UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 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 September 30, 2019

☐ **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: 001-38939

Prevail Therapeutics Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware	**82-2129632**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
430 East 29th Street, Suite 1520 New York, New York	**10016**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (917) 336-9310

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

Title of each class	Trading Symbol	Name of exchange on which registered
Common Stock, par value $0.0001 per share	PRVL	The Nasdaq Stock Market LLC

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, 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 ☒

As of November 6, 2019, the registrant had 34,102,019 shares of common stock, par value $0.0001 per share, outstanding.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts contained in this Quarterly Report on Form 10-Q are forward-looking statements, including statements about:

- our expectations regarding the initiation, timing, scope and results of our development activities, including our planned clinical trials;
- the timing of and plans for regulatory filings;
- our plans to obtain and maintain regulatory approvals of our product candidates in any of the indications for which we plan to develop them;
- the potential benefits of our product candidates and technologies;
- our expectations regarding our ability to identify additional gene therapy product candidates;
- the market opportunities for our product candidates and our ability to maximize those opportunities;
- our business strategies and goals;
- estimates of our expenses, capital requirements and need for additional financing;
- our expectations regarding potentially establishing manufacturing capabilities;
- the performance of our third-party suppliers and manufacturers,
- our expectations regarding our ability to obtain and maintain intellectual property protection for our product candidates and our ability to operate our business without infringing on the intellectual property rights of others;
- our expectations regarding developments and projections relating to our competitors and any competing therapies that are or become available;
- our ability to identify, recruit and retain key personnel;
- regulatory development in the United States and foreign countries; and
- our expectations regarding the uses of the net proceeds from our initial public offering and the sufficiency of such net proceeds together with our existing cash and cash equivalents to fund our operations.

In some cases, you can identify forward-looking statements by terms such as “anticipate,” “believe,” “continue” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “target” or “will” or the negative of these terms or other similar expressions intended to identify statements about the future. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and some of which are beyond our control, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this report, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

You should read the section titled “Risk Factors” set forth in Part II, Item 1A of this Quarterly Report on Form 10-Q for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. As a result of these factors, we cannot assure you that the forward-looking statements in this Quarterly Report on Form 10-Q will prove to be accurate. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

You should read this Quarterly Report on Form 10-Q, completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements.

PART I—FINANCIAL INFORMATION
Prevail Therapeutics Inc.
Balance Sheets
(Unaudited)
(in thousands, except share and per share data)

	September 30, 2019	December 31, 2018
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 183,074	$ 63,014
Prepaid expenses and other current assets	7,425	563
Total current assets	190,499	63,577
Property and equipment, net	2,527	678
Operating lease right-of-use assets	10,312	8,534
Restricted cash	91	91
TOTAL ASSETS	$ 203,429	$ 72,880
LIABILITIES, REDEEMABLE CONVERTIBLE PREFERRED STOCK, AND STOCKHOLDERS' EQUITY (DEFICIT)		
CURRENT LIABILITIES:		
Accounts payable	$ 4,952	$ 1,241
Accrued expenses and other current liabilities	5,089	1,477
Operating lease liabilities	1,134	917
Total current liabilities	11,175	3,635
Long-term operating lease liabilities	10,226	7,952
TOTAL LIABILITIES	21,401	11,587
COMMITMENTS AND CONTINGENCIES (Note 13)		
REDEEMABLE CONVERTIBLE PREFERRED STOCK		
Series Seed Preferred Stock - $0.0001 par value, 0 and 6,480,000 shares authorized, issued and outstanding as of September 30, 2019 and December 31, 2018, respectively	—	3,524
Series A Preferred Stock - $0.0001 par value, 0 and 9,072,000 shares authorized, 0 and 8,997,085 shares issued and outstanding as of September 30, 2019 and December 31, 2018, respectively	—	76,186
STOCKHOLDERS' EQUITY (DEFICIT)		
Common stock - $0.0001 par value, 200,000,000 and 28,398,600 shares authorized as of September 30, 2019 and December 31, 2018, respectively, 34,098,819 and 7,209,000 shares issued and outstanding as of September 30, 2019 and December 31, 2018, respectively	3	1
Additional paid-in capital	248,286	2,496
Accumulated deficit	(66,261)	(20,914)
Total stockholders' equity (deficit)	182,028	(18,417)
TOTAL LIABILITIES, REDEEMABLE CONVERTIBLE PREFERRED STOCK, AND STOCKHOLDERS' EQUITY (DEFICIT)	$ 203,429	$ 72,880

The accompanying notes are an integral part of these financial statements.

