirsen, golodirsen and casimersen through our EAP.

We established a global EAP for eteplirsen, golodirsen and casimersen in some countries where these products currently have not been approved. While we generate revenue from the distribution of these products through our EAP, we cannot predict whether historical revenues from this program will continue, whether we will be able to continue to distribute our products through our EAP, or whether revenues will exceed revenues historically generated from sales through our EAP. Reimbursement through national EAPs may cease to be available if authorization for an EAP expires or is terminated. For example, healthcare providers in EAP jurisdictions may not be convinced that their patients benefit sufficiently from our products or alternatively, may prefer to wait until such time as our products are approved by a regulatory authority in their country before prescribing any of our products. Even if a healthcare provider is interested in obtaining access to our products for its patient through the EAP, the patient will not be able to obtain access to our products if funding for the drug is not secured.

Any failure to maintain revenues from sales of eteplirsen, golodirsen or casimersen through our EAP and/or to generate revenues from commercial sales of these products exceeding historical sales through our EAP could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

Failure to obtain or maintain regulatory exclusivity for our products could result in our inability to protect our products from competition and our business may be adversely impacted. If a competitor obtains an authorization to market the same or substantially same product before a product of ours is authorized in a given country and is granted regulatory exclusivity, then our product may not be authorized for sale as a result of the competitor's regulatory exclusivity and as a result, our investment in the development of that product may not be returned.

In addition to any patent protection, we rely on various forms of regulatory exclusivity to protect our products. During the development of our products, we anticipate any one form of regulatory exclusivities becoming available upon approval of our products. Implementation and enforcement of regulatory exclusivity, which may consist of regulatory data protection and market protection, varies widely from country to country. Failure to qualify for regulatory exclusivity, or failure to obtain or maintain the extent or duration of such protections that we expect in each of the markets for our products due to challenges, changes or interpretations in the law or otherwise, could affect our revenues for our products or our decision on whether to market our products in a particular country or countries or could otherwise have an adverse impact on our results of operations. We are not guaranteed to receive or maintain regulatory exclusivity for our current or future products, and if our products that are granted orphan status were to lose their status as orphan drugs or the data or marketing exclusivity provided for orphan drugs, our business and operations could be adversely affected.

Due to the nature of our products and product candidate pipeline, in addition to new chemical entity exclusivity and new biologic exclusivity, orphan drug exclusivity is especially important for our products that are eligible for orphan drug designation. For eligible products, we plan to rely on orphan drug exclusivity to maintain a competitive position. If we do not have adequate patent protection for our products, then the relative importance of obtaining regulatory exclusivity is even greater. While orphan status for any of our products, if granted or maintained, would provide market exclusivity for the time periods specified above upon approval, we would not be able to exclude other companies from obtaining regulatory approval of products using the same or similar active ingredient for the same indication during or beyond the exclusivity period applicable to our product on the basis of orphan drug status (e.g., seven years in the U.S.). For example, the exclusivity period for EXONDYS 51 will end in September 2023. 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.

In addition, we may face risks with maintaining regulatory exclusivities for our products, and our protection may be circumvented, even if maintained. For instance, orphan drug exclusivity in the U.S. may be rescinded if (i) an alternative, competing product demonstrates clinical superiority to our product with orphan exclusivity; or (ii) we are unable to assure the availability of sufficient quantities of our orphan products to meet the needs of patients. Moreover, competitors may receive approval of different drugs or biologics for indications for which our prior approved orphan products have exclusivity. Orphan drug exclusivity in Europe may be modified for several reasons, including a significant change to the orphan medicinal product designations or status criteria after-market authorization of the orphan product (e.g., product profitability exceeds the criteria for orphan drug designation), problems with the production or supply of the orphan drug, or a competitor drug, although similar, is safer, more effective or otherwise clinically superior than the initial orphan drug. Thus, other companies may have received, or could receive, approval to market a product candidate that is granted orphan drug exclusivity for the same drug or similar drug and same orphan indication as any of our product candidates for which we plan to file an NDA, BLA or MAA. If that were to happen, our prior approved orphan products may face competition and any pending NDA, BLA or MAA for our product candidate for that indication may not be approved until the competing company's period of exclusivity has expired in the U.S. or the EU, as applicable. For example, in September 2021, the FDA issued guidance concerning its position on interpreting when gene therapy products would be considered the "same" or "different" for purposes of orphan drug exclusivity. The guidance states that if two gene therapy products have or use different vectors, the FDA generally intends to consider them to be "different" drugs. Further, according to the guidance, the FDA generally intends to consider vectors from the same viral group (e.g., adeno-associated virus 2 (AAV2) vs. adeno-associated virus 5 (AAV5)) to be different, when the differences between the vectors impact factors such as tropism, immune response avoidance, or potential insertional mutagenesis. However, there is considerable uncertainty as to the interpretation of these guidelines. As illustrated by this guidance, orphan drug exclusivity as applied to gene therapy products is an evolving area subject to change and interpretation by the FDA and therefore, we cannot be certain as to how the FDA will apply those rules to our products.

If we are unable to successfully maintain and further develop internal commercialization capabilities, sales of our products may be negatively impacted.

We have hired and trained a commercial team and put in the organizational infrastructure we believe we need to support the commercial success of our products in the U.S. Factors that may inhibit our efforts to maintain and further develop commercial capabilities include:

- an inability to retain an adequate number of effective commercial personnel;

- an inability to train sales personnel, who may have limited experience with our company or our products, to deliver a consistent message regarding our products and be effective in educating physicians on how to prescribe our products;
- an inability to equip sales personnel with compliant and effective materials, including medical and sales literature to help them educate physicians and our healthcare providers regarding our products and their proper administration and educate payors on the safety, efficacy and effectiveness profile of our products to support favorable coverage decisions;
- unforeseen costs and expenses associated with maintaining and further developing an independent sales and marketing organization; and
- restrictions on the ability of our employees to perform their jobs due to the COVID-19 pandemic, such as quarantines and self-isolations.

If we are not successful in maintaining an effective commercial, sales and marketing infrastructure, we will encounter difficulty in achieving, maintaining or increasing projected sales of our products in the U.S., which would adversely affect our business and financial condition.

The patient population suffering from Duchenne, LGMDs, and CMT 1A is small and has not been established with precision. If the actual number of patients is smaller than we estimate, our revenue and ability to achieve profitability may be adversely affected.

Duchenne, LGMD, and CMT 1A are rare, fatal genetic disorders. Duchenne affects an estimated one in approximately every 3,500 to 5,000 males born worldwide, of which up to 13% are estimated to be amenable to exon 51 skipping, up to 8% are estimated to be amenable to exon 53 skipping and up to 8% are estimated to be amenable to exon 45 skipping. LGMDs as a class affect an estimated range of approximately one in every 14,500 to one in every 123,000 individuals. CMT is a group of peripheral nerve disorders affecting approximately one in every 2,500 individuals. CMT type 1A affects approximately 50,000 patients in the U.S. Our estimates of the size of these patient populations are based on limited number of published studies as well as internal analyses. Various factors may decrease the market size of our products and product candidates, including the severity of the disease, patient demographics and the response of patients' immune systems to our products and product candidates. If the results of these studies or our analysis of them do not accurately reflect the relevant patient population, our assessment of the market may be inaccurate, making it difficult or impossible for us to meet our revenue goals, or to obtain and maintain profitability.

We face intense competition and rapid technological change, which may result in other companies discovering, developing or commercializing competitive products.

The biotechnology and pharmaceutical industries are highly competitive and subject to significant and rapid technological change. We are aware of many pharmaceutical and biotechnology companies that are actively engaged in research and development in areas in which our products and product candidates are aimed. Some of these competitors are developing or testing product candidates that now, or may in the future, compete directly with our products or product candidates. For example, we face competition in the field of Duchenne by third parties who are developing or who had once developed: (i) exon skipping product candidates, such as Wave Life Sciences (notably for exons 51 and 53), Nippon Shinyaku (notably for exon 44 and exon 53, for which it has received FDA approval for its product Viltepso (viltolarsen)), Daiichi Sankyo (notably for exon 45), Dyne Therapeutics pursuing antibody-oligonucleotide conjugates for exons 44, 45, 51, and 53, Avidity Biosciences pursuing antibody-oligonucleotide conjugates for exons 44, 45 and 51), Entrada Therapeutics (notably for exon 44), PepGen (notably for exon 51) and BioMarin (BMN-351 for exon 51); (ii) gene therapies, such as Pfizer, Solid Biosciences (in partnership with Ultragenyx), Regenxbio and Bristol-Myers Squibb; (iii) gene editing, including CRISPR/Cas 9 approaches, such as Vertex Pharmaceuticals, CRISPR Therapeutics, Editas Medicine, Beam Therapeutics Inc. (in partnership with Pfizer) and Precision Biosciences (in partnership with Eli Lilly); (iv) other disease modifying approaches, such as PTC Therapeutics, which has a small molecule candidate, ataluren, that targets nonsense mutations; and (v) other approaches that may be palliative in nature or potentially complementary with our products and product candidates and that are or were once being developed by Santhera, Catabasis, Fibrogen, ReveraGen, Capricor Therapeutics (in partnership with Nippon Shinyaku), BioPhytis, Mallinckrodt, Antisense Therapeutics, Italfarmaco and Edgewise Therapeutics. Although BioMarin announced on May 31, 2016 its intent to discontinue clinical and regulatory development of drisapersen as well as its other clinical stage candidates, BMN 044, BMN 045 and BMN 053, then-currently in Phase 2 studies for distinct forms of Duchenne, it further announced in 2021 its plans to submit an IND for BMN-351, an oligonucleotide therapy. In addition, while Wave announced its intention to discontinue development of suvodirsen and suspend development of WVE-N531, it has announced that it commenced clinical development for its exon 53 oligonucleotide, WVE-N531.

In addition, we are aware of many pharmaceutical and biotechnology companies that are actively engaged in research and development using platform technologies that may be viewed as competing with ours including those companies mentioned immediately above, as well as other companies including, but not limited to Alnylam Pharmaceuticals, Inc., Tekmira Pharmaceuticals Corp., Deciphera Pharmaceuticals, Ionis Pharmaceuticals, Inc., Roche Innovation Center Copenhagen (formerly Santaris Pharma A/S), Takeda, Biogen, Moderna Therapeutics, Stoke Therapeutics, Fulcrum Therapeutics, Synthena AG, DTx Pharma, PYC Therapeutics, and Sanofi. Additionally, several companies and institutions have entered into collaborations or other agreements for the development of product candidates, including mRNA, gene therapy and gene editing (CRIPSR and AAV, among others) and small molecule therapies that are potential competitors for therapies being developed in the muscular dystrophy, neuromuscular and rare

disease space, including, but not limited to, Astellas Pharma, Biogen Inc., Arrowhead Pharmaceuticals, Ionis, Alexion Pharmaceuticals, Inc., Sanofi, Takeda, Eli Lilly, Alnylam Pharmaceuticals, Inc., Moderna Therapeutics, Inc., Akashi, Catabasis, Capricor Therapeutics, Oxford University, Vertex Pharmaceuticals, and Editas Medicine.

If any of our competitors are successful in obtaining regulatory approval for any of their product candidates, it may limit our ability to enter into the market, gain market share or maintain market share in the Duchenne space or other diseases targeted by our platform technologies, products and product candidate pipeline.

It is possible that our competitors will succeed in developing technologies that, in addition to limiting the market size for our products or product candidates, impact the regulatory approval and post-marketing process for our products and product candidates, are more effective than our products or product candidates or would render our technologies obsolete or noncompetitive. Our competitors may, among other things, relative to our products or product candidates:

- develop safer or more effective products;
- implement more effective approaches to sales and marketing;
- develop less costly products;
- have lower cost of goods;
- receive more favorable reimbursement coverage;
- obtain preferred formulary status;
- obtain regulatory approval more quickly;
- have access to more manufacturing capacity;
- develop products that are more convenient and easier to administer;
- form more advantageous strategic alliances; or
- establish superior intellectual property positions.

Our revenue could face competitive pressures for any of the above reasons. Moreover, if competing products are marketed in a territory in which we also have the authority to market our products, our sales may diminish, or our business could be otherwise materially adversely affected.

We have entered into multiple collaborations and strategic transactions, including our collaboration with Roche, and may seek or engage in future strategic collaborations, alliances, acquisitions, licensing agreements or other relationships that complement or expand our business. We may not be able to complete such transactions, and such transactions, if executed, may increase our capital requirements, dilute our stockholders, cause us to incur debt or assume contingent liabilities and subject us to other risks.

In order to achieve our long-term business objectives, we actively evaluate strategic opportunities on an ongoing basis, including licensing or acquiring products, technologies or businesses. We may face competition from other companies in pursuing such opportunities. This competition is most intense for approved drugs and late-stage drug candidates, which have the lowest risk in terms of probability of success but would have a higher risk and more immediate effect on our financial performance. Our ability to complete transactions may also be limited by applicable antitrust and trade regulation laws and regulations in the relevant U.S. and foreign jurisdictions.

We have entered into multiple collaborations, including with Roche, Nationwide, Duke University, Genethon, StrideBio, University of Florida, Genevant Sciences, Dyno Therapeutics, Selecta Biosciences, GenEdit and Hansa Biopharma. We may not realize the anticipated benefits of such collaborations, and the anticipated benefits of any future collaborations or strategic relationships, each of which involves numerous risks, including:

- collaborators have significant discretion in determining the efforts and resources that they will apply to a collaboration;
- collaborators may not pursue development and commercialization of our products or product candidates based on clinical trial results, changes in their strategic focus due to the acquisition of competitive products, availability of funding, or other internal or external factors, such as a business combination that diverts resources or creates competing priorities;

- collaborators may delay research activities including clinical trials, provide insufficient funding for research activities, stop research activities, abandon a product candidate, repeat or conduct new research activities including clinical trials, or require a new formulation of a product candidate for investigation including clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products or product candidates, or otherwise undermine or devalue the efforts of our collaboration;
- collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;
- disputes may arise between us and a collaborator that cause the delay or termination of the research, development or commercialization of our products or product candidates, or that result in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated and, if terminated, may eliminate our rights to commercialize certain products or product candidates or may result in a need for additional capital;
- failure to successfully develop the acquired or licensed products or technology or to achieve strategic objectives, including successfully developing and commercializing the products, product candidates or technologies that we acquire or license;
- entry into markets in which we have no or limited direct prior experience or where competitors in such markets have stronger market positions;
- disruption of our ongoing business, distraction of our management and employees from other opportunities and challenges and retention of key employees;
- potential failure of the due diligence processes to identify significant problems, liabilities or other shortcomings or challenges of a strategic partner, or the relevant product or technology, including but not limited to, problems, liabilities or other shortcomings or challenges with respect to intellectual property, product quality, safety, accounting practices, employee, customer or third-party relations and other known and unknown liabilities;
- liability for activities of a strategic partner before the effective date of the relevant agreement, including intellectual property infringement claims, violations of laws, commercial disputes, tax liabilities, and other known and unknown liabilities;
- exposure to litigation or other claims in connection with, or inheritance of claims or litigation risk as a result of a strategic transaction, including but not limited to, claims from terminated employees, customers, former equity holders or other third-parties;
- difficulty in integrating the products, product candidates, technologies, business operations and personnel of an acquired asset or company; and
- difficulties in the integration of the acquired company’s departments, systems, including accounting, human resource and other administrative systems, technologies, books and records, and procedures, as well as in maintaining uniform standards, controls, including internal control over financial reporting required by the Sarbanes-Oxley Act of 2002 and related procedures and policies.