Prevail Therapeutics Inc.
Statements of Operations
(Unaudited)
(in thousands, except share and per share data)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Operating Expenses:				
Research and development	$ 16,836	$ 4,599	$ 37,202	$ 9,110
General and administrative	4,452	920	10,050	2,520
Operating loss	(21,288)	(5,519)	(47,252)	(11,630)
Change in fair value of derivative liabilities	—	—	—	(781)
Interest income	989	320	1,905	543
Interest expense	—	—	—	(471)
Total other income (expense), net	989	320	1,905	(709)
Net loss	$ (20,299)	$ (5,199)	$ (45,347)	$ (12,339)
Net loss per share				
Basic and Diluted	$ (0.62)	$ (0.99)	$ (1.68)	$ (2.47)
Weighted average shares outstanding:				
Basic and Diluted	32,864,156	5,244,585	26,950,854	4,989,604

The accompanying notes are an integral part of these financial statements.

Prevail Therapeutics Inc.
Statements of Changes in Redeemable Convertible Preferred Stock and Stockholders' Equity (Deficit)
(Unaudited)
(in thousands except share data)

	Series Seed Preferred Stock		Series A Preferred Stock		Series B Preferred Stock		Common Stock		Additional Paid-in Capital	Accumulated Deficit	Total Stockholders' Deficit
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount			
For the three months ended September 30, 2019											
Balance at June 30, 2019	—	$ —	—	$ —	—	$ —	34,021,194	$ 3	$ 246,998	$ (45,962)	$ 201,039
Stock-based compensation and other	—	—	—	—	—	—	—	—	1,276	—	1,276
Exercise of stock options	—	—	—	—	—	—	77,625	—	12	—	12
Net loss	—	—	—	—	—	—	—	—	-	(20,299)	(20,299)
Balance at September 30, 2019	—	$ —	—	$ —	—	$ —	34,098,819	$ 3	$ 248,286	$ (66,261)	$ 182,028
For the three months ended September 30, 2018											
Balance at June 30, 2018	6,480,000	$ 3,524	8,997,085	$ 76,186	—	$ —	7,209,000	$ 1	$ 1,497	$ (8,967)	$ (7,469)
Stock-based compensation	—	—	—	—	—	—	—	—	478	—	478
Net loss	—	—	—	—	—	—	—	—	—	(5,199)	(5,199)
Balance at September 30, 2018	6,480,000	$ 3,524	8,997,085	$ 76,186	—	$ —	7,209,000	$ 1	$ 1,975	$ (14,166)	$ (12,190)
For the nine months ended September 30, 2019											
Balance at December 31, 2018	6,480,000	$ 3,524	8,997,085	$ 76,186	—	$ —	7,209,000	$ 1	$ 2,496	$ (20,914)	$ (18,417)
Issuance of Series B Preferred Stock, net of issuance costs of $166	—	—	—	—	3,958,046	49,834	—	—	—	—	—
Stock-based compensation	—	—	—	—	—	—	—	—	3,017	—	3,017
Conversion of convertible preferred stock into common stock upon the closing of initial public offering	(6,480,000)	(3,524)	(8,997,085)	(76,186)	(3,958,046)	(49,834)	19,435,131	1	129,542	—	129,543
Issuance of common stock upon closing of initial public offering, net of issuance costs of $3,037	—	—	—	—	—	—	7,353,000	1	113,214	—	113,215
Exercise of stock options	—	—	—	—	—	—	101,688	—	17	—	17
Net loss	—	—	—	—	—	—	—	—	s	(45,347)	(45,347)
Balance at September 30, 2019	—	$ —	—	$ —	—	$ —	34,098,819	$ 3	$ 248,286	$ (66,261)	$ 182,028
For the nine months ended September 30, 2018											
Balance at December 31, 2017	6,480,000	$ 3,524	—	$ —	—	$ —	7,209,000	$ 1	$ 886	$ (1,827)	$ (940)
Issuance of Series A Preferred Stock, net of issuance costs of $93	—	—	7,666,716	64,907	—	—	—	—	—	—	—
Series A Preferred Stock shares issued as a result of conversion of convertible note - related party	—	—	1,330,369	11,279	—	—	—	—	—	—	—
Stock-based compensation	—	—	—	—	—	—	—	—	1,089	—	1,089
Net loss	—	—	—	—	—	—	—	—	—	(12,339)	(12,339)
Balance at September 30, 2018	6,480,000	$ 3,524	8,997,085	$ 76,186	—	$ —	7,209,000	$ 1	$ 1,975	$ (14,166)	$ (12,190)

The accompanying notes are an integral part of these financial statements.

Prevail Therapeutics Inc.
Statements of Cash Flows
(Unaudited)
(in thousands)

	Nine Months Ended September 30,	
	2019	**2018**
Cash flows from operating activities		
Net loss	$ (45,347)	$ (12,339)
Adjustments to reconcile net loss to net cash used in operating activities		
Depreciation	201	29
Stock-based compensation	3,017	1,089
Amortization of convertible note discount, issuance costs and other non-cash interest	—	471
Change in fair value of derivative liabilities	—	781
Other	—	12
Changes in operating assets and liabilities		
Prepaid expenses and other current assets	(6,862)	(916)
Operating lease right-of-use asset	1,326	220
Accounts payable	3,711	1,867
Accrued expenses and other current liabilities	3,612	616
Operating lease liabilities	(613)	(210)
Net cash used in operating activities	(40,955)	(8,380)
Cash flows from investing activities		
Purchases of property and equipment	(2,050)	(304)
Net cash used in investing activities	(2,050)	(304)
Cash flows from financing activities		
Proceeds from issuance of common stock	116,251	—
Payment of issuance costs for preferred stock	(166)	—
Payment of issuance costs for common stock	(3,037)	(93)
Proceeds from exercise of stock options	17	—
Proceeds from issuance of Series A Preferred Stock	—	65,000
Proceeds from issuance of Series B Preferred Stock	50,000	—
Net cash provided by financing activities	163,065	64,907
Net increase in cash, cash equivalents and restricted cash	120,060	56,223
Cash, cash equivalents, and restricted cash at beginning of period	63,105	12,836
Cash, cash equivalents, and restricted cash at end of period	$ 183,165	$ 69,059
Supplemental disclosure of non-cash investing and financing activities		
Conversion of convertible note plus accrued interest into 1,330,369 shares of Series A Preferred Stock	$ —	$ 11,279
Right-of-use asset obtained in exchange for operating lease obligation	$ 3,104	$ 7,740
Conversion of preferred stock to common stock upon the initial public offering	$ 129,543	$ —

	As of September 30,	
	2019	**2018**
Reconciliation of cash, cash equivalents and restricted cash reported within the Balance Sheets:		
Cash and cash equivalents	$ 183,074	$ 68,968
Restricted Cash	91	91
Total cash, cash equivalents and restricted cash	183,165	69,059

The accompanying notes are an integral part of these financial statements.

1. NATURE OF THE BUSINESS

Prevail Therapeutics Inc., or the Company, was incorporated in the State of Delaware on July 6, 2017. The Company is a biotechnology company engaged in the research and development of novel gene therapies in an effort to treat Parkinson's disease and other neurodegenerative diseases. Since beginning operations, the Company has devoted substantially all its efforts to research and development, recruiting management and technical staff, administration, and raising capital. In May 2019, the U.S. Food and Drug Administration, or FDA, declared the Investigational New Drug, or IND, application associated with the Company's lead program, PR001, for the treatment of patients with Parkinson's disease with *GBA1* mutations, or PD-GBA, as open.

Stock Split - In June 2019, the Board of Directors of the Company approved a 1.62-for-one forward stock-split of the Company's outstanding shares of common stock, convertible preferred stock and options outstanding and available for future issuance. The stock split became effective on June 7, 2019. Accordingly, all share and per share amounts for all periods presented in the accompanying financial statements and notes thereto have been retroactively adjusted, where applicable, to reflect this forward stock split. Shares of common stock underlying outstanding stock options and other equity instruments were proportionately increased and the respective per share value and exercise prices, if applicable, were proportionately decreased in accordance with the terms of the agreements governing such securities.

Initial Public Offering - In June 2019, the Company completed its initial public offering, or IPO, whereby the Company sold an aggregate of 7,353,000 shares of its common stock at a price of $17.00 per share. The shares began trading on The Nasdaq Global Select Market on June 20, 2019. The aggregate net proceeds received by the Company from the offering were approximately $113.2 million, after deducting underwriting discounts and commissions and offering expenses payable by the Company of $11.8 million. Upon the closing of the IPO, all outstanding shares of redeemable convertible preferred stock converted into 19,435,131 shares of common stock. Additionally, the Company is authorized to issue 200,000,000 shares of common stock and 10,000,000 shares of preferred stock. On June 24, 2019, the Company filed an Amended and Restated Certificate of Incorporation with the Secretary of State of the State of Delaware, in connection with the closing of the IPO.

Significant Risks and Uncertainties - The Company is subject to a number of risks common to early-stage biotechnology companies. Principal among these risks are the uncertainties in the development process, development of the same or similar technological innovations by competitors, protection of proprietary technology, dependence on key personnel, compliance with government regulations and approval requirements, and the need to obtain additional financing to fund operations. Product candidates currently under development will require significant additional research and development efforts, including extensive pre-clinical and clinical testing and regulatory approval, prior to commercialization. These efforts require significant amounts of additional capital, adequate personnel infrastructure, and extensive compliance-reporting capabilities.

There can be no assurance that the Company's research and development will be successfully completed, that adequate protection for the Company's technology will be obtained, that any products developed will obtain necessary government regulatory approval, or that any approved products will be commercially viable. The Company operates in an environment of rapid change in technology and substantial competition from pharmaceutical and biotechnology companies. In addition, the Company is dependent upon the services of its qualified employees, consultants and contractors to be successful with its objectives.