For example, we will have limited influence and control over the development and commercialization activities of Roche in the territories in which it leads development and commercialization of SRP-9001, and if the exclusive option is exercised, in the territories in which it leads commercialization of certain other products or product candidates. Roche’s development and commercialization activities in the territories where it is the lead party may adversely impact our own efforts in the U.S. Failure by Roche to meet its obligations under the collaboration agreement, to apply sufficient efforts at developing and commercializing collaboration products, or to comply with applicable legal or regulatory requirements, may materially adversely affect our business and our results of operations. In addition, to the extent we rely on Roche to commercialize any products upon obtaining regulatory approval, we may receive less revenues than if we commercialized these products ourselves, which could materially harm our prospects.

Even if we achieve the long-term benefits associated with strategic transactions, our expenses and short-term costs may increase materially and adversely affect our liquidity and short-term net income (loss). Future strategic transactions could result in potentially dilutive issuances of our equity securities, the incurrence of debt, the creation of contingent liabilities, impairment or expenses related to goodwill, and impairment or amortization expenses related to other intangible assets, which could harm our financial condition.

Risks Related to the Development of our Product Candidates

We may find it difficult to enroll patients in our clinical trials, which could delay or prevent clinical trials of our product candidates.

Identifying and qualifying patients to participate in clinical trials of our product candidates is critical to our success. The timing of our clinical trials depends on the speed at which we can recruit eligible patients to participate in testing our product candidates. We have experienced delays in some of our clinical trials, and we may experience similar delays in the future. These delays could result in increased costs, delays in advancing our product development, delays in testing the effectiveness of our technology or termination of the clinical trials altogether.

We may not be able to identify, recruit and enroll a sufficient number of patients, or those with required or desired characteristics to achieve diversity in a study, to complete our clinical trials within the expected timeframe. Patient enrollment can be impacted by factors including, but not limited to:

- design and complexity and/or commitment of participation required in the study protocol;
- size of the patient population;
- diagnostic capabilities within patient population;
- eligibility criteria for the study in question;
- clinical supply availability;
- delays in participating site identification, qualification and subsequent activation to enroll;
- perceived risks and benefits of the product candidate under study, including as a result of adverse effects observed in similar or competing therapies;
- proximity and availability of clinical trial sites for prospective patients;
- availability of competing therapies and clinical trials;
- competition of site efforts to facilitate timely enrollment in clinical trials;
- participating site motivation;
- patient referral practices of physicians;
- activities of patient advocacy groups;
- ability to monitor patients adequately during and after treatment; and
- severity of the disease under investigation.

In particular, each of the conditions for which we plan to evaluate our product candidates are rare genetic diseases with limited patient pools from which to draw for clinical trials. Further, because newborn screening for these diseases is not widely adopted, and it can be difficult to diagnose these diseases in the absence of a genetic screen, we may have difficulty finding patients who are eligible to participate in our studies. The eligibility criteria of our clinical trials will further limit the pool of available study participants. Additionally, the process of finding and diagnosing patients may prove costly. The treating physicians in our clinical trials may also use their medical discretion in advising patients enrolled in our clinical trials to withdraw from our studies to try alternative therapies. In addition, our ability to recruit and enroll patients in our clinical trials may be negatively impacted by the evolving COVID-19 pandemic, including patients' ability and willingness to travel to clinical trial sites as a result of quarantines and other restrictions.

We may not be able to initiate or continue clinical trials if we cannot enroll the required eligible patients per protocol to participate in the clinical trials required by the FDA or the EMA or other regulatory agencies. Our ability to successfully initiate,

enroll and complete a clinical trial in any foreign country is subject to numerous risks unique to conducting business in foreign countries, including:

- difficulty in establishing or managing relationships with contract research organizations ("CROs") and physicians;
- different standards for the conduct of clinical trials;
- our inability to locate qualified local consultants, physicians and partners;
- the potential burden of complying with a variety of foreign laws, medical standards and regulatory requirements, including the regulation of pharmaceutical and biotechnology products and treatment;
- ability to procure and deliver necessary clinical trial materials needed to perform the study; and
- inability to implement adequate training at participating sites remotely when in person training cannot be completed.

If we have difficulty enrolling a sufficient number of patients to conduct our clinical trials as planned, we may need to delay, limit or terminate ongoing or planned clinical trials, any of which would have an adverse effect on our business.

Failures or delays in the commencement or completion of ongoing and planned clinical trials of our product candidates could negatively impact commercialization efforts; result in increased costs; and delay, prevent or limit our ability to gain regulatory approval of product candidates and to generate revenues and continue our business.

Successful completion of clinical trials at each applicable stage of development is a prerequisite to submitting a marketing application to the regulatory agencies and, consequently, the ultimate approval and commercial marketing of any of our product candidates for the indications in which we develop them. We do not know whether any of our clinical trials will begin or be completed, and results announced, as planned or expected, if at all, as the commencement and completion of clinical trials and announcement of results is often delayed or prevented for a number of reasons, including, among others:

- denial by the regulatory agencies of permission to proceed with our planned clinical trials or any other clinical trials we may initiate, or placement of a clinical trial on hold;
- delays in filing or receiving approvals of additional INDs that may be required;
- negative and/or unanticipated results from our ongoing non-clinical trials or clinical trials;
- challenges in identifying, recruiting, enrolling and retaining patients to participate in clinical trials;
- challenges with subject compliance within clinical trials;
- timely and effectively contract with (under reasonable terms), manage and work with investigators, institutions, hospitals and the CROs/ vendors involved in the clinical trial;
- negotiate contracts and other related documents with clinical trial parties and institutional review boards, such as informed consents, CRO agreements and site agreements, which can be subject to extensive negotiations that could cause significant delays in the clinical trial process, with terms possibly varying significantly among different trial sites and CROs and possibly subjecting the Company to various risks;
- inadequate quantity or quality of supplies of a product candidate or other materials necessary to conduct clinical trials, for example as a result of delays in defining and implementing the manufacturing process for materials used in pivotal trials or for the manufacture of larger quantities or other delays or issues arising in the manufacturing of sufficient supply of finished drug product;
- difficulties obtaining institutional review board ("IRB") approval, and equivalent (Ethics Committees or ECs) approval for sites outside the U.S., to conduct a clinical trial at a prospective site or sites;
- ensure adherence to trial designs and protocols agreed upon and approved by regulatory authorities and applicable legal and regulatory guidelines;
- delays or problems in analyzing data, or the need for additional analysis or data or the need to enroll additional patients;
- the occurrence of serious adverse events or unexpected drug-related side effects experienced by patients in a clinical trial or unexpected results in ongoing non-clinical trials;
- delays in validating endpoints utilized in a clinical trial;

- delays in validating outcome assessments needed in a clinical trial;
- our inability to have formal meetings with the regulatory agencies or to interact with them on a regular basis;
- our inability to satisfy the requirements of the regulatory agencies to commence clinical trials, such as developing potency assays and lot release specifications that correlate with the activity or response of the product candidate or other CMC requirements;
- the regulatory agencies disagreeing with our clinical trial design and our interpretation of data from clinical trials, or changing the requirements for approval even after the regulatory authority has reviewed and commented on the design for our clinical trials;
- reports from non-clinical or clinical testing of competing therapies that raise safety or efficacy concerns; and
- the recruitment and retention of employees, consultants or contractors with the required level of expertise.

Any inability to complete successfully pre-clinical and clinical development could result in additional costs to us or impair our ability to generate revenues from product sales, regulatory and commercialization milestones and royalties. In addition, manufacturing or formulation changes to our product candidates often require additional studies to demonstrate comparability of the modified product candidates to earlier versions. Clinical study delays also shorten any periods during which we may have the exclusive right to commercialize our product candidates or allow our competitors to bring products to market before we do, which impairs our ability to successfully commercialize our product candidates and harms our business and results of operations.

Clinical development is lengthy and uncertain. Clinical trials of our novel gene therapy candidates may be delayed, including as a result of the COVID-19 pandemic, and certain programs may never advance in the clinic or may be more costly to conduct than we anticipate, any of which could have a material adverse impact on our business.

Clinical testing is expensive and complex and can take many years to complete, and its outcome is inherently uncertain. We may not be able to initiate, may experience delays in, or may have to discontinue clinical trials for our product candidates as a result of numerous unforeseen events, including:

- the FDA, other regulators, IRBs, or ethics committees may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site for any number of reasons, including concerns regarding safety and aspects of the clinical trial design;
- we may experience delays in reaching, or fail to reach, agreement on favorable terms with prospective trial sites and prospective CROs, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- the outcome of our pre-clinical studies and our early clinical trials may not be predictive of the success of later clinical trials, and interim results of a clinical trial do not necessarily predict final results;
- we may be unable to establish clinical endpoints that applicable regulatory authorities would consider clinically meaningful;
- clinical trials of any product candidates may fail to show safety or efficacy, or produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional nonclinical studies or clinical trials, or we may decide to abandon product development programs;
- differences in trial design between early-stage clinical trials and later-stage clinical trials make it difficult to extrapolate the results of earlier clinical trials to later clinical trials;
- pre-clinical and clinical data are often susceptible to varying interpretations and analyses, and many product candidates believed to have performed satisfactorily in pre-clinical studies and clinical trials have nonetheless failed to obtain marketing approval; and
- regulators may elect to impose a clinical hold, or we or our investigators, IRBs, or ethics committees may elect to suspend or terminate clinical research or trials for various reasons, including noncompliance with regulatory requirements or a finding that the participants are being exposed to unacceptable benefit risk ratio. For example, in the past we have received clinical holds from the FDA. Although these holds have generally not materially affected our development timelines, there is no assurance that any future hold would not have a material adverse effect. A clinical hold, or any of the above factors, may be out of our control and could materially impair our development timelines, expenses and results of operations.

In addition, the impact of COVID-19 has caused disruptions and may cause delays in some of our clinical trials, and delays of reviews and approvals by the FDA and other health authorities. The recent responses to COVID-19 by healthcare providers and

regulatory agencies could delay the commencement of clinical trials, site initiation, protocol compliance, the completion of clinical trials, including the completion of post-marketing requirements and commitments, slow down enrollment, and make the ongoing collection of data for patients enrolled in studies more difficult or intermittent.

Results from pre-clinical and early-stage clinical trials may not be indicative of safety or efficacy in late-stage clinical trials, and pre-clinical and clinical trials may fail to demonstrate acceptable levels of safety, efficacy, and quality of our product candidates, which could prevent or significantly delay their regulatory approval.

To obtain the requisite regulatory approvals to market and sell any of our product candidates, we must demonstrate, through extensive pre-clinical and clinical trials, that the product candidate is safe and effective in humans. Ongoing and future pre-clinical and clinical trials of our product candidates may not show sufficient safety, efficacy or adequate quality to obtain or maintain regulatory approvals. For example, although we believe the data for SRP-9001, SRP-9003 and SRP-5051 collected to date are positive, the additional data we collect may not be consistent with the pre-clinical and/or early clinical data or show a safe benefit that warrants further development or pursuit of a regulatory approval for these product candidates.

Furthermore, success in pre-clinical and early clinical trials does not ensure that the subsequent trials will be successful, nor does it predict final results of a confirmatory trial. Some of our clinical trials were conducted with small patient populations and were not blinded or placebo-controlled, making it difficult to predict whether the favorable results that we observed in such trials will be repeated in larger and more advanced clinical trials. For example, our most recent announcements for SRP-9001, SRP-9003 and SRP-5051 include: in July 2022, we announced additional data and analyses from Studies 102 and 103 for SRP-9001; in May 2021, we announced results from the 30 mg/kg cohort of Part A of Study 5051-201 for SRP-5051; and in March 2022, we announced 24-month functional data from two clinical trial participants in the high-dose cohort, and 36-month functional data from three clinical trial participants in the low-dose cohort for SRP-9003. These data are based on small patient samples, and, given the heterogeneity of Duchenne and LGMD patients and potential lot-to-lot variability, the data may not be predictive of future results. In addition, we cannot assure that the results of additional data or data from any future trial will yield results that are consistent with the data presented, that we will be able to demonstrate the safety and efficacy of these product candidates, that later trial results will support further development, or even if such later results are favorable, that we will be able to successfully complete the development of, obtain accelerated, conditional or standard regulatory approval for, or successfully commercialize any of such product candidates. Similarly, we cannot provide assurances that data from our ongoing and planned studies with respect to our commercially approved products and product candidates will be positive and consistent or that the interpretation by regulators, such as the FDA or EMA, of the data we collect for our products or product candidates will be consistent with our interpretations.

Our product candidates may cause undesirable side effects or have other properties that could delay or prevent regulatory approval of product candidates, limit the commercial potential or result in significant negative consequences following any potential marketing approval.

Our product candidates may cause undesirable side effects. In addition to side effects caused by our product candidates, the administration process or related procedures also can cause adverse side effects. If any such adverse events occur in our trials, we may decide, or the FDA, the EMA or other regulatory authorities could order us, to halt, delay or amend pre-clinical development or clinical development of our product candidates or we may be unable to receive regulatory approval of our product candidates for any or all targeted indications. Even if we are able to demonstrate that all future serious adverse events are not product-related, such occurrences could affect patient recruitment or the ability of enrolled patients to complete the trial. Moreover, if we elect, or are required, to delay, suspend or terminate any clinical trial of any of our product candidates, the commercial prospects of such product candidates may be harmed and our ability to generate product revenues from any of these product candidates may be delayed or eliminated. Any of these occurrences may harm our ability to develop other product candidates and may harm our business, financial condition and prospects significantly.

Our gene therapy product candidates may be perceived as unsafe or may result in unforeseen adverse events. Failure of other gene therapy programs, negative public opinion and increased regulatory scrutiny of gene therapy may damage public perception of the safety of our gene therapy product candidates and harm our ability to conduct our business or obtain regulatory approvals for our gene therapy product candidates.

Gene therapy remains a newly applied technology, with only a few gene therapy products approved to date in the U.S., the EU or elsewhere. Public perception may be influenced by claims that gene therapy is unsafe, and gene therapy may not gain the acceptance of the public or the medical community. In particular, our success will depend upon physicians who specialize in the treatment of genetic diseases targeted by our product candidates, prescribing treatments that involve the use of our product candidates in lieu of, or in addition to, existing treatments with which they are familiar and for which greater clinical data may be available.

In addition, ethical, social and legal concerns about gene therapy, genetic testing and genetic research could result in additional regulations or prohibiting the processes we may use. Federal and state agencies, congressional committees and foreign governments have expressed their intentions to further regulate biotechnology. More restrictive regulations or claims that our product

candidates are unsafe or pose a hazard could prevent us from commercializing any products. New government requirements may be established that could delay or prevent regulatory approval of our product candidates under development. It is impossible to predict whether legislative changes will be enacted, regulations, policies or guidance changed, or interpretations by agencies or courts changed, or what the impact of such changes, if any, may be.