Liquidity and Capital Resources- Since its inception, the Company has incurred operating losses and has consistently used cash in operations. The Company has not recognized any revenue to date, devoting its efforts and capital resources to research and development of its product candidates. The Company's activities have been primarily funded by the sale of shares of convertible preferred stock and common stock (see Note 8). The Company manages its capital resources to ensure the Company will continue as a going concern while maximizing the return to stockholders through the optimization of the debt and equity balances.

The Company's cash and cash equivalents as of September 30, 2019 and December 31, 2018 were $183.1 million and $63.0 million respectively. In March 2019, the Company raised an aggregate of $49.8 million of net proceeds from its Series B Preferred Stock financing. In June 2019, the Company completed its IPO whereby the Company sold an aggregate of 7,353,000 shares of its common stock for aggregate net proceeds of approximately $113.2 million. Based on the Company's cash and cash equivalents balance as of September 30, 2019, the Company estimates that its cash and cash equivalents balance will be sufficient to enable it to fund its operating expenses and capital expenditure requirements for at least 12 months. This estimate is based on assumptions that may prove to be incorrect, and the Company could use its available capital resources sooner than currently expected. Changing circumstances could cause the Company to consume capital resources sooner than currently anticipated, and the Company may need to spend more than currently planned due to circumstances beyond its control.

2. SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation—The Company's unaudited interim financial statements have been prepared by the Company in accordance with accounting principles generally accepted in the United States, or U.S. GAAP, for interim information and pursuant to the rules and regulations of the U.S. Securities and Exchange Commission, or the SEC, for reporting on Form 10-Q. Accordingly, certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. GAAP have been or omitted pursuant to such rules and regulations. These unaudited interim financial statements should be read in conjunction with the audited financial statements and related notes included in the Company's final prospectus for its IPO, dated June 19, 2019, and filed with the SEC pursuant to Rule 424(b)(4) under the Securities Act of 1933, as amended, on June 20, 2019.

In April 2012, the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, was enacted. Section 107(b) of the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. Thus, an emerging growth company can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. The Company has irrevocably elected not to avail itself of this extended transition period, and, as a result, the Company will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies.

Use of Estimates—The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of expenses during the reporting period. Significant estimates in the financial statements include, but are not limited to stock-based compensation, fair value of common and preferred stock derivative liabilities, operating lease right-of-use assets and liabilities, the recoverability of the Company's net deferred tax assets and related valuation allowance, and accrued liabilities related to expenses incurred for research and development from external vendors. The Company bases its estimates on historical experience, known trends and other market-specific or other relevant factors that it believes to be reasonable under the circumstances. The Company tracks the progress of its various research and development studies and manufacturing projects to ensure related prepaid expenses and accrued expenses are in line with progress of each. On an ongoing basis, management evaluates its estimates, as there are changes in circumstances, facts and experience. Actual results may differ materially from those estimates or assumptions.

Cash, Cash Equivalents and Restricted Cash—The Company's cash and cash equivalents include short-term highly liquid investments which are readily convertible into cash. These investments include money market securities and commercial paper with maturities of three months or less when acquired. The Company's institutional money market accounts permit daily redemption and the fair values of these investments are based upon the quoted prices in active markets provided by the holding financial institutions, which are considered Level 1 inputs in the fair value hierarchy, as described below. The Company had cash and cash equivalents of $183.1 million as of September 30, 2019. Restricted cash represents cash on deposit with a financial institution as collateral in support of a letter of credit outstanding in favor of the Company's landlord for office space. The restricted cash balance has been excluded from the cash balance and is classified as non-current restricted cash on the balance sheets as the lease expires after September 30, 2020.

Concentration of Credit Risk—The Company maintains cash deposits in excess of government-provided insurance limits. The Company maintains its cash balances with one high quality, accredited financial institution, and accordingly, such funds are not exposed to significant credit risk.

Leases—The Company determines if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use, or ROU, assets, operating lease liabilities, and long-term operating lease liabilities in the Company's balance sheets.

ROU assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As the Company's leases do not provide a readily determinable implicit rate, the Company's uses its incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments. The operating lease ROU asset also includes any lease prepayments, offset by lease incentives.

The Company's facilities operating leases have lease and non-lease components for which the Company has elected to apply the practical expedient and account for each lease component and related non-lease component as one single component. Operating lease cost is recognized on a straight-line basis over the lease term.

Property and Equipment, Net—Property and equipment are stated at cost less accumulated depreciation. Depreciation expense is recognized using the straight-line method over the estimated useful life of the asset, ranging from 3-7 years as follows:

Fixed Asset Type	Estimated useful life
Laboratory Equipment	7 Years
Leasehold Improvements	Lesser of useful life or remaining lease term
Computer Equipment	3 Years
Furniture and Fixtures	7 Years

Expenditures for repairs and maintenance of assets are charged to expense as incurred, while major betterments are capitalized. Upon retirement or sale, the cost and related accumulated depreciation of assets disposed of are removed from the accounts and any resulting gain or loss is included in the statements of operations.

Impairment of Long-Lived Assets—Long-lived assets, comprised of property and equipment, to be held and used and the right-of-use asset associated with the Company's leased office space are tested for recoverability whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable. Factors that the Company considers in deciding when to perform an impairment review include significant underperformance of the business in relation to expectations, significant negative industry or economic trends and significant changes or planned changes in the use of the assets. If an impairment review is performed to evaluate a long-lived asset for recoverability, the Company compares forecasts of undiscounted cash flows expected to result from the use and eventual disposition of the long-lived asset to its carrying value. An impairment loss would be recognized when estimated undiscounted future cash flows expected to result from the use of an asset are less than its carrying amount. The impairment loss would be based on the excess of the carrying value of the impaired asset over its current fair value. To date, the Company has not recorded any impairment losses on long-lived assets.

Comprehensive Loss—The Company does not have items of other comprehensive loss for the three and nine months ended September 30, 2019 and 2018, and therefore does not present a statement of comprehensive loss. The Company's comprehensive loss equals its net loss.

Fair Value Measurements—Certain assets and liabilities are carried at fair value under U.S. GAAP. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. A framework is used for measuring fair value utilizing a three-tier hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. Financial assets and liabilities carried at fair value are to be classified and disclosed in one of the following three levels of the fair value hierarchy, of which the first two are considered observable and the last is considered unobservable:

- **Level 1**—Unadjusted quoted prices in active markets for identical assets or liabilities.
- **Level 2**—Observable inputs (other than Level 1 quoted prices), such as quoted prices in active markets for similar assets or liabilities, quoted prices in markets that are not active for identical or similar assets or liabilities, or other inputs that are observable or can be corroborated by observable market data.
- **Level 3**—Unobservable inputs that are supported by little or no market activity and that are significant to determining the fair value of the assets or liabilities, including pricing models, discounted cash flow methodologies and similar techniques.

The following table summarizes assets measured at fair value on a recurring basis at September 30, 2019:

September 30, 2019	Active Markets (Level 1)	Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
		(in thousands)	
Cash and cash equivalents:			
Cash	$ 30	$ —	$ —
Money Market Funds	183,044	—	—
Restricted cash:			
Money Market Funds	91	—	—
Total	$ 183,165	$ —	$ —

The following table summarizes assets measured at fair value on a recurring basis at December 31, 2018:

December 31, 2018	Active Markets (Level 1)	Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
Cash and cash equivalents:		(in thousands)	
Cash	$ 7	$ —	$ —
Money Market Funds	63,007	—	—
Restricted cash:			
Money Market Funds	91	—	—
Total	$ 63,105	$ —	$ —

There have been no changes to the valuation methods utilized by the Company, nor were there transfers between Level 1, Level 2 and Level 3 investments during the three and nine months ended September 30, 2019. As of September 30, 2019 and December 31, 2018 there were no financial instruments classified as Level 3 investments.

Derivative Liabilities—From time to time, the Company may issue certain financial instruments with embedded features which, dependent on their specific contractual terms or other conditions, may be required to be accounted for as separate derivative assets or liabilities. These instruments are required to be measured at fair value. In determining the appropriate fair value, the Company's uses a discounted cash flow analysis because these instruments are not quoted on an active market. These instruments are then adjusted to reflect fair value at each period end. Any increase or decrease in the fair value is recorded in the statement of operations as change in fair value of derivative liabilities.

Research and Development Costs—Research and development costs are expensed as incurred. Research and development expenses consist principally of personnel costs, including salaries, stock-based compensation, and benefits for research and development employees, costs related to third-party contract research, contract development and manufacturing organizations, other third-party research service providers, third-party license fees, other direct and indirect operational costs related to the Company's research and development activities, including facility-related expenses. Non-refundable research and development advance payments are capitalized and expensed as the related goods are delivered or services are performed.

Stock-Based Compensation—The Company measures all stock options and other stock-based awards granted to employees, directors, consultants and other nonemployees based on the fair value on the date of the grant and recognizes compensation expense of those awards over the requisite service period, which is generally the vesting period of the respective award. The Company recognizes forfeitures at the time forfeitures occur.

The Company classifies stock-based compensation expense in its statement of operations in the same way the payroll costs or service payments are classified for the related stock-based award recipient. The fair value of each stock option grant is estimated on the date of grant using the Black-Scholes option pricing model. The Company lacks company specific historical and implied volatility information. Therefore, it estimates its expected stock volatility based on the historical volatility of a publicly-traded set of peer companies and expects to continue to do so until it has adequate historical data regarding the volatility of its own traded stock price.