More restrictive government regulations or negative public opinion would harm our business, financial condition, results of operations and prospects and may delay or impair the development and commercialization of our gene therapy product candidates or demand for any products we may develop. For example, earlier gene therapy trials led to several well-publicized adverse events, including death. Lack of efficacy and/or serious adverse events related to clinical trials we, our strategic partners or other companies conduct, even if such adverse events are not ultimately attributable to the relevant product candidates or products, and/or failed commercialization of gene therapy products may result in increased government regulation, unfavorable public perception, potential regulatory delays in the testing or approval of our product candidates, stricter labeling requirements for those product candidates that are approved and a decrease in demand for any such product candidates.

If there are significant delays in obtaining or we are unable to obtain or maintain required regulatory approvals, we will not be able to commercialize our product candidates in a timely manner or at all, which could impair our ability to generate sufficient revenue and have a successful business.

The research, testing, manufacturing, labeling, approval, commercialization, marketing, selling and distribution of drug products are subject to extensive regulation by applicable local, regional and national regulatory authorities and regulations may differ from jurisdiction to jurisdiction. In the U.S., approvals and oversight from federal (e.g., FDA), state and other regulatory authorities are required for these activities. Sale and marketing of our product candidates in the U.S. or other countries is not permitted until we obtain the required approvals from the applicable regulatory authorities. Of the large number of drugs in development in the biopharmaceutical industry, only a small percentage result in the submission of a marketing application to the FDA or an MAA to the EMA and even fewer are approved for commercialization.

Our ability to obtain the government or regulatory approvals required to commercialize any of our product candidates in any jurisdiction, including in the U.S. or the EU, cannot be assured, may be significantly delayed or may never be achieved for various reasons including the following:

- Our non-clinical, clinical, chemistry, manufacturing and controls and other data and analyses from past, current and future studies for any of our product candidates may not be sufficient to meet regulatory requirements for marketing application approvals. The regulatory authorities could disagree with our interpretations and conclusions regarding data we provide in connection with NDA, BLA or MAA submissions for one or more of our product candidates, and may delay, reject or refuse to accept for review, or approve any submission we make or identify additional requirements for product approval to be submitted upon completion, if ever. In addition, in the U.S., an FDA advisory committee could determine that our data are insufficient to provide a positive recommendation for approval of any NDA or BLA we submit to the FDA. Even if we meet FDA requirements and an advisory committee votes to recommend approval of an NDA or BLA submission, the FDA could still disagree with the advisory committee's recommendation and deny approval of a product candidate based on their review.
- The regulatory approval process for product candidates targeting orphan diseases, such as Duchenne, that use new technologies and processes, such as antisense oligonucleotide therapies, gene therapy and other alternative approaches or endpoints for the determination of efficacy is uncertain due to, among other factors, evolving interpretations of a new therapeutic class, the broad discretion of regulatory authorities, lack of precedent, small safety databases, varying levels of applicable expertise of regulators or their advisory committees, scientific developments, changes in the competitor landscape, shifting political priorities and changes in applicable laws, rules or regulations and interpretations of the same. As a result of uncertainty in the approval process for products intended to treat serious rare diseases, we may not be able to anticipate, prepare for or satisfy requests or requirements from regulatory authorities, including completing and submitting planned NDAs, BLAs and MAAs for our product candidates, in a timely manner, or at all. Examples of such requests or requirements could include, but are not limited to, conducting additional or redesigned trials and procedures (e.g., additional safety data, patient muscle biopsies, dystrophin analyses and the use of assays), repeating or completing additional analysis of our data, or providing additional supportive data. In addition, in the U.S., an FDA advisory committee or regulators may disagree with our data analysis, interpretations and conclusions at any point in the approval process, which could negatively impact the approval of our NDA or BLA or result in a decision by the Company not to proceed with an NDA or BLA submission for a product candidate based on feedback from regulators.
- We may not have the resources required to meet regulatory requirements and successfully navigate what is generally a lengthy, expensive and extensive approval process for commercialization of drug product candidates.

Any failure on our part to respond to these requirements in a timely and satisfactory manner could significantly delay or negatively impact confirmatory study timelines and/or the development plans we have for PMO, PPMO, gene therapy-based product candidates or other product candidates. Responding to requests from regulators and meeting requirements for clinical trials, submissions and approvals may require substantial personnel, financial or other resources, which, as a small biopharmaceutical company, we may not be able to obtain in a timely manner or at all. In addition, our ability to respond to requests from regulatory authorities that involve our agents, third party vendors and associates may be complicated by our own limitations and those of the parties we work with. It may be difficult or impossible for us to conform to regulatory guidance or successfully execute our product development plans in response to regulatory guidance, including guidance related to clinical trial design with respect to any NDA, BLA or MAA submissions.

Even if our product candidates demonstrate safety and efficacy in clinical studies, the regulatory agencies may not complete their review processes in a timely manner, or we may not be able to obtain regulatory approval. Additional delays may result if an FDA Advisory Committee or other regulatory advisory group or authority recommends non-approval or restrictions on approval. In addition, we may experience delays or rejections based upon additional government regulation from future legislation or administrative action, or changes in regulatory agency policy during the period of product development, clinical studies and the review process. Regulatory agencies also may approve a treatment candidate for fewer or more limited indications than requested or may grant approval subject to the performance of post-marketing studies. Furthermore, regulatory agencies may not approve the labeling claims that are necessary or desirable for the successful commercialization of our treatment candidates. Finally, some of our product candidates may require diagnostic tests to ensure we appropriately select patients suitable for treatment. If we are unable to successfully develop diagnostic tests for these product candidates, experience significant delays in doing so, or are unable to obtain required regulatory clearances or approvals for any diagnostic tests, the commercialization of our product candidates may be delayed or prevented. Even if we receive the required regulatory clearance or approvals for certain diagnostic tests, the commercial success of any of our product candidates that require such tests will be dependent upon the continued availability of such tests.

We are investing significant resources in the development of novel gene therapy product candidates. Only a few gene therapy products have been approved in the U.S. and EU. If we are unable to show the safety and efficacy of these product candidates, experience delays in doing so or are unable to successfully commercialize at least one of these drugs, our business would be materially harmed.

We are investing significant resources in the development of our gene therapy product candidates. We believe that a significant portion of the long-term value attributed to our company by investors is based on the commercial potential of these product candidates. There can be no assurance that any development problems we experience in the future related to our gene therapy programs will not cause significant delays or unanticipated costs, or that such development problems can be solved. Development problems and delays in one program may delay the development of other programs. Early results from ongoing clinical trials may differ materially from final results from such clinical trials. The results from pre-clinical and early clinical studies do not always accurately predict results in later, large-scale clinical trials. We may also experience delays in developing a sustainable, reproducible and commercial-scale manufacturing process or transferring that process to commercial partners, which may prevent us from completing our clinical trials or commercializing our products on a timely or profitable basis, if at all.

In addition, the clinical trial requirements of the FDA, the EMA, and other regulatory agencies and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty and intended use and market of the potential products. The regulatory approval process for novel product candidates such as ours can be more expensive and take longer than for other, better known or more extensively studied pharmaceutical or other product candidates. Currently, only a few gene therapy products have been approved in the Western world. Given the few precedents of approved gene therapy products, it is difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our gene therapy product candidates in the U.S., the EU or other jurisdictions. Approvals by the EMA and the EC may not be indicative of what the FDA may require for approval.

Regulatory requirements governing gene therapy products have evolved and may continue to change in the future. Within the FDA, the Center for Biologics Evaluation and Research (“CBER”) regulates gene therapy products. Within the CBER, the review of gene therapy and related products is consolidated in the Office of Cellular, Tissue and Gene Therapies, and the FDA has established the Cellular, Tissue and Gene Therapies Advisory Committee to advise CBER on its reviews. The CBER works closely with the National Institutes of Health (the “NIH”). The FDA and the NIH have published guidance documents with respect to the development and submission of gene therapy protocols. For example, on January 28, 2020, the FDA issued final guidance documents that updated draft guidance documents that were originally released in July 2018 to reflect recent advances in the field, and to set forth the framework for the development, review and approval of gene therapies. These final guidance documents pertain to the development of gene therapies for the treatment of specific disease categories, including rare diseases, and to manufacturing and long-term follow up issues relevant to gene therapy, among other topics. The FDA also issued a new guidance document in September 2021 describing the FDA’s approach for determining whether two gene therapy products were the same or different for the purpose of assessing orphan

drug exclusivity. In addition, the FDA can put an IND on hold if the information in an IND is not sufficient to assess the risks in pediatric patients.

These regulatory review agencies, committees and advisory groups 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 these treatment candidates or lead to significant post-approval studies, limitations or restrictions. As we advance our product candidates, we will be required to consult with these regulatory and advisory groups and comply with applicable requirements and guidelines, failure of which may lead to delayed or discontinued development of our product candidates.

If the anticipated or actual timing of marketing approvals for our gene therapy product candidates, or the market acceptance of these product candidates, if approved, including treatment reimbursement levels agreed to by third-party payors, do not meet the expectations of investors or public market analysts, the market price of our common stock would likely decline.

Because we are developing product candidates for the treatment of certain diseases in which there is little clinical experience and we are using new endpoints or methodologies, there is increased risk that the FDA, the EMA or other regulatory authorities may not consider the endpoints of our clinical trials to provide clinically meaningful results and that these results may be difficult to analyze.

During the FDA review process, we will need to identify success criteria and endpoints such that the FDA will be able to determine the clinical efficacy and safety profile of our product candidates. As we are developing novel treatments for diseases in which there is little clinical experience with new endpoints and methodologies, such as gene therapy, there is heightened risk that the FDA, the EMA or other regulatory bodies may not consider the clinical trial endpoints to provide clinically meaningful results (reflecting a tangible benefit to patients). In addition, the resulting clinical data and results may be difficult to analyze. Even if the FDA does find our success criteria to be sufficiently validated and clinically meaningful, we may not achieve the pre-specified endpoints to a degree of statistical significance. Achieving appropriate statistical power may be challenging for some of the ultra-rare genetically defined diseases we are targeting in our programs, especially if the acceptance of descriptive data is not yet established. In addition, different methodologies, assumptions and applications we utilize to assess particular safety or efficacy parameters may yield different statistical results. Even if we believe the data collected from clinical trials of our product candidates are promising, these data may not be sufficient to support approval by the FDA or foreign regulatory authorities. Pre-clinical and clinical data can be interpreted in different ways. Accordingly, the FDA or foreign regulatory authorities could interpret these data in different ways from us or our partners, which could delay, limit or prevent full or accelerated regulatory approval.

If our study data do not consistently or sufficiently demonstrate the safety or efficacy of any of our product candidates, the regulatory approvals for such product candidates could be significantly delayed as we work to meet approval requirements, or, if we are not able to meet these requirements, such approvals could be withheld or withdrawn.

Fast track product, breakthrough therapy, priority review, or Regenerative Medicine Advanced Therapy ("RMAT") designation by the FDA, or access to the Priority Medicine scheme ("PRIME") by the EMA, for our product candidates, if granted, may not lead to faster development or regulatory review or approval process, and it does not increase the likelihood that our product candidates will receive marketing approval.

We may seek fast track, breakthrough therapy designation, RMAT designation, PRIME scheme access or priority review designation for our product candidates if supported by the results of clinical trials. A fast track product designation is designed to facilitate the clinical development and expedite the review of drugs intended to treat a serious or life-threatening condition which demonstrate the potential to address an unmet medical need. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition, where preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. A RMAT designation is designed to accelerate approval for regenerative advanced therapies such as our gene therapy product candidates. Priority review designation is intended to speed the FDA marketing application review timeframe for drugs that treat a serious condition and, if approved, would provide a significant improvement in safety or effectiveness. PRIME is a scheme provided by the EMA to enhance support for the development of medicines that target an unmet medical need.

For drugs and biologics that have been designated as fast track products or breakthrough therapies, or granted access to the PRIME scheme, interaction and communication between the regulatory agency and the sponsor of the trial can help to identify the most efficient path for clinical development. Sponsors of drugs with fast track products or breakthrough therapies may also be able to submit marketing applications on a rolling basis, meaning that the FDA may review portions of a marketing application before the sponsor submits the complete application to the FDA, if the sponsor pays the user fee upon submission of the first portion of the

marketing application. For products that receive a priority review designation, the FDA's marketing application review goal is shortened to six months, as opposed to ten months under standard review. This review goal is based on the date the FDA accepts the marketing application for review, this application validation period typically adds approximately two months to the timeline for review and decision from the date of submission. RMAT designations will accelerate approval and will include all the benefits of fast track and breakthrough therapy designations, including early interactions with the FDA, but the exact mechanisms have not yet been announced by FDA.

Designation as a fast track product, breakthrough therapy, RMAT, PRIME, or priority review product is within the discretion of the regulatory agency. Accordingly, even if we believe one of our product candidates meets the criteria for designation as a fast track product, breakthrough therapy, RMAT, PRIME, or priority review product, the agency may disagree and instead determine not to make such designation. In any event, the receipt of such a designation for a product candidate may not result in a faster development process, review or approval compared to drugs considered for approval under conventional regulatory procedures and does not assure ultimate marketing approval by the agency. In addition, regarding fast track products and breakthrough therapies, the FDA may later decide that the products no longer meet the conditions for qualification as either a fast track product, RMAT, or a breakthrough therapy or, for priority review products, decide that period for FDA review or approval will not be shortened.

We may not be able to advance all of our programs, and we may use our financial and human resources to pursue particular programs and fail to capitalize on programs that may be more profitable or for which there is a greater likelihood of success.

Our pipeline includes more than 40 programs in various stages of development for a broad range of diseases and disorders. We plan to expand our pipeline through internal research and development and through strategic transactions. Because we have limited resources, we may not be able to advance all of our programs. We may also forego or delay pursuit of opportunities with certain programs or for indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs for product candidates may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through strategic collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate, or we may allocate internal resources to a product candidate in a therapeutic area in which it would have been more advantageous to enter into a partnering arrangement.

Risks Related to Third Parties

If we are unable to maintain our agreements with third parties to distribute our products to patients, our results of operations and business could be adversely affected.

We rely on third parties to commercially distribute our products to patients in the U.S. We have contracted with a third-party logistics company to warehouse our products and with distributors and specialty pharmacies to sell and distribute our products to patients. A specialty pharmacy is a pharmacy that specializes in the dispensing of medications for complex or chronic conditions that require a high level of patient education and ongoing management.

This distribution network requires significant coordination with our sales and marketing and finance organizations. In addition, failure to coordinate financial systems could negatively impact our ability to accurately report product revenue from our products. If we are unable to effectively manage the distribution process, the sales of our products, as well as any future products we may commercialize, could be delayed or severely compromised and our results of operations may be harmed.

In addition, the use of third parties involves certain risks, including, but not limited to, risks that these organizations will:

- not provide us with accurate or timely information regarding their inventories, the number of patients who are using our products or serious adverse events and/or product complaints regarding our products;
- not effectively sell or support our products;
- reduce or discontinue their efforts to sell or support our products;
- not devote the resources necessary to sell our products in the volumes and within the time frame we expect;
- be unable to satisfy financial obligations to us or others; or
- cease operations.

Any such events may result in decreased product sales, lower product revenue, loss of revenue, and/or reputational damage, which would harm our results of operations and business.

With respect to the pre-commercial distribution of our products to patients outside of the U.S., we have contracted with third party distributors and service providers to distribute our products in certain countries through our EAP. We will need to continue building out our network for commercial distribution in jurisdictions in which our products are approved, which will also require third party contracts. The use of distributors and service providers involves certain risks, including, but not limited to, risks that these organizations will not comply with applicable laws and regulations, or not provide us with accurate or timely information regarding serious adverse events and/or product complaints regarding our products. Any such events may result in regulatory actions that may include suspension or termination of the distribution and sale of our products in a certain country, loss of revenue, and/or reputational damage, which could harm our results of operations and business.

Furthermore, a significant outbreak of COVID-19 at one of our third-party logistics, distribution, or specialty pharmacy sites could lead to a delay in the commercial or pre-commercial shipments of our products to patients and hospitals.

We rely on third parties to conduct some aspects of our early stage research and pre-clinical and clinical development. The inadequate performance by or loss of any of these third parties could affect the development and commercialization of our product candidate development.

We have relied upon, and plan to continue to rely upon, third parties to conduct some aspects of our early stage research and pre-clinical and clinical development with respect to certain of our product candidates, including our follow-on exon-skipping product candidates, PPMO, gene therapy and gene editing product candidates. Our third-party collaborators may not commit sufficient resources or adequately develop our programs for these candidates. If our third-party collaborators fail to commit sufficient resources to any of our product candidates or to carry out their contractual duties or obligations, our programs related to any particular product candidate could be delayed, terminated, or unsuccessful. Furthermore, if we fail to make required payments to these third-party collaborators, including up-front, milestone, reimbursement or royalty payments, or to observe other obligations in our agreements with them, these third parties may not be required to perform their obligations under our respective agreements with them and may have the right to terminate such agreements. In addition, if our strategic partners experience regulatory delays for the development of their clinical product candidates, including clinical holds, our opportunities to commercialize products may be delayed.

We also have relied upon and plan to continue to rely upon third-party CROs to monitor and manage data completeness for our ongoing pre-clinical and clinical programs. We rely on these parties for execution of our pre-clinical and clinical trials, and we control only certain aspects of their activities. Nevertheless, we are responsible for ensuring that each of our studies is conducted in accordance with the applicable protocol and legal, regulatory and scientific standards, and our reliance on collaborators and CROs does not relieve us of our regulatory responsibilities.

The individuals at our third-party collaborators and CROs who conduct work on our behalf, including their sub-contractors, are not always our employees, and although we participate in the planning of our early stage research and pre-clinical and clinical programs, we cannot control whether or not they devote sufficient time and resources or exercise appropriate oversight of these programs, except for remedies available to us under our agreements with such third parties. If our collaborators and CROs do not successfully carry out their contractual duties or obligations or if the quality or accuracy of the data they obtain is compromised due to the failure to adhere to our pre-clinical and clinical protocols, regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates. As a result, our results of operations and the commercial prospects for our product candidates would be harmed, our costs could increase and our ability to generate revenues could be delayed.

Our reliance on third parties requires us to share our proprietary information, which increases the possibility that a competitor will discover them or that our proprietary information will be misappropriated or inadvertently disclosed.

Our reliance on third-party collaborators requires us to disclose our proprietary information to these parties, which could increase the risk that a competitor will discover this information or that this information will be misappropriated or disclosed without our intent to do so. If any of these events were to occur, then our ability to obtain patent protection or other intellectual property rights could be irrevocably jeopardized, and costly, distracting litigation could ensue. Furthermore, if these third parties cease to continue operations and we are not able to quickly find a replacement provider or we lose information or items associated with our products or product candidates, our development programs may be delayed. Although we carefully manage our relationships with our third-party collaborators and CROs, there can be no assurance that we will not encounter challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects.

Risks Related to Manufacturing

We currently rely on third parties to manufacture our products and to produce our product candidates; our dependence on these parties, including failure on our part to accurately anticipate product demand and timely secure manufacturing capacity to meet commercial, EAP, clinical and pre-clinical product demand may impair the availability of product for commercial supply or to successfully support various programs, including research and development and the potential commercialization of additional product candidates in our pipeline.

We rely on, and expect to continue relying on for the foreseeable future, a limited number of third parties to manufacture and supply materials (including raw materials and subunits), API and drug product, and to provide labeling and packaging of vials and storage of our products and product candidates. The limited number of third parties with facilities and capabilities suited for the manufacturing process of our products and product candidates creates a risk that we may not be able to obtain materials and APIs in the quantity and purity that we require. As of the date of this Report, we have dual sourcing for the APIs and drug product for all three of our commercial products.

In addition, the process for adding new manufacturing capacity is lengthy and often causes delays in development efforts. Any interruption of the development or operation of those facilities due to, among other reasons, events such as the ongoing COVID-19 pandemic, order delays for equipment or materials, equipment malfunctions, quality control and quality assurance issues, regulatory delays and possible negative effects of such delays on supply chains and expected timelines for product availability, production yield issues, shortages of qualified personnel, discontinuation of a facility or business or failure or damage to a facility by natural disasters, such as earthquakes or fires, could result in the cancellation of shipments, loss of product in the manufacturing process or a shortfall in supply of our products, product candidates or materials.

If these third parties cease providing quality manufacturing and related services to us, and we are not able to engage appropriate replacements in a timely manner, our ability to manufacture our products or product candidates in sufficient quality and quantity required for our planned commercial, pre-clinical and clinical or EAPs, our various product research, development and commercialization efforts would be adversely affected.

Furthermore, any problems in our manufacturing process or the facilities with which we contract make us a less attractive collaborator for potential partners, including larger pharmaceutical companies and academic research institutions, which could limit our access to additional attractive development programs.

We, through our third-party manufacturers, seek to produce or produce supply of our products and product candidates. In light of the limited number of third parties with the expertise to produce our products and product candidates, the lead time needed to manufacture them, and the availability of underlying materials, we may not be able to, in a timely manner or at all, establish or maintain sufficient commercial and other manufacturing arrangements on the commercially reasonable terms necessary to provide adequate supply of our products and product candidates. Furthermore, we may not be able to obtain the significant financial capital that may be required in connection with such arrangements. Even after successfully engaging third parties to execute the manufacturing process for our products and product candidates, such parties may not comply with the terms and timelines they have agreed to for various reasons, some of which may be out of their or our control, which impacts our ability to execute our business plans on expected or required timelines in connection with the commercialization of our products and the continued development of our product candidates. When we enter into long-term manufacturing agreements that contain exclusivity provisions and /or substantial termination penalties, we constrain our operational flexibility.

The operations at one of our partner sites could also be disturbed by man-made or natural disasters or public health pandemics or epidemics or other business interrupts. For example, a significant outbreak of COVID-19 at one of our partner sites could lead to delays in the manufacturing of our products and product candidates. In addition, the need to prioritize rated orders issued by the Federal Emergency Management Agency pursuant to the U.S. Defense Production Act could impact the manufacturing, supply chain and distribution of our products and product candidates.

The third parties we use in the manufacturing process for our products and product candidates may fail to comply with cGMP regulations.

Our contract manufacturers are required to produce our materials, APIs and drug products under cGMP. We and our contract manufacturers are subject to periodic inspections by the FDA, EMA and corresponding state and foreign authorities to ensure strict compliance with cGMP and other applicable government regulations. In addition, before we can begin to commercially manufacture our product candidates in third-party or our own facilities, we must obtain regulatory approval from the FDA, which includes a review of the manufacturing process and facility. A manufacturing authorization also must be obtained from the appropriate EU regulatory authorities and may be required by other foreign regulatory authorities. The timeframe required to obtain such approval or

authorization is uncertain. In order to obtain approval, we need to demonstrate that all of our processes, methods and equipment are compliant with cGMP, and perform extensive audits of vendors, contract laboratories and suppliers. In complying with cGMP, we are obligated to expend time, money and effort in production, record keeping and quality control to seek to assure that the product meets applicable specifications and other requirements.

We do not have direct operational control over a third-party manufacturer's compliance with regulations and requirements. In addition, changes in cGMP could negatively impact the ability of our contract manufacturers to complete the manufacturing process of our products and product candidates in a compliant manner on the schedule we require for commercial and clinical trial use, respectively. Failure to achieve and maintain compliance with cGMP and other applicable government regulations, including failure to detect or control anticipated or unanticipated manufacturing errors, results in product recalls, clinical holds, delayed or withheld approvals, patient injury or death.

Failure by our contract manufacturers to adhere to applicable cGMP and other applicable government regulations, or our contract manufacturers experiencing manufacturing problems, may result in significant negative consequences, including product seizures or recalls, postponement or cancellation of clinical trials, loss or delay of product approval, fines and sanctions, loss of revenue, termination of the development of a product candidate, reputational damage, shipment delays, inventory shortages, inventory write-offs and other product-related charges and increased manufacturing costs. If we experience any of these consequences, the success of our commercialization of our products and/or our development efforts for our product candidates could be significantly delayed, fail or otherwise be negatively impacted.

We may not be able to successfully scale up manufacturing of our product candidates in sufficient quality and quantity or within targeted timelines, or be able to secure ownership of intellectual property rights developed in this process, which could negatively impact the commercial success of our products and/or the development of our product candidates.

Our focus remains on optimizing manufacturing for our follow-on exon skipping product candidates and other programs, including PPMO and gene therapy. We may not be able to successfully increase manufacturing capacity production of materials, APIs and drug products, whether in collaboration with third party manufacturers or on our own, in a manner that is safe, compliant with cGMP conditions or other applicable legal or regulatory requirements, in a cost-effective manner, in a time frame required to meet our timeline for commercialization, clinical trials and other business plans, or at all.

Challenges complying with cGMP requirements and other quality issues arise during efforts to increase manufacturing capacity and scale up production. We experience such issues in connection with manufacturing, packaging and storage of our products and product candidates, and during shipping and storage of the APIs or finished drug product. In addition, in order to release our products for commercial use and demonstrate stability of product candidates for use in clinical trials (and any subsequent drug products for commercial use), our manufacturing processes and analytical methods must be validated in accordance with regulatory guidelines. Failure to successfully validate, or maintain validation of, our manufacturing processes and analytical methods or demonstrate adequate purity, stability or comparability of our products or product candidates in a timely or cost-effective manner, or at all, may undermine our commercial efforts. Failure to successfully validate our manufacturing processes and analytical methods or to demonstrate adequate purity, stability or comparability, will negatively impact the commercial availability of our products and the continued development and/or regulatory approval of our product candidates, which could significantly harm our business.

During our work with our third-party manufacturers to increase and optimize manufacturing capacity, they may make proprietary improvements in the manufacturing processes for our products or product candidates. We may not own or be able to secure ownership of such improvements or may have to share the intellectual property rights to those improvements. Additionally, we may need additional processes, technologies and validation studies, which could be costly and which we may not be able to develop or acquire from third parties. Failure to secure the intellectual property rights required for the manufacturing process needed for large-scale clinical trials or the continued development of our product candidates could cause significant delays in our business plans or otherwise negatively impact the continued development of our product candidates.

Products intended for use in gene therapies are novel, complex and difficult to manufacture. We could experience production problems that result in delays in our development or commercialization of gene therapy programs, limit the supply of our products or otherwise harm our business.

We currently have development, manufacturing and testing agreements with third parties to manufacture supplies of our gene therapy product candidates. Several factors could cause production interruptions, including equipment malfunctions, facility

contamination, raw material shortages or contamination, natural disasters, disruption in utility services, human error or disruptions in the operations of suppliers.

The physical and chemical properties of biologics such as ours generally cannot be fully characterized. As a result, assays of the finished product may not be sufficient to ensure that the product will perform in the intended manner. Accordingly, we employ multiple steps to control our manufacturing process to assure that the process works and the product candidate is made strictly and consistently in compliance with the process. Problems with the manufacturing process, even minor deviations from the normal process, could result in product defects or manufacturing failures that result in lot failures, product recalls, product liability claims or insufficient inventory. We may encounter problems achieving adequate quantities and quality of clinical and/or commercial-grade materials that meet FDA, EMA or other applicable foreign standards or specifications with consistent and acceptable production yields and costs.

In addition, the FDA, the EMA and other foreign regulatory authorities may require us to submit samples of any lot of any approved product together with the protocols showing the results of applicable tests at any time. Under some circumstances, the FDA, the EMA or other foreign regulatory authorities may require that we not distribute a lot until the competent authority authorizes its release. Slight deviations in the manufacturing process, including those affecting quality attributes and stability and deviations among different sites, may result in unacceptable changes in the product that could result in lot failures or product recalls. Lot failures or product recalls could cause us to delay clinical trials or product launches which could be costly to us and otherwise harm our business, financial condition, results of operations and prospects.

As our product candidates advance to later stage clinical trials, it is customary that various aspects of the development program, such as manufacturing, formulation and other processes, and methods of administration, may be altered to optimize the candidates and processes for scale-up necessary for later stage clinical trials and potential approval and commercialization. These changes may not produce the intended optimization, including production of drug substance and drug product of a quality and in a quantity sufficient for Phase 3 clinical stage development or for commercialization, which may cause delays in the initiation or completion of clinical trials and greater costs. We may also need to conduct additional studies to demonstrate comparability between newly manufactured drug substance and/or drug product for commercialization relative to previously manufactured drug substance and/or drug product for clinical trials. Demonstrating comparability may require us to incur additional costs or delay initiation or completion of clinical trials and, if unsuccessful, could require us to complete additional pre-clinical studies or clinical trials.

We also may encounter problems hiring and retaining the experienced scientific, quality control and manufacturing personnel needed to operate our manufacturing process which could result in delays in our production or difficulties in maintaining compliance with applicable regulatory requirements.

Currently, the capacity to produce our viral vectors gene therapy product candidates at commercial levels is limited and the availability of sufficient GMP compliant capacity may result in delays in our development plans or increased capital expenditures, and the development and sales of our products, if approved, may be materially harmed.

Risks Related to our Intellectual Property

Our success, competitive position and future revenue depend in part on our ability and the abilities of our licensors and other collaborators to obtain, maintain and defend the intellectual property (e.g., patent) protection for our products, product candidates, and platform technologies; to preserve our trade secrets; and to prohibit third parties from infringing on our proprietary rights.

We currently directly hold various issued patents and patent applications, or have exclusive license or option rights to issued patents and patent applications, in each case in the U.S. as well as other countries that protect our products, product candidates and platform technologies. We anticipate filing additional patent applications both in the U.S. and in other countries. Our success will depend, in significant part, on our ability to obtain, maintain and defend our U.S. and foreign patents covering our products, product candidates and platform technologies as well as preserving our trade secrets for these assets. The patent process is subject to numerous risks and uncertainties, and we can provide no assurance that we will be successful in obtaining, maintaining, or defending our patents. Even when our patent claims are allowed, the claims may not issue, or in the event of issuance, may not be sufficient to protect our products, product candidates or platform technologies or may be challenged in post-grant proceedings by third parties.

The patent positions of pharmaceutical, biotechnology and other life sciences companies can be highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. This uncertainty is heightened for our PMO-based products and product candidates and gene therapy-based product candidates for which there has not been a significant number of patent litigations involving such technologies. No consistent policy regarding the breadth of claims allowed in biotechnology patents has emerged to date in the U.S. and tests used for determining the patentability of patent claims in all

technologies are in flux. The USPTO and patent offices in other jurisdictions have often required that patent applications directed to pharmaceutical and/or biotechnology-related inventions be limited or narrowed substantially to cover only the specific innovations exemplified in the patent application, thereby limiting the scope of protection against competitive challenges. Accordingly, even if we or our licensors are able to obtain patents, the patents might be substantially narrower than anticipated. Thus, there is no assurance as to the degree and range of protections any of our patents, if issued, may afford us or whether patents will be issued. Patents which may be issued to us may be subjected to further governmental review that may ultimately result in the reduction of their scope of protection, and pending patent applications may have their requested breadth of protection significantly limited before being issued, if issued at all. The pharmaceutical, biotechnology and other life sciences patent situation outside the U.S. can be even more uncertain.