Debt Issuance Costs—The Company incurred third-party costs in connection with the Company's convertible note as described in Note 7. The Company amortizes these costs over the term of its agreement as interest expense in the statement of operations.

Income Taxes—The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the financial statements or the Company's tax returns. Under this method, deferred tax assets and liabilities are determined on the basis of the differences between the financial statements and tax basis of the assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes.

The Company recognizes deferred tax assets to the extent that the Company believes that these assets are more likely than not to be realized. In making such a determination, management considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. Valuation allowances are provided, if based upon the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. If management determines that the Company would be able to realize its deferred tax assets in the future in excess of their net recorded amount, management would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

The Company records uncertain tax positions in accordance with ASC 740 on the basis of a two-step process in which (1) management determines whether it is more likely than not that the tax positions will be sustained on the basis of the technical merits of the position and (2) for those tax positions that meet the more-likely-than-not recognition threshold, management recognizes the largest amount of tax benefit that is more than 50 percent likely to be realized upon ultimate settlement with the related tax authority.

The Company provides reserves for potential payments of tax to various tax authorities related to uncertain tax positions. These reserves are based on a determination of whether and how much of a tax benefit taken by the Company in its tax filings or positions is more likely than not to be realized following resolution of any potential contingencies related to the tax benefit. Potential interest related to the underpayment of income taxes will be classified as a component of interest expense and any related penalties will be classified in operating expenses in the statement of operations.

Net Loss per Common Share—Basic net loss per Share is computed using the "two-class" method which includes the weighted average number of shares of common stock outstanding during the period and other securities that participate in dividends (a participating security). The Company's convertible preferred stock are participating securities as defined by ASC 260-10, Earnings per Share. During the periods where the Company incurs net losses, the Company allocates no loss to participating securities because these securities have no contractual obligation to share in the losses of the Company. Under the two-class method, basic net loss per share applicable to common stockholders is computed by dividing the net loss applicable to common stockholders by the weighted average number of common shares outstanding for the period. Diluted net loss per share is computed similar to basic net loss per share except that the denominator is increased to include the number of additional shares for the potential dilutive effects of convertible debt, convertible preferred stock and stock options outstanding during the period calculated in accordance with the treasury stock method, or the two-class method, whichever is more dilutive. The Company allocates net earnings on a pari passu (equal) basis to both common and preferred stockholders. Net losses are not allocated to preferred stockholders as they do not have an obligation to share in the Company's net losses. For all periods presented, basic and diluted net loss per share are the same, as any additional share equivalents would be anti-dilutive (Note 12).

Segment Reporting—Operating segments are identified as components of an enterprise for which separate discrete financial information is available for evaluation by the Company's Chief Operating Decision Maker in making decisions regarding resource allocation and assessing performance. To date, the Company has viewed its operations and manages its business as one operating segment.

Recently Issued Accounting Pronouncements (Adopted)—In November 2018, the SEC's release, Disclosure Update and Simplification, became effective. The Company adopted this amendment on January 1, 2019. The included amendments are intended to simplify and update the SEC's disclosure requirements and eliminate duplicative disclosures between the SEC rules and U.S. GAAP. The amendments included new interim financial statement disclosures to reconcile the beginning balance to the ending balance in stockholders' equity for each period for which an income statement is required to be filed.

In July 2018, the FASB issued ASU 2018-09,*Codification Improvements,* or ASU 2018-09. The Company adopted this amendment on January 1, 2019. This amendment makes changes to a variety of topics to clarify, correct errors in, or make minor improvements to the Accounting Standards Codification. The adoption of ASU 2018-09 did not have a material impact on its financial statements.

Recently Issued Accounting Pronouncements (Not Yet Adopted)—In August 2018, the FASB issued ASC 2018-13*Fair Value Measurement – Disclosure Framework-Changes to the Disclosure Requirement for Fair Value Measurement,* or ASU 2018-13. The amendments in ASU 2018-13 modify the disclosure requirements on fair value measurements in ASC 820, Fair Value Measurement, based on the concepts in the FASB Concepts Statement, including the consideration of costs and benefits. The amendments under ASU 2018-13 are effective for interim and annual fiscal periods beginning after December 15, 2019, with early adoption permitted. The Company does not expect the adoption of ASU 2018-13 to have a material impact on its financial statements.

In August 2018, the FASB issued ASU No. 2018-15,*Intangible-Goodwill and Other Internal-Use Software (Subtopic 350-40)*, or ASU 2018-15. ASU 2018-15 updates guidance regarding accounting for implementation costs associated with a cloud computing arrangement that is a service contract. The amendments under ASU 2018-15 are effective for interim and annual fiscal periods beginning after December 15, 2019, with early adoption permitted. The Company does not expect the adoption of ASU 2018-15 to have a material impact on its financial statements.