As a matter of public policy, there might be significant pressure on governmental bodies to limit the scope of patent protection or impose compulsory licenses for disease treatments that prove successful, particularly as a tactic to impose a price control. Additionally, competitors may leverage such pressure to enhance their ability to exploit these laws to create, develop and market competing products.

We may be able to assert that certain activities engaged in by our competitors infringe on our current or future patent rights. To the extent that we enforce our patents, an alleged infringer may deny infringement and/or counter-claim that our patents are not valid or enforceable, and if successful, could negatively impact our patent estate. We may not be able to successfully defend patents necessary to prevent competitors from developing, manufacturing, or commercializing competing product candidates or products. To the extent we assert infringement of a patent that covers a competing product candidate or product as well as our own product candidate(s) or product(s), or such a patent is otherwise challenged without our initiation, the patent protection for our own product candidate(s) or product(s) could be materially adversely affected should an infringing competitor be successful in challenging the validity, enforceability, or scope of our patent(s). Our patent rights might be challenged, invalidated, circumvented or otherwise not provide any competitive advantage. Defending our patent positions may require significant financial resources and could negatively impact other Company objectives. Even if we successfully enforce our patent rights against a competitor, we may not be able to recover adequate damages or obtain other desired relief.

Under the Hatch-Waxman Act, one or more motivated third parties may file an ANDA, seeking approval of a generic copy of an innovator product approved under the NDA pathway such as our PMO products, or an NDA under Section 505(b)(2), for a new or improved version of the original innovator products. In certain circumstances, motivated third parties may file such an ANDA or NDA under Section 505(b)(2) as early as the so-called "NCE-1" date that is one year before the expiry of the five-year period of New Chemical Entity exclusivity or more generally four years after NDA approval. The third parties are allowed to rely on the safety and efficacy data of the innovator's product, may not need to conduct clinical trials and can market a competing version of a product after the expiration or loss of patent exclusivity or the expiration or loss of regulatory exclusivity and often charge significantly lower prices. Upon the expiration or loss of patent protection or the expiration or loss of regulatory exclusivity for a product, the major portion of revenues for that product may be dramatically reduced in a very short period of time. If we are not successful in defending our patents and regulatory exclusivities, we will not derive the expected benefit from them. As such, a third party could be positioned to market an ANDA or Section 505(b)(2) product that competes with one of our products prior to the expiry of our patents if the third party successfully challenges the validity, enforceability, or scope of our patents protecting the product.

The patent landscape is continually evolving, and we may be able to assert that certain activities engaged in by third parties infringe our current or future patent rights. There has been, and we believe that there will continue to be, significant litigation in the biopharmaceutical and pharmaceutical industries regarding patent and other intellectual property rights. As such, the patents and patent applications that we own, license, have optioned, and rely on for exclusivity for our product candidates may be challenged.

Uncertainty over intellectual property in the pharmaceutical and biotechnology industry has been the source of litigation and other disputes, which is inherently costly and unpredictable.

Litigation, interferences, oppositions, inter partes reviews, administrative challenges or other similar types of proceedings are, have been and may in the future be necessary in some instances to determine the validity and scope of certain of our proprietary rights, and in other instances to determine the validity, enforceability, scope or non-infringement of certain patent rights claimed by third parties to be pertinent to the manufacture, use, offer to sell, or sale of our product candidates or products. We may also face challenges to our patents and regulatory exclusivities covering our products by third parties, including manufacturers of generics and/or biosimilars who may choose to launch or attempt to launch their products before the expiration of our patents or regulatory exclusivity. Litigation, interferences, oppositions, inter partes reviews, administrative challenges or other similar types of proceedings are unpredictable and may be protracted, expensive and distracting to management. The outcomes of such proceedings could adversely affect the validity, enforceability, and scope of our patents or other proprietary rights, hinder our ability to manufacture and market our products, require us to seek a license for the infringed products or technology or result in the assessment of significant monetary damages against us that may exceed amounts, if any, accrued in our financial statements. An adverse determination in a judicial or administrative proceeding or a failure to obtain necessary licenses could prevent us from developing, manufacturing or selling our products. Furthermore, payments under any licenses that we are able to obtain would reduce our profits derived from our

products. Any of these circumstances could result in financial, business or reputational harm to us or could cause a decline or volatility in our stock price.

On September 16, 2011, the Leahy-Smith America Invents Act (the "Leahy-Smith Act"), was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law, including provisions that affect the way patent applications will be prosecuted, and that may also affect patent litigation. The USPTO has issued regulations and procedures to govern administration of the Leahy-Smith Act. In view of the long timelines for interpreting legal provisions in the court system and the evolving nature of our laws, it is not clear what, if any, impact the Leahy-Smith Act will have on the operation of our business. However, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business and financial condition. For instance, a third party may petition the Patent Trial and Appeal Board ("PTAB") seeking to challenge some or all of the claims in any of our patents through an inter partes review or other post-grant proceedings. Should the PTAB or USPTO Director institute an inter partes review or other proceedings and the PTAB decide that some or all of the claims in the challenged patent are unpatentable, unenforceable, or invalid, such a decision, if upheld on appeal, could have a material adverse effect on our business and financial condition.

Our business prospects will be impaired if third parties successfully assert that our products, product candidates, or platform technologies infringe proprietary rights of such third parties.

Similar to us, competitors continually seek intellectual property protection for their technology. Several of our development programs, particularly gene therapy programs, focus on therapeutic areas that have been the subject of extensive research and development by third parties for many years and have been protected with third party patent rights. Due to the amount of intellectual property in our various fields of technology, we cannot be certain that we do not infringe intellectual property rights of competitors or other third parties or that we will not infringe intellectual property rights of competitors or other third parties granted or created in the future. Moreover, activities we conduct or those conducted on our behalf in connection with the development of our product candidates may not be protected from infringement under the so-called Safe Harbor provision of 35 U.S.C. § 271(e)(1) and thus may be found to infringe the patent rights of third parties. Our competitors or other third parties might have obtained, or could obtain in the future, patents that threaten, limit, interfere with or eliminate our ability to make, use and sell our products, product candidates or platform technologies in important commercial markets.

Due to the nature of our various partnerships, collaborators, licensors, CROs, CMOs and the like, we may be subjected to claims of infringement arising from activities conducted by these third parties in connection with our products or product candidates, whether or not such activities are authorized by us. In addition, we may have contractual obligations to indemnify these partners from claims of infringement or declaratory relief. As a result, we may be subject to substantial unforeseen costs, distraction, and financial liability if a third party making such a claim was successful in obtaining a final judgment of infringement and validity.

In order to maintain or obtain freedom to operate for our products and product candidates, we may incur significant expenses, including those associated with entering into agreements with third parties that require milestone and royalty payments. Additionally, if we were to challenge the patent rights of our competitors or otherwise defend against allegations of infringement, misappropriation, breach of contract or related claims, we could incur substantial costs and ultimately might not be successful.

If our products, product candidates, or platform technologies are alleged to infringe or are determined to infringe enforceable proprietary rights of others, we could incur substantial costs and may have to:

- obtain rights or licenses from others, which might not be available on commercially reasonable terms or at all;
- abandon development of an infringing product candidate, or cease commercialization of an infringing product;
- redesign our products, product candidates or processes to avoid infringement;
- pay damages; and/or
- defend litigation or administrative proceedings which might be costly whether we win or lose, and which could result in a substantial diversion of financial and management resources.

Any of these events could result in product and product candidate development delays or cessation, and as such substantially harm our potential earnings, financial condition and operations. The patent landscape of our product candidates and products is continually evolving and multiple parties, including both commercial entities and academic institutions, may have rights to claims or may be pursuing additional claims that could provide these parties a basis to assert that our products, product candidates or platform technologies infringe on the intellectual property rights of such parties. There has been, and we believe that there will continue to be, significant litigation in the biopharmaceutical and pharmaceutical industries regarding patent and other intellectual property rights.

Risks Related to our Business Operations

Failure to comply with healthcare and other regulations is subject to substantial penalties and our business, operations and financial condition could be adversely affected.

As a manufacturer of pharmaceuticals, within the U.S., certain federal and state healthcare laws and regulations apply to or affect our business. The laws and regulations include:

- federal healthcare anti-kickback law, which prohibit, among other things, persons from soliciting, receiving or providing remuneration, directly or indirectly, to induce either the referral of an individual, for an item or service or the purchasing or ordering of a good or service, for which payment may be made under federal healthcare programs such as Medicare and Medicaid;
- federal false claims laws which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, information or claims for payment from Medicare, Medicaid or other third-party payors that are false or fraudulent;
- the Federal Food, Drug and Cosmetic Act, which among other things, strictly regulates drug product and medical device marketing, prohibits manufacturers from marketing such products for off-label use and regulates the distribution of samples;
- federal laws that require pharmaceutical manufacturers to report certain calculated product prices to the government or provide certain discounts or rebates to government authorities or private entities, often as a condition of reimbursement under government healthcare programs;
- the so-called “federal sunshine” law, which requires pharmaceutical and medical device companies to monitor and report certain financial interactions with teaching hospitals, physicians and certain non-physician practitioners to the federal government for re-disclosure to the public; and
- state law equivalents of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third party payor, including commercial insurers, state laws regulating interactions between pharmaceutical manufactures and healthcare providers, and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by federal laws, thus complicating compliance efforts.

The number and complexity of both federal and state laws continues to increase; the laws contain ambiguous requirements or require administrative guidance for implementation; government interpretations of the laws continue to evolve; and additional governmental resources are being used to enforce these laws and to prosecute companies and individuals who are believed to be violating them. We anticipate that government scrutiny of pharmaceutical sales and marketing practices will continue for the foreseeable future and subject us to the risk of government investigations and enforcement actions.

We have implemented a compliance program, which is based on industry best practices and is designed to ensure that our activities comply with all applicable laws, regulations and industry standards. While our compliance program is intended to detect and prevent potential non-compliance, we cannot be certain that compliance will be assured. If our operations are found to be in violation of any of the laws described above or any other laws, rules or regulations that apply to us, we will be subject to penalties, including civil and criminal penalties, damages, fines and the curtailment or restructuring of our operations. Any penalties, damages, fines, curtailment or restructuring of our operations could adversely affect our ability to operate our business and our financial results. Responding to government investigations, defending any claims raised, and any resulting fines, restitution, damages and penalties, settlement payments or administrative actions, as well as any related actions brought by stockholders or other third parties, could have a material impact on our reputation, business and financial condition and divert the attention of our management from operating our business. Even if we successfully defend against an action against us for violation of a law, the action and our defense could nonetheless cause us to incur significant legal expenses and divert our management’s attention from the operation of our business. Moreover, achieving and sustaining compliance with applicable federal and state privacy, security, fraud and reporting laws may prove costly.

If we, our collaborators, or any third-party manufacturers engaged by us or our collaborators fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could harm our business.

We, our collaborators, and any third-party manufacturers we engage are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the generation, handling, use, storage, treatment, manufacture, transportation and disposal of, and exposure to, hazardous materials and wastes, as well as laws and regulations relating to occupational health and safety, including those governing laboratory procedures, exposure to blood-borne pathogens and the handling of bio-hazardous materials. Our operations involve the use of hazardous materials, including organic and inorganic solvents and reagents. Although we believe that our activities conform in all material respects with such environmental laws, there can be no assurance that violations of these laws will not occur in the future as a result of human error, accident, equipment failure or other causes. Liability under environmental, health and safety laws can be joint and several and without regard to fault or negligence. The failure to comply with past, present or future laws could result in the imposition of substantial fines and penalties, remediation costs, property damage and personal injury claims, loss of permits or a cessation of operations, and any of these events could harm our business and financial condition. We expect that our operations will be affected by other new environmental, health and workplace safety laws on an ongoing basis, and although we cannot predict the ultimate impact of any such new laws, they may impose greater compliance costs or result in increased risks or penalties, which could harm our business.

Further, with respect to the operations of any current or future collaborators or third party contract manufacturers, it is possible that if they fail to operate in compliance with applicable environmental, health and safety laws and regulations or properly dispose of wastes associated with our product or product candidates, we could be held liable for any resulting damages, suffer reputational harm or experience a disruption in the manufacture and supply of our product or product candidates.

Comprehensive tax reform in the U.S. and future guidance could adversely affect our business and financial condition.

The Tax Cuts and Jobs Act (the "TCJA") was enacted on December 22, 2017 in the U.S. The TCJA contains significant changes to corporate taxation, including reduction of the U.S. corporate tax rate from 35% to 21%, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), one-time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, limitation of the tax deduction for interest expense, immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. On March 27, 2020, President Trump signed into law the "Coronavirus Aid, Relief, and Economic Security Act" or the CARES Act, which included certain changes in tax law intended to stimulate the U.S. economy in light of the COVID-19 outbreak, including temporary beneficial changes to the treatment of net operating losses, interest deductibility limitations and payroll tax matters.

We continue to monitor changes in tax laws in the U.S. and the impact of proposed and enacted legislation in the international jurisdictions in which the company operates. President Biden has provided informal guidance on tax law changes he may support. Among other things, his proposals would raise the rate on both domestic and foreign income. If any of these proposals are ultimately enacted into legislation, they could materially impact our tax provision, cash tax liability and effective tax rate.

The COVID-19 pandemic has resulted, and may continue to result in disruptions to our commercialization, clinical trials, manufacturing and other business operations, which could have a material adverse effect on our business, financial condition, operating results, cash flows and prospects.

The COVID-19 pandemic has presented a substantial public health and economic challenge around the world. The rapid spread of COVID-19 has led to the implementation of various responses, including government-imposed quarantines, shelter-in-place mandates, sweeping restrictions on travel, mandatory shutdowns for non-essential businesses, requirements regarding social distancing, and other public health safety measures, as well as reported adverse impacts on healthcare resources, facilities and providers across the United States and in other countries. In response to the pandemic, healthcare providers have, and may need to further, reallocate resources, such as physicians, staff, hospital beds, and intensive care unit facilities, as they prioritize limited resources and personnel capacity to focus on the treatment of patients with COVID-19 and implement limitations on access to hospitals and other medical institutions due to concerns about the spread of COVID-19 in such settings. These responses may be extended by the duration of the outbreak, periodic spikes in infection rates due to new strains of the virus Omicron or otherwise, local outbreaks of the virus, the broad availability of effective vaccines, new information that will emerge concerning the severity of the coronavirus and the actions to contain the coronavirus or treat its impact. These actions have and may continue to negatively impact commercialization, clinical trials, manufacturing and other business operations, including:

- **Commercial:** The response to COVID-19 by healthcare providers has made it difficult for some patients, especially those dependent on a hospital setting, to receive infusions or initiate treatment with our commercial products. In addition, as a result of the pandemic, some patients may choose to delay or stop treatment to avoid a visit to a hospital or a visit of a third party in their homes to minimize the risk of infection. In some cases, at home infusions have been delayed due to outbreaks of COVID-19 among trained personnel and staffing shortages. The impact of COVID-19 may also result in delays in processing reauthorizations and modifications to program benefits by insurers, making it

difficult for patients to obtain or maintain favorable coverage decisions for our products. In addition, the increase in unemployment due to the pandemic has resulted in decreased insurance coverage for many individuals. These challenges may continue for the duration of the COVID-19 pandemic, which is uncertain, and are expected to reduce our revenue and cash flows.

- **Clinical trials:** The impact of COVID-19 has caused disruptions and may cause delays in some of our clinical trials. Missing data could undermine data integrity and probability of success. The response to COVID-19 by healthcare providers and regulatory agencies could delay the commencement of trials, site initiation, compliance in the trials, the completion of trials, including the completion of post-marketing requirements and commitments, slow down enrollment, and make the ongoing collection of data for patients enrolled in studies more difficult or intermittent. In addition, as COVID-19 continues to spread, some participants and clinical investigators may be unable or unwilling to comply with clinical trial protocols. For example, quarantines or other travel limitations (whether voluntary or required) were implemented in many countries during the pandemic, and may impede participant movement, affect sponsor access to study sites, or interrupt healthcare services, which may negatively impact the execution of clinical trials. Significant delays or disruptions to our clinical trials could adversely affect our ability to timely initiate studies, conduct successful studies, obtain or maintain regulatory approvals, or commercialize our product candidates.
- **Manufacturing:** A significant outbreak at one of our partner sites could lead to delays in the manufacturing of our products and product candidates. In addition, the need to prioritize rated orders issued by the Federal Emergency Management Agency pursuant to the U.S. Defense Production Act could impact the manufacturing, supply chain and distribution of our products and product candidates.
- **Operations:** On March 13, 2020, to protect the health of our employees and their families, and our communities, and in accordance with direction from state and local government authorities, we instituted mandatory work-from-home for all employees and contingent workers other than those who are facility-dependent. With increased availability of vaccines and public health guidelines evolving to reflect their availability, we reopened our offices to employees who are not facility-dependent and will continue to monitor and make adjustments in response to the public health environment, together with local, state and federal guidance regarding workplace protective measures, including travel restrictions, quarantines, and business shutdowns. If there is an increase in COVID-19 infection rates or new outbreaks, our operations may be adversely impacted. Remote working increases our vulnerability to cyber security breaches. Further, if the spread of the COVID-19 pandemic continues and our operations are adversely impacted, including due to an outbreak in a facility, we risk a delay, default and/or nonperformance under existing agreements.

Any of the foregoing factors could have a material adverse impact on our business, financial condition, operating results, cash flows and prospects. The extent to which COVID-19 impacts our operations and those of our third-party partners will depend on future developments, which are highly uncertain and cannot be predicted with confidence, including the duration of the pandemic, additional or modified government actions, new information which emerges concerning the severity of COVID-19 and the actions taken to contain the virus or treat its impact, among others. In particular, the speed of the continued spread of COVID-19 globally, and the magnitude of interventions to contain the spread of the virus, will determine the impact of the pandemic on our operations.

Our ability to use net operating loss carryforwards and other tax attributes to offset future taxable income may be limited as a result of future transactions involving our common stock.

In general, under Section 382 of the Internal Revenue Code, a corporation that undergoes an "ownership change" is subject to limitations on its ability to utilize its pre-change net operating losses and certain other tax assets to offset future taxable income. In general, an ownership change occurs if the aggregate stock ownership of certain stockholders increases by more than 50 percentage points over such stockholders' lowest percentage ownership during the testing period, which is generally three years. An ownership change could limit our ability to utilize our net operating loss and tax credit carryforwards for taxable years including or following such "ownership change." Limitations imposed on the ability to use net operating losses and tax credits to offset future taxable income could require us to pay U.S. federal income taxes earlier than we estimated or than would have otherwise been required if such limitations were not in effect and could cause such net operating losses and tax credits to expire unused, in each case reducing or eliminating the benefit of such net operating losses and tax credits and potentially adversely affecting our financial position. Similar rules and limitations may apply for state income tax purposes.

We are winding down our expired U.S. government contracts, and the U.S. government may deny payment of some or all of the currently outstanding amounts owed to us. In addition, further development of our infectious disease programs may be limited by the intellectual property and other rights retained by the U.S. government.

We have historically relied on U.S. government contracts and awards to fund and support certain infectious disease development programs. These contracts expired and we are currently involved in contract close-out activities. The U.S. government has the right to perform additional audits prior to making final payment of costs and fees. If we are not able to adequately support costs incurred or other government requirements, the government may deny payment of some or all of the currently outstanding amounts owed to us. In addition, the U.S. government may have the right to develop all or some parts of product candidates that we have developed under a U.S. government contract after such contract has terminated or expired.

Our employees, principal investigators, consultants and strategic partners may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements and insider trading.

We are exposed to the risk of fraud or other misconduct by our employees, principal investigators, consultants and strategic partners. Misconduct by these parties could include intentional failures to comply with the regulations of the FDA and non-U.S. regulators, provide accurate information to the FDA and non-U.S. regulators, comply with healthcare fraud and abuse laws and regulations in the U.S. and abroad, report financial information or data accurately or disclose unauthorized activities to us. We adopted a code of conduct applicable to all of our employees, but it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant fines or other sanctions.

Failure to retain our key personnel or an inability to attract and retain additional qualified personnel would cause our future growth and our ability to compete to suffer.

We are highly dependent on the efforts and abilities of the principal members of our senior management. Additionally, we have scientific personnel with significant and unique expertise in RNA-targeted therapeutics and gene therapy technologies. The loss of the services of any one of the principal members of our managerial team or staff may prevent us from achieving our business objectives.

The competition for qualified personnel in the biotechnology field is intense, and our future success depends upon our ability to attract, retain, motivate and support such personnel. The COVID-19 pandemic has exacerbated workforce competition and workforce shortages. In order to develop and commercialize our products successfully, we will be required to retain key management and scientific employees. In certain instances, we may also need to expand or replace our workforce and our management ranks. In addition, we rely on certain consultants and advisors, including scientific and clinical advisors, to assist us in the formulation and advancement of our research and development programs. Our consultants and advisors may be employed by other entities or have commitments under consulting or advisory contracts with third parties that limit their availability to us, or both. If we are unable to attract, assimilate or retain such key personnel, our ability to advance our programs would be adversely affected.

Turnover rates of key employees has varied substantially in recent years. Over the last two years, we have had several executive management changes. Leadership transitions can be inherently difficult to manage and may cause uncertainty or a disruption to our business or may increase the likelihood of turnover in other key officers and employees. If we lose the services of one or more of our senior management or key employees, or if one or more of them decides to join a competitor or otherwise to compete with us, our business could be harmed.

Risks Related to our Financial Condition and Capital Requirements

We have incurred operating losses since our inception and we may not achieve or sustain profitability.

We incurred an operating loss of $298.0 million for the six months ended June 30, 2022. Our accumulated deficit was $3.5 billion as of June 30, 2022. Although we currently have three commercially approved products in the U.S., we believe that it will take us some time to attain profitability and positive cash flow from operations. Since our products and product candidates target small patient populations, the per-patient drug pricing must be high in order to recover our development and manufacturing costs, fund adequate patient support programs, fund additional research and achieve profitability. We may be unable to maintain or obtain sufficient sales volumes at a price high enough to justify our product development efforts and our sales, marketing and manufacturing expenses.

We have generally incurred expenses related to research and development of our technologies and product candidates and from general and administrative expenses that we have incurred while building our business infrastructure. We anticipate that our expenses will increase substantially if and/or as we:

- continue the commercialization of our products in the U.S.;
- expand the global footprint of our products outside of the U.S.;
- establish our sales, marketing and distribution capabilities;
- continue our research, pre-clinical and clinical development of our product candidates;
- respond to and satisfy requests and requirements from regulatory authorities in connection with development and potential approval of our product candidates;
- initiate additional clinical trials for our product candidates;
- seek marketing approvals for our product candidates that successfully complete clinical trials;
- acquire or in-license other product candidates;
- maintain, expand and protect our intellectual property portfolio;
- increase manufacturing capabilities, including capital expenditures related to our real estate facilities and entering into manufacturing agreements;
- hire additional clinical, quality control and scientific personnel; and
- add operational, financial and management information systems and personnel, including personnel to support our product development and planned future commercialization efforts.

As a result, we expect to continue to incur significant operating losses at least through 2022. Because of the numerous risks and uncertainties associated with developing biopharmaceutical products, we are unable to predict the extent of any future losses or when, or if, we will become profitable.

We will need to raise additional funding, which may not be available on acceptable terms, or at all. Failure to obtain this necessary capital when needed may force us to delay, limit or terminate our product development efforts or other operations.

We will likely require additional capital from time to time in the future in order to meet FDA post-marketing approval requirements and market and sell our products as well as to continue the development of product candidates in our pipeline, to prepare for potential commercialization of additional product candidates in our pipeline, to expand our product portfolio and to continue or enhance our business development efforts. The actual amount of funds that we may need and the sufficiency of the capital we have or are able to raise will be determined by many factors, some of which are in our control and others that are beyond our control.

While we are currently well capitalized, we may use available capital resources sooner than we expect under our current operating plan. In addition, our operating plan may change. We may need or choose to seek additional funds sooner than planned, through equity or debt financings, government or other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances, funded research and development arrangements and licensing arrangements or a combination of these approaches. In any event, we expect to require additional capital to expand future development efforts, obtain regulatory approval for, and to commercialize, our product candidates. Raising funds in the current economic environment may present additional challenges. Even if we believe we have sufficient funds for our current or future operating plans, we may seek additional capital if market conditions are favorable or in light of specific strategic considerations.

Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all. In the event we receive negative data from our key clinical programs or encounter other major setbacks in our development, manufacturing or regulatory activities or in our commercialization efforts, our stock price is likely to decline, which would make a future financing more difficult. Moreover, the terms of any financing may adversely affect the holdings or the rights of our stockholders. The issuance of additional securities, whether equity or debt, by us, or the possibility of such issuance, may cause the market price of our shares to decline. The sale of additional equity or convertible securities may dilute all of our stockholders. The incurrence of indebtedness may result in increased fixed payment obligations and we may be required to agree to certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. We could also be required to seek funds through arrangements with collaborative partners or otherwise at an earlier stage than otherwise would be desirable and we may be required to relinquish rights to some of our technologies or product candidates or otherwise agree to terms unfavorable to us, any of which may have a material adverse effect on our business, operating results and prospects.

If we are unable to obtain funding on a timely basis, we may be required to significantly curtail, delay or discontinue one or more of our research or development programs or the commercialization of any product, if approved, or be unable to expand our operations or otherwise capitalize on our business opportunities, as desired, which could materially affect our business, financial condition and results of operations.

Raising additional capital may cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights.

We may seek additional capital through a combination of private and public equity offerings, debt financings, collaborations and strategic and licensing arrangements. To the extent that we raise additional capital through the sale of common stock or securities convertible or exchangeable into common stock, the ownership interest of our stockholders in our company may be diluted. In addition, the terms of any such securities may include liquidation or other preferences that materially adversely affect the rights of our stockholders. Debt financing, if available, may increase our fixed payment obligations and may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through collaboration, strategic partnerships and licensing arrangements with third parties, we may have to relinquish valuable rights to our product candidates, our intellectual property, future revenue streams or grant licenses on terms that are not favorable to us.

The estimates and judgments we make, or the assumptions on which we rely, in preparing our consolidated financial statements could prove inaccurate.

Our consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the U.S. The preparation of these consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of our assets, liabilities, revenues and expenses, the amounts of charges accrued by us and related disclosure of contingent assets and liabilities. Such estimates and judgments include revenue recognition, inventory, valuation of stock-based awards, research and development expenses and income tax. We base our estimates on historical experience, facts and circumstances known to us and on various other assumptions that we believe to be reasonable under the circumstances. We cannot provide assurances, however, that our estimates, or the assumptions underlying them, will not change over time or otherwise prove inaccurate. If this is the case, we may be required to restate our consolidated financial statements, which could, in turn, subject us to securities class action litigation. Defending against such potential litigation relating to a restatement of our consolidated financial statements would be expensive and would require significant attention and resources of our management. Moreover, our insurance to cover our obligations with respect to the ultimate resolution of any such litigation may be inadequate. As a result of these factors, any such potential litigation could have a material adverse effect on our financial results and cause our stock price to decline, which could in turn subject us to securities class action litigation.

Risks Related to Our Common Stock

Our stock price is volatile and may fluctuate due to factors beyond our control.

The market prices for and trading volumes of securities of biotechnology companies, including our securities, has historically been volatile. Our stock has had significant swings in trading prices, in particular in connection with our public communications regarding feedback received from regulatory authorities. For example, over the last twelve months, as of the date of this report, our stock has increased as much as 16% in a single day or decreased as much as 12% in a single day. The market has from time to time

experienced significant price and volume fluctuations unrelated to the operating performance of particular companies. The market price of our common stock may fluctuate significantly due to a variety of factors, including but not limited to:

- the commercial performance of our products in the U.S.;
- the timing of our submissions to regulatory authorities and regulatory decisions and developments;
- positive or negative clinical trial results or regulatory interpretations of data collected in clinical trials conducted by us, our strategic partners, our competitors or other companies with investigational drugs targeting the same, similar or related diseases to those targeted by us;
- delays in beginning and completing pre-clinical and clinical trials for potential product candidates;
- delays in entering or failing to enter into strategic relationships with respect to development and/or commercialization of our products or product candidates or entry into strategic relationships on terms that are not deemed to be favorable to us;
- technological innovations, product development or additional commercial product introductions by ourselves or competitors;
- changes in applicable government regulations or regulatory requirements in the approval process;
- developments concerning proprietary rights, including patents and patent litigation matters, such as developments in the interferences declared by the USPTO, including in the near term any outcomes of ongoing interference proceedings and over the longer term the outcomes from any related appeals;
- public concern relating to the commercial value, efficacy or safety of any of our products;
- our ability to obtain funds, through the issuance of equity or equity linked securities or incurrence of debt, or other corporate transactions;
- comments by securities analysts;
- developments in litigation against us;
- changes in senior management; or
- general market conditions in our industry or in the economy as a whole.

Broad market and industry factors may seriously affect the market price of a company's stock, including ours, regardless of actual operating performance. For example, the trading prices of biopharmaceutical companies have been highly volatile as a result of the COVID-19 pandemic, which continues to rapidly evolve. In addition, in the past, following periods of volatility in the overall market and the market price of a particular company's securities, securities class action litigation has often been instituted against these companies. Such litigation could result in substantial costs and a diversion of our management's attention and resources.

Our revenues and operating results could fluctuate significantly, which may adversely affect our stock price.

Our revenues and operating results may vary significantly from year-to-year and quarter-to-quarter as well as in comparison to the corresponding quarter of the preceding year. Variations my result from one or more factors, including, without limitation:

- timing of purchase orders;
- changes in coverage and reimbursement policies of health plans and other health insurers, especially in relation to those products that are currently manufactured, under development or identified for future development by us;
- re-authorizations processes that may be required for patients who initially obtained coverage by third parties, including government payors, managed care organizations and private health insurers;
- transition from temporary billing codes established by the CMS to permanent medical codes;
- timing of approval of applications filed with the FDA;
- timing of product launches and market acceptance of products launched;
- changes in the amounts spent to research, develop, acquire, license or promote new and existing products;
- results of clinical trial programs;
- serious or unexpected health or safety concerns with our product or product candidates and any resulting clinical holds;

- introduction of new products by others that render one or more of our products obsolete or noncompetitive;
- the ability to maintain selling prices and gross margins on our products;
- increases in the cost of raw materials contained within our products and product candidates;
- manufacturing and supply interruptions, including product rejections or recalls due to failure to comply with manufacturing specifications;
- timing of revenue recognition relating to our distribution agreements;
- the ability to protect our intellectual property from being acquired by other entities;
- the ability to avoid infringing the intellectual property of others;
- the continued impact of the ongoing COVID-19 pandemic; and
- the addition or loss of customers.