3. LICENSE AGREEMENTS

REGENXBIO Inc.

In August 2017, the Company entered into a License Agreement, or the REGENXBIO GBA1 License, with REGENXBIO Inc., or REGENXBIO. Under the terms of the REGENXBIO GBA1 License, REGENXBIO granted the Company an exclusive, worldwide license under certain patents and patent applications to make, have made, use, import, sell and offer for sale products for the treatment of disease, including but not limited to Parkinson's disease and Gaucher disease, whether or not caused by mutations in the gene that produces the GBA1 enzyme in humans by in vivo gene therapy using AAV9 delivering the gene (or any portion thereof) encoding for GBA1.

As consideration for the licensed rights under the REGENXBIO GBA1 License, the Company issued 2,430,000 shares of its common stock with an aggregate fair value of $0.4 million in a concurrent private placement to REGENXBIO. The Company is obligated, pursuant to the REGENXBIO GBA1 License, to pay REGENXBIO: (1) an annual maintenance fee; (2) mid-to high-single digit royalty percentages on net sales of licensed products, subject to reduction in specified circumstances; and (3) mid-teen to low-twenties royalty percentages of any sublicense fees the Company receives from sublicensees for the licensed intellectual property rights. The initial license fee paid in connection with the REGENXBIO GBA1 License, including the fair value of the common stock issued to REGENXBIO, was recognized as research and development expense in the period ended December 31, 2017. The initial annual maintenance fee was recognized as research and development expense for the year ended December 31, 2018.

The REGENXBIO GBA1 License will expire on a country-by-country, licensed product-by-licensed product basis upon the later of (1) the expiration, lapse, abandonment or invalidation of the last valid claim of the licensed intellectual property and (2) seven years from the first commercial sale of each licensed product. The Company has the right to terminate the REGENXBIO GBA1 License upon a specified period of prior written notice. REGENXBIO may terminate the REGENXBIO GBA1 License immediately if the Company becomes insolvent, if the Company is late by a specified number of days in paying money due under the REGENXBIO GBA1 License, or if the Company or its affiliates commence any action against REGENXBIO or its licensors to declare or render any claim of the licensed patent rights invalid or unenforceable. Either party may terminate the REGENXBIO GBA1 License for material breach if such breach is not cured within a specified number of days.

In May 2018, the Company entered into a license agreement, or the REGENXBIO Option Genes License, with REGENXBIO pursuant to which REGENXBIO granted the Company three distinct exclusive options for specified genes, or the Option Genes, exercisable at the Company's sole discretion through May 10, 2019. Each option represented the right to obtain an exclusive, worldwide license under certain patents and patent applications to make, have made, use, import, sell and offer for sale products for the treatment or prevention of disease, including but not limited to Parkinson's disease, whether or not caused by mutations in any Option Gene that is the subject of the applicable license, in humans by in vivo gene therapy using AAV9 delivering the applicable licensed Option Gene and/or RNA interference or antisense modalities that target the applicable licensed Option Gene. The Company also received a non-exclusive, royalty-free, worldwide research license to perform research and development activities for each Option Gene solely for purposes of evaluating whether to exercise the applicable option.

Under the terms of the REGENXBIO Option Genes License, the Company paid REGENXBIO an initial fee of $0.6 million. In connection with the exercise of each option, the Company is required to pay REGENXBIO: (1) an additional up-front fee of $0.6 million; (2) an annual maintenance fee; (3) mid- to high-single digit royalty percentages on net sales of the licensed product, subject to reduction in specified circumstances; and (4) mid-teen to low-twenties royalty percentages of any sublicense fees the Company receives from sublicensees for the licensed intellectual property rights. If a licensed product includes the GBA1 gene and otherwise would be subject to royalties under the REGENXBIO GBA1 License, then royalties for that licensed product will only be due under the REGENXBIO Option Genes License. The initial fee paid for the REGENXBIO Option Genes License, was recognized as research and development expense for the three and nine months ended September 30, 2018.

The REGENXBIO Option Genes License will expire on a country-by-country, licensed product-by-licensed product basis upon the later of (1) the expiration, lapse, abandonment or invalidation of the last valid claim of the licensed intellectual property and (2) seven years from the first commercial sale of each licensed product. The Company has the right to terminate the REGENXBIO Option Genes License upon a specified period of prior written notice. REGENXBIO may terminate the REGENXBIO Option Genes License immediately if the Company becomes insolvent, if the Company is late by a specified number of days in paying money due under the REGENXBIO Option Genes License, or if the Company or its affiliates commence any action against REGENXBIO or its licensors to declare or render any claim of the licensed patent rights invalid or unenforceable. Either party may terminate the REGENXBIO Option Genes License for material breach if such breach is not cured within a specified number of days.