In addition, in one or more future periods, our results of operations may fall below the expectations of securities analysts and investors. In that event, the market price of our common stock could decline.

Provisions of our certificate of incorporation, bylaws and Delaware law might deter acquisition bids for us that might be considered favorable and prevent or frustrate any attempt to replace or remove the then-current management and board of directors.

Certain provisions of our certificate of incorporation and bylaws may make it more difficult for a third party to acquire control of us or effect a change in our board of directors and management. These provisions include:

- when the board is comprised of six or more directors, classification of our board of directors into two classes, with one class elected each year;
- directors may only be removed for cause by the affirmative vote of a majority of the voting power of all the then-outstanding shares of voting stock;
- prohibition of cumulative voting of shares in the election of directors;
- right of the board of directors to elect directors to fill a vacancy created by the expansion of the board of directors or the resignation, death, disqualification or removal of a director;
- express authorization of the board of directors to make, alter or repeal our bylaws;
- prohibition on stockholder action by written consent;
- advance notice requirements for nominations for election to our board or for proposing matters that can be acted upon by stockholders at stockholder meetings;
- the ability of our board of directors to authorize the issuance of undesignated preferred stock, the terms and rights of which may be established and shares of which may be issued without stockholder approval, including rights superior to the rights of the holders of common stock; and
- a super-majority (66 2/3%) of the voting power of all of the then-outstanding shares of capital stock are required to amend, rescind, alter or repeal our bylaws and certain provisions of our certificate of incorporation.

In addition, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which may prohibit certain business combinations with stockholders owning 15% or more of our outstanding voting stock. These and other provisions in our certificate of incorporation and our bylaws and in the Delaware General Corporation Law could make it more difficult for stockholders or potential acquirers to obtain control of our board of directors or initiate actions that are opposed by the then-current board of directors.

A significant number of shares of our common stock are issuable pursuant to outstanding stock awards, and we expect to issue additional stock awards and shares of common stock to attract and retain employees, directors and consultants. We may also issue shares of common stock to finance our operations and in connection with our strategic goals. Exercise of these awards and sales of shares will dilute the interests of existing security holders and may depress the price of our common stock.

Currently, our Amended and Restated Certificate of Incorporation authorizes the issuance of up to 198.0 million shares of common stock. As of June 30, 2022, there were approximately 87.5 million shares of common stock outstanding and outstanding awards to purchase 11.1 million shares of common stock under various incentive stock plans. Additionally, as of June 30, 2022, there were approximately 4.8 million shares of common stock available for future issuance under our 2018 Equity Incentive Plan, approximately 0.2 million shares of common stock available for issuance under our Amended and Restated 2013 Employee Stock Purchase Plan, and approximately 1.1 million shares of common stock available for issuance under our 2014 Employment Commencement Incentive Plan.

We may issue additional shares to grant equity awards to our employees, officers, directors and consultants under our 2018 Equity Incentive Plan, our 2013 Employee Stock Purchase Plan or our 2014 Employment Commencement Incentive Plan. We may also issue additional common stock and warrants from time to time to finance our operations and in connection with strategic transactions, such as acquisitions and licensing. For example, in February 2020, we issued and sold 2,522,227 shares of common stock to Roche Finance in connection with the entry into the collaboration agreement with Roche.

The issuance of additional shares of common stock or warrants to purchase common stock and the perception that such issuances may occur or exercise of outstanding warrants or stock options may have a dilutive impact on other stockholders and could have a material negative effect on the market price of our common stock.

Future sales of our common stock in the public market could cause our share price to fall.

Sales of a substantial number of our common stock in the public market, including sales by members of our management or board of directors, or the perception that these sales might occur, could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity or equity-related securities.

Risks Related to Our Credit Agreement and Convertible Senior Notes

Our indebtedness resulting from our credit agreement could adversely affect our financial condition or restrict our future operations.

On December 13, 2019, we entered into a loan agreement (the “Credit Agreement”) with BioPharma Credit PLC, as the collateral agent and a lender (“BioPharma”), and BioPharma Credit Investments V (Master) LP, as a lender (together with BioPharma in its capacity as a lender, and each of their respective successors and assigns at any time party to the Credit Agreement, the “Lenders” and each a “Lender”) that provides for a senior secured term loan facility (the “Loan Facility”) of up to $500.0 million to be funded in two tranches: (i) a Tranche A Loan in an aggregate principal amount of $250.0 million (the “Tranche A Loan”), which was funded on December 20, 2019; and (ii) a Tranche B Loan in an aggregate principal amount of up to $250.0 million (the “Tranche B Loan”, and together with the Tranche A Loan, the “Term Loans”). We drew the $250.0 million Tranche A Loan in full on December 20, 2019.

On September 24, 2020, we entered into a first amendment to loan agreement (the “Amendment”) which amends the Credit Agreement. The Amendment increases the aggregate principal amount of the Tranche B Loan under the Loan Facility from $250.0 million to $300.0 million. On November 2, 2020, we drew the $300.0 million Tranche B Loan. In addition, the Amendment extends the maturity date for the Tranche B Loan to December 31, 2024 and increases the funding fee payable to each Lender providing a portion of the Tranche B Loan on the date the Tranche B Loan is funded by 120 basis points to 2.95%.

All obligations under the Credit Agreement are secured pursuant to the terms of a security agreement and subject to certain exceptions, by security interests in certain collateral (collectively, the “Collateral”), which includes the following: (1) any and all U.S. intellectual property owned by, and rights to U.S. intellectual property licensed to, us relating to any pharmaceutical composition in which eteplirsen or golodirsen is indicated to be administered for use in the treatment of Duchenne in patients who have a confirmed mutation of the dystrophin gene that is amenable to exon 51 or 53 skipping, respectively, or for any other use approved by the FDA (the “Loan Products”), (2) 100% of the equity interests directly held by us in certain wholly owned domestic subsidiaries and 65% of the equity interests in certain other wholly owned domestic subsidiaries, and (3) all of our personal property, including, without limitation, cash held in all our deposit accounts. Any non-U.S. intellectual property related to the Loan Products and intellectual property unrelated in any way to the Loan Products anywhere are not part of the Collateral.

The Credit Agreement contains negative covenants that, among other things and subject to certain exceptions, restrict our ability to:

- sell or dispose of assets, including certain intellectual property;
- amend, modify or waive certain material agreements or organizational documents;
- consolidate or merge;
- incur additional indebtedness;
- incur additional liens on the Collateral;
- pay dividends or make any distribution or payment on or redeem, retire or purchase any equity interests; and
- make payments of certain subordinated indebtedness.

The Credit Agreement requires us to have consolidated liquidity of at least $100.0 million as of the last day of each month. Additionally, the Credit Agreement contains certain representations and warranties, affirmative covenants and provisions relating to events of default, which include, but are not limited to, the following: (i) nonpayment of principal, interest and other amounts; (ii) failure to comply with covenants; (iii) the occurrence of a material adverse change in (A) our ability to fulfill the payment or performance obligations under the Credit Agreement and related documents or (B) the binding nature of the Credit Agreement and related documents; (iv) the rendering of judgments or orders or the acceleration or payment default by us in respect of other indebtedness in excess of $10.0 million; and (v) certain insolvency and ERISA events. A change of control triggers a mandatory prepayment of the Term Loans, and we may not have sufficient funds or the ability to raise the funds necessary to prepay them.

Servicing our Credit Agreement and 1.50% notes due 2024 (the "Notes") requires a significant amount of cash, and we may not have sufficient cash flow to pay our debt.

In 2017, we issued $570.0 million aggregate principal amount of Notes, pursuant to that certain indenture, dated as of November 14, 2019, between us, as issuer, and U.S. Bank National Association, as trustee. Our ability to make scheduled payments of the principal of, to pay interest on, or to refinance our indebtedness, including the Credit Agreement and the Notes, depends on our future performance, which is subject to many factors, including, economic, financial, competitive and other, beyond our control. We do not expect our business to be able to generate cash flow from operations in the foreseeable future, sufficient to service our debt and make necessary capital expenditures and we may therefore be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance the term loan under the Credit Agreement, which matures in 2023, and the Notes, which are non-callable and mature in 2024, will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations, and limit our flexibility in planning for and reacting to changes in our business.

We may not have the ability to raise the funds necessary to repurchase the Notes as required upon a fundamental change, and our future debt may contain limitations on our ability to repurchase the Notes.

Holders of the Notes will have the right to require us to repurchase their Notes for cash upon the occurrence of a fundamental change at a fundamental change repurchase price equal to 100% of the principal amount of the Notes to be repurchased, plus accrued and unpaid interest, if any. A fundamental change may also constitute an event of default or prepayment under, and result in the acceleration of the maturity of, our then-existing indebtedness. We cannot assure you that we will have sufficient financial resources, or will be able to arrange financing, to pay the fundamental change repurchase price in cash with respect to any Notes surrendered by holders for repurchase upon a fundamental change. In addition, restrictions under our then existing credit facilities or other indebtedness, if any, may not allow us to repurchase the Notes upon a fundamental change. Our failure to repurchase the Notes upon a fundamental change when required would result in an event of default with respect to the Notes which could, in turn, constitute a default under the terms of our other indebtedness, if any. If the repayment of the related indebtedness were to be accelerated after any applicable notice or grace periods, we may not have sufficient funds to repay the indebtedness and repurchase the Notes.

Capped call transactions entered into in connection with the Notes may impact the value of our common stock.

In connection with the Notes, we entered into capped call transactions (the "Capped Call Transactions") with certain financial institutions. The Capped Call Transactions are expected to generally reduce the potential dilution upon conversion of the Notes into shares of our common stock.

In connection with establishing their initial hedges of the Capped Call Transactions, these financial institutions or their respective affiliates may have entered into various derivative transactions with respect to our common stock and/or purchased our common stock. The financial institutions, or their respective affiliates, may modify their hedge positions by entering into or unwinding various derivatives with respect to our common stock and/or purchasing or selling our common stock or other securities of ours in secondary market transactions prior to the maturity of the Notes. This activity may have an impact on the value of our common stock.

General Risks

We may be subject to product liability claims and our insurance may not be adequate to cover damages.

The current and future use of our product candidates by us and our collaborators in clinical trials, expanded access programs, the sale of our products, or the use of our products under emergency use vehicles may expose us to liability claims inherent to the manufacture, clinical testing, marketing and sale of medical products. These claims might be made directly by consumers or healthcare providers or indirectly by pharmaceutical companies, our collaborators or others selling such products. Regardless of merit or eventual outcome, we may experience financial losses in the future due to such product liability claims. We have obtained commercial general liability insurance coverage for our clinical trials and the sale of commercial products. However, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against all losses. If a successful product liability claim or series of claims is brought against us for uninsured liabilities or in excess of insured liabilities, our assets may not be sufficient to cover such claims and our business operations could be impaired.

Violation of the General Data Protection Regulation could subject us to significant fines.

The GDPR increases our obligations with respect to clinical trials conducted in the member states of the EEA by expanding the definition of personal data to include coded data and requiring changes to informed consent practices and more detailed notices for clinical trial subjects and investigators. In addition, the GDPR increases the scrutiny that clinical trial sites located in the EEA should apply to transfers of personal data from such sites to countries that are considered to lack an adequate level of data protection, such as the U.S. The GDPR imposes substantial fines for breaches of data protection requirements, which can be up to four percent of global revenue or 20 million Euros, whichever is greater, and it also confers a private right of action on data subjects for breaches of data protection requirements. Compliance with these directives will be a rigorous and time-intensive process that may increase our cost of doing business, and despite those efforts, there is a risk that we may be subject to fines and penalties, litigation and reputational harm in connection with our European activities.

We have expanded, and may continue to expand, our organization and may experience difficulties in managing this growth, which could disrupt our operations.

To support the expansion of our business activities, we have expanded, and may continue to expand, our full-time employee base, as well as our consultant and contractor base. Our management may need to divert a disproportionate amount of its attention away from our day-to-day activities and devote a substantial amount of time to managing these growth activities. Our ability to manage our growth properly and maintain compliance with all applicable rules and regulations will require us to continue to improve our operational, legal, financial and management controls, as well as our reporting systems and procedures. We may not be able to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, operational mistakes, loss of business opportunities, loss of employees and reduced productivity among remaining employees. Our growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of additional product candidates. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our ability to generate and/or grow revenues could be reduced, and we may not be able to implement our business strategy.

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

We are increasing our presence in international markets, including emerging markets, subjecting us to many risks that could adversely affect our business and revenues, such as:

- the inability to obtain necessary foreign regulatory or pricing approvals of products in a timely manner;
- uncertainties regarding the collectability of accounts receivable;
- fluctuations in foreign currency exchange rates that may adversely impact our revenues, net income and value of certain of our investments;
- difficulties in staffing and managing international operations;
- the imposition of governmental controls;

- less favorable intellectual property or other applicable laws;
- increasingly complex standards for complying with foreign laws and regulations that may differ substantially from country to country and may conflict with corresponding U.S. laws and regulations;
- the far-reaching anti-bribery and anti-corruption legislation in the U.K., including the U.K. Bribery Act 2010, and elsewhere and escalation of investigations and prosecutions pursuant to such laws;
- compliance with complex import and export control laws;
- restrictions on direct investments by foreign entities and trade restrictions; and
- changes in tax laws and tariffs.

In addition, our international operations are subject to regulation under U.S. law. For example, the Foreign Corrupt Practices Act ("FCPA") prohibits U.S. companies and their representatives from paying, offering to pay, promising to pay or authorizing the payment of anything of value to any foreign government official, government staff member, political party or political candidate for the purpose of obtaining or retaining business or to otherwise obtain favorable treatment or influence a person working in an official capacity. In many countries, the healthcare professionals we regularly interact with may meet the FCPA's definition of a foreign government official. Failure to comply with domestic or foreign laws could result in various adverse consequences, including: possible delay in approval or refusal to approve a product, recalls, seizures or withdrawal of an approved product from the market, disruption in the supply or availability of our products or suspension of export or import privileges, the imposition of civil or criminal sanctions, the prosecution of executives overseeing our international operations and damage to our reputation. Any significant impairment of our ability to sell products outside of the U.S. could adversely impact our business and financial results.

Unfavorable global economic conditions could harm our business, financial condition or results of operations.

Our results of operations could be harmed by general conditions in the global economy and in the global financial markets. A severe or prolonged economic downturn could result in a variety of risks to our business, including weakened demand for our product candidates and our ability to raise additional capital when needed on acceptable terms, if at all. A weak or declining economy could strain our manufacturers, possibly resulting in manufacturing disruption, or cause delays in payments for our services by third-party payors or our future collaborators. Any of the foregoing could harm our business and we cannot anticipate all of the ways in which the current economic climate and financial market conditions could harm our business.

Moreover, the COVID-19 pandemic is impacting the global economy, and the U.S. economy in particular, with the potential for any economic downturn to be severe and prolonged. A severe or prolonged economic downturn as a result of the COVID-19 pandemic could result in a variety of risks to our business, including disruptions in the financial markets, which could adversely impact our ability to raise additional capital when needed or on acceptable terms, if at all.

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

In the ordinary course of our business, we collect and store sensitive data, including intellectual property, our proprietary business information and that of our suppliers, as well as personally identifiable information of the patients using our commercially approved products, clinical trial participants and employees. Similarly, our third-party providers possess certain of our sensitive data. The secure maintenance of this information is critical to our operations and business strategy. Our ongoing operating activities also depend on functioning computer systems. Despite our security measures, our information technology and infrastructure are subject to attacks or breaches. Any such breach could result in a material compromise of our networks, and the information stored there could be accessed, publicly disclosed, lost, stolen, or rendered, permanently or temporarily, inaccessible. Furthermore, we may not promptly discover a system intrusion. Attacks could have a material impact on our business, operations or financial results. Any such access, disclosure or other loss of information, including our data being breached at third party providers, could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, disrupt our operations and damage our reputation, which could adversely affect our business. We also may need to pay "ransomware" to re-access our systems.

In addition, privacy and data protection laws may be interpreted and applied differently from country to country and may create inconsistent or conflicting requirements, which increase the costs incurred by us in complying with such laws. The European Union's GDPR, which greatly increases the jurisdictional reach of European Union law and became effective in May 2018, adds a broad array of requirements for handling personal data including the public disclosure of significant data breaches, and imposes substantial penalties for non-compliance of up to the greater of €20 million or 4% of global annual revenue for the preceding financial year. Our efforts to comply with GDPR and other privacy and data protection laws imposes significant costs and challenges that are

likely to increase over time, and we are exposed to substantial penalties or litigation related to violations of existing or future data privacy laws and regulations.

Additionally, the CCPA, which became effective January 1, 2020, substantially expands privacy obligations of many businesses. The CCPA requires new disclosures to California consumers, imposes new rules for collecting or using information about minors, and affords consumers new abilities, such as the right to know whether the data is sold or disclosed and to whom, the right to request that a company delete personal information collected, the right to opt-out of the sale of personal information and the right to non-discrimination in terms of price or service when a consumer exercises a privacy right. Failure to comply with these regulations is subject to civil sanctions, including fines and penalties. 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. Moreover, a newly passed ballot initiative, the California Privacy Rights Act ("CPRA"), which will become operational in 2023, expands on the CCPA, creating new consumer rights and protections, including the right to correct personal information, the right to opt out of the use of personal information in automated decision making, the right to opt out of "sharing" consumer's personal information for cross-context behavioral advertising, and the right to restrict use of and disclosure of sensitive personal information, including geolocation data to third parties. We will need to evaluate and potentially update our privacy program to seek to comply with the CPRA and will incur additional costs and expenses in our effort to comply.

We may incur substantial costs in connection with litigation and other disputes.

In the ordinary course of business we may, and in some cases have, become involved in lawsuits and other disputes such as securities claims, intellectual property challenges, including interferences declared by the USPTO, and employee matters. It is possible that we may not prevail in claims made against us in such disputes even after expending significant amounts of money and company resources in defending our positions in such lawsuits and disputes. The outcome of such lawsuits and disputes is inherently uncertain and may have a negative impact on our business, financial condition and results of operations.

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

Social media is increasingly being used to communicate about our products, technologies and programs, and the diseases our product and product candidates are designed to treat. Social media practices in the biopharmaceutical industry continue to evolve and regulations relating to such use are not always clear. This evolution creates uncertainty and risk of noncompliance with regulations applicable to our business. For example, patients may use social media channels to comment on the effectiveness of a product or to report an alleged adverse event. When such disclosures occur, there is a risk that we fail to monitor and comply with applicable adverse event reporting obligations or we may not be able to defend ourselves or the public's legitimate interests in the face of the political and market pressures generated by social media due to restrictions on what we may say about our product and/or product candidates. There is also a risk of inappropriate disclosure of sensitive information or negative or inaccurate posts or comments about us on any social networking website. If any of these events were to occur or we otherwise fail to comply with applicable regulations, we could incur liability, face overly restrictive regulatory actions or incur other harm to our business.

We or the third parties upon whom we depend may be adversely affected by natural disasters and/or terrorism attacks, and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.

Natural disasters could severely disrupt our operations, and have a material adverse effect on our business, results of operations, financial condition and prospects. If a natural disaster, power outage, terrorism attack or other event occurred that prevented us from using all or a significant portion of our office, manufacturing and/or lab spaces, that damaged critical infrastructure, such as the manufacturing facilities of our third-party contract manufacturers, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time.

The disaster recovery and business continuity plans we have in place may prove inadequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which could have a material adverse effect on 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.

None.

Item 5. Other Information.

None.

Item 6. Exhibits.

The exhibits listed on the Exhibit Index immediately preceding such exhibits, which is incorporated herein by reference, are filed or furnished as part of this Quarterly Report on Form 10-Q.

EXHIBIT INDEX

Exhibit Number	Exhibit Description	Incorporated by Reference to Filings Indicated				Provided Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation.	8-K12B	001-14895	3.1	6/6/13	
3.2	Amendment to the Amended and Restated Certificate of Incorporation.	8-K	001-14895	3.1	6/30/15	
3.3	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of Sarepta Therapeutics, Inc.	8-K	001-14895	3.1	6/8/20	
3.4	Amended and Restated Bylaws.	8-K	001-14895	3.1	9/25/14	
3.5	Amendment No. 1 to the Amended and Restated Bylaws.	8-K	001-14895	3.1	1/13/20	
10.1	Amendment No. 2 to the Sarepta Therapeutics, Inc. 2018 Equity Incentive Plan	8-K	001-14895	10.1	6/3/22	
10.2	Amendment no. 9 dated March 23, 2022 to the License, Collaboration, and Option Agreement between Sarepta Therapeutics Three, LLC and F. Hoffman-La Roche Ltd, dated December 21, 2019					X
31.1	Certification of the Company's Principal Executive Officer, Douglas S. Ingram, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
31.2	Certification of the Company's Principal Financial and Accounting Officer, Ian M. Estepan, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
32.1**	Certification of the Company's Principal Executive Officer, Douglas S. Ingram, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
32.2**	Certification of the Company's Principal Financial and Accounting Officer, Ian M. Estepan, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
101.INS	Inline eXtensible Business Reporting Language (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.					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document.					X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.					X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.					X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.					X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.					X
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)					X

† Indicates management contract or compensatory plan, contract or arrangement.
* Identified information has been excluded from this exhibit because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.
** The Certifications attached as Exhibits 32.1 and 32.2 that accompany this Quarterly Report on Form 10-Q are not deemed filed with the SEC and are not to be incorporated by reference into any filings of Sarepta Therapeutics, 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 this Form 10-Q, irrespective of any general incorporation language contained in such filing.

SIGNATURES

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.

SAREPTA THERAPEUTICS, INC.
(Registrant)

Date: August 2, 2022

By: /s/ DOUGLAS S. INGRAM
Douglas S. Ingram
President and Chief Executive Officer
(Principal Executive Officer)

Date: August 2, 2022

By: /s/ IAN M. ESTEPAN
Ian M. Estepan
Executive Vice President, Chief Financial Officer
(Principal Financial and Accounting Officer)

NINTH AMENDMENT TO LICENSE, COLLABORATION, AND OPTION AGREEMENT

This NINTH AMENDMENT TO LICENSE, COLLABORATION, AND OPTION AGREEMENT (this "**Ninth Amendment**") is made and entered into as of March 23, 2022 (the "**Ninth Amendment Effective Date**") between Sarepta Therapeutics Three LLC, a limited liability company organized and existing under the laws of the State of Delaware, United States of America, with its principal offices at 215 First Street, Cambridge, MA, 02142 ("**Sarepta**") and F. Hoffmann-La Roche Ltd, a company organized and existing under the laws of Switzerland, with its principal office at Grenzacherstrasse 124, 4070 Basel, Switzerland ("**Roche**"). Sarepta and Roche may be referred to herein individually as a "**Party**" and collectively as the "**Parties**."

WHEREAS, Sarepta and Roche entered into that certain License, Collaboration, and Option Agreement executed on December 21, 2019 and effective as of February 4, 2020 and amended October 23, 2020, October 28, 2020, February 4, 2021, June 23, 2021, August 31, 2021, November 30, 2021, January 5, 2022, and January 28, 2022 (the "**Original Agreement**"); and

WHEREAS, the Parties desire to make certain further amendments to the Original Agreement;

NOW, THEREFORE, in consideration of the promises and covenants contained in this Ninth Amendment, and intending to be legally bound, the Parties hereby agree as follows:

1. Interpretation. Capitalized terms not defined in this Ninth Amendment have the meanings given such terms in the Original Agreement. References to Sections and Schedules herein will be to Sections and Schedules of the Original Agreement, except as otherwise noted.

2. Amendments.

   a. Section 8.6.1 shall be deleted and replaced by the following:

      Development Supply Agreement. Unless otherwise agreed by the Parties, no later than (a) May 31, 2022, with regards to the Lead Product, and (b) no later than nine months following the effective date of exercise of the Option with regards to every other Licensed Product to which this Article 8 (Manufacturing and Supply) applies in accordance with Section 8.1, (or such other time as agreed by each Party), the Parties will negotiate in good faith and enter into a supply agreement on reasonable and customary terms for the supply of such Licensed Product by Sarepta to Roche in the Roche Territory at the Supply Price (the **"Development Supply Agreement**"), and a related quality agreement, which agreements will govern the terms and conditions of the Manufacturing of such Licensed Product for Development purposes. The Parties may choose to combine into a single agreement the Development Supply Agreement and the Commercial Supply Agreement for a Licensed Product.

   b. Section 8.6.2 shall be deleted and replaced by the following:

      Commercial Supply Agreement. Unless otherwise agreed by the Parties, no later than (a) May 31, 2022, with regards to the Lead Product, and (b) no later than twelve (12) months following the effective date of the Option Exercise with regards to every other Licensed Product to which this Article 8 (Manufacturing and Supply) applies in accordance

with Section 8.1, (or such other time as agreed by each Party), the Parties will negotiate in good faith and enter into a commercial supply agreement on reasonable and customary terms for the commercial-grade supply of such Licensed Product by Sarepta to Roche in the Roche Territory at the Supply Price (the "**Commercial Supply Agreement**" and together with the Development Supply Agreement, the "**Supply Agreements**"), and a related quality agreement, which agreements will govern the terms and conditions of the Manufacturing and supply of such Licensed Product for Commercialization purposes. As noted above, the Parties may choose to combine into a single agreement the Development Supply Agreement and the Commercial Supply Agreement for a Licensed Product,

3. Effect on Original Agreement. Except as specifically amended by this Ninth Amendment, the Original Agreement will remain in full force and effect and is hereby ratified and confirmed. Each future reference to the Original Agreement will refer to the Original Agreement as amended by this Ninth Amendment. To the extent a conflict arises between the terms of the Original Agreement and this Ninth Amendment, the terms of this Ninth Amendment shall prevail but only to the extent necessary to accomplish their intended purpose.

4. Incorporation. Article 17 of the Original Agreement is hereby incorporated *mutatis mutandis* into this Amendment.

5. Binding Effect. This Ninth Amendment will be binding upon and inure to the benefit of the Parties and their respective permitted successors and assigns.

6. Authority. As of the Ninth Amendment Effective Date, each Party hereby represents and warrants that (a) it has the power and authority to execute and deliver this Ninth Amendment, (b) the execution, delivery, and performance of this Ninth Amendment by it has been duly authorized by all requisite corporate action, and (c) this Ninth Amendment has been duly executed and delivered on behalf of such Party and constitutes a legal, valid, and binding obligation of such Party and is enforceable against it in accordance with its terms.

7. Governing Law. This Ninth Amendment and all amendments, modifications, alterations, or supplements hereto, and the rights of the Parties, will be construed under and governed by the laws of the State of New York, United States, exclusive of its conflicts of laws principles.

8. Amendments. This Ninth Amendment may not be modified or amended, except by another agreement in writing executed by duly authorized signatories of each Party.

9. Counterparts. This Ninth Amendment may be executed in two or more counterparts, all of which taken together will be regarded as one and the same instrument. Each Party may execute this Ninth Amendment in Adobe™ Portable Document Format (PDF) sent by electronic mail. PDF signatures of authorized signatories of the Parties will be deemed to be original signatures, will be valid and binding upon the Parties, and, upon delivery, will constitute due execution of this Ninth Amendment.

[Signatures Follow]

IN WITNESS WHEREOF, the Parties have executed this Ninth Amendment to License, Collaboration, and Option Agreement through their duly authorized representatives.

Sarepta Therapeutics Three, LLC

By: /s/ Adam Hopkin

Name: Adam Hopkin

Title: Manager

F. Hoffmann-La Roche Ltd

By: /s/ Claire Steers

Name: Claire Steers

Title: Global Alliance Director

By: /s/ Hannah Boehm

Name: Hannah Boehm

Title: Legal Counsel

[Signature Page To Ninth Amendment To License, Collaboration, and Option Agreement]

EXHIBIT 31.1

CERTIFICATION

I, Douglas S. Ingram, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Sarepta Therapeutics, Inc., (the "Registrant");

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 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 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.

August 2, 2022

/s/ DOUGLAS S. INGRAM
Douglas S. Ingram
President and Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Ian M. Estepan, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Sarepta Therapeutics, Inc., (the "Registrant");

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 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 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.

August 2, 2022

/s/ IAN M. ESTEPAN
Ian M. Estepan
Executive Vice President, Chief Financial Officer
(Principal Financial and Accounting Officer)

EXHIBIT 32.1

CERTIFICATION PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002
(18 U.S.C. SECTION 1350)

I, Douglas S. Ingram, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that this Quarterly Report of Sarepta Therapeutics, Inc. on Form 10-Q for the quarterly period ended June 30, 2022, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Quarterly Report on Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of Sarepta Therapeutics, Inc.

August 2, 2022

/s/ DOUGLAS S. INGRAM
Douglas S. Ingram

President and Chief Executive Officer

(Principal Executive Officer)

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to Sarepta Therapeutics, Inc. and will be retained by Sarepta Therapeutics, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies this Quarterly Report on Form 10-Q pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 and shall not, except to the extent required by such Act, be deemed filed by Sarepta Therapeutics, Inc. for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Such certification will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent that Sarepta Therapeutics, Inc. specifically incorporates it by reference.

EXHIBIT 32.2

CERTIFICATION PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002
(18 U.S.C. SECTION 1350)

I, Ian M. Estepan, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that this Quarterly Report of Sarepta Therapeutics, Inc. on Form 10-Q for the quarterly period ended June 30, 2022, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Quarterly Report on Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of Sarepta Therapeutics, Inc.

August 2, 2022

/s/ IAN M. ESTEPAN
Ian M. Estepan

Executive Vice President, Chief Financial Officer

(Principal Financial and Accounting Officer)

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to Sarepta Therapeutics, Inc. and will be retained by Sarepta Therapeutics, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies this Quarterly Report on Form 10-Q pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 and shall not, except to the extent required by such Act, be deemed filed by Sarepta Therapeutics, Inc. for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Such certification will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent that Sarepta Therapeutics, Inc. specifically incorporates it by reference.