In April 2019, the Company exercised all of the options under the REGENXBIO Option Genes License and paid the additional up-front fee of $0.6 million per option for an aggregate of $1.8 million to REGENXBIO. In August 2019, in accordance with the REGENXBIO GBA1 License, the Company paid an annual maintenance fee of approximately $0.1 million. As a result, the Company

recognized approximately $0.1 million and $1.9 million in research and development expense related to these license agreements for the three and nine months ended September 30, 2019, respectively.

4. FAIR VALUE OF FINANCIAL INSTRUMENTS

The Company's financial instruments consist of cash equivalents, the derivative liabilities related to certain redemption rights pursuant to the issuance of the convertible note to OrbiMed Private Investments VI, LP, or OrbiMed, and corresponding convertible note (Note 7), accounts payable and accrued expenses. Fair value estimates of these instruments are made at a specific point in time, based on relevant market information. The fair value of cash equivalents, which consisted of money-market funds, were determined using Level 1 inputs reflecting quoted prices in active markets. The carrying amount of accounts payable and accrued expenses as reported on the balance sheets as of September 30, 2019 and December 31, 2018, approximates fair value, due to the short-term duration of these instruments.

To derive the fair value of the convertible note derivative liabilities, the Company estimated the fair value of the convertible notes with and without the derivative liabilities using a discounted cash flow approach. The difference between the "with" and "without" convertible note prices represents the fair value of the derivative liabilities at issuance and immediately prior to conversion. Key inputs for this valuation were the stated interest rate of the convertible notes, the assumed cost of debt, an assessment of the likelihood and timing of conversion, and the discount upon conversion of the note into equity. The convertible note derivative liabilities were settled in March 2018 for $3.0 million. The Company recognized a loss of $0.8 million related to the settlement during the nine months ended September 30, 2019 as change in fair value of derivative liabilities.

As of September 30, 2019 and December 31, 2018 there were no financial instruments classified as Level 3 investments. Further, during the three and nine months ended September 30, 2019 and 2018 there were no transfers between Level 1, Level 2, and Level 3.

5. PROPERTY AND EQUIPMENT, NET

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

	September 30, 2019	December 31, 2018
	(in thousands)	
Laboratory Equipment	$ 1,572	$ 677
Leasehold Improvements	889	—
Computer Equipment	133	57
Furniture and Fixtures	191	1
Gross property and equipment	2,785	735
Less: Accumulated depreciation	(258)	(57)
Property and equipment, net	$ 2,527	$ 678

6. ACCRUED EXPENSES AND OTHER CURRENT LIABILITIES

Accrued expenses and other current liabilities consisted of the following:

	September 30, 2019	December 31, 2018
	(in thousands)	
Accrued compensation	$ 1,962	$ 840
Accrued research and development expense	2,439	273
Accrued professional fees	589	—
Other	99	364
Total accrued expenses and other current liabilities	$ 5,089	$ 1,477

7. CONVERTIBLE NOTE – RELATED PARTY

In December 2017, the Company entered into a Convertible Note Purchase Agreement with OrbiMed, an existing investor of the Company (Note 11). Under the terms of the agreement, the Company issued a convertible note, or the Note, with a principal amount of $10.0 million, which accrued interest at 8.0% per annum, and had a maturity date of December 31, 2018. Under the terms of the

agreement, the Note would be convertible in two scenarios:(i) if the Company closes a sale of preferred stock in an equity financing with aggregate proceeds of at least $25.0 million, or a Qualified Financing, and (ii) upon a Corporate Transaction, which is defined as a deemed liquidation event such as a merger or consolidation, or sale of the Company.

In the first scenario, the Note automatically converts into preferred stock of the Company at a conversion price equal to 90% of the price per share paid in the financing, or the Automatic Conversion Upon a Qualified Financing. In the second scenario, OrbiMed could elect to receive either (i) the outstanding balance of the note immediately prior to the Corporate Transaction, or (ii) the amount that OrbiMed would have received if OrbiMed converted the outstanding balance of the Note immediately prior to such Corporate Transaction into the number of shares of Series Seed Preferred Stock determined by dividing the outstanding balance by the Original Issue Price of Series Seed Preferred Stock, which becomes due and payable in cash as and when such amounts are paid to holders of the Series Seed Preferred sSock, or the Automatic Redemption Based Upon Series Seed Price.

In connection with the issuance of the Note, the Company incurred issuance costs of less than $0.1 million. The debt issuance costs are recorded as a discount on the debt and presented net of the principal balance on the balance sheet. The costs are amortized to interest expense over the life of the debt using the effective interest method.

Derivative Liabilities

The Note was considered a hybrid financial instrument consisting of a fixed interest rate debt host with certain embedded features requiring evaluation for bifurcation and separate accounting. The Company determined that the Automatic Conversion Upon a Qualified Financing and Automatic Redemption Based Upon Series Seed Price features were considered freestanding financial instruments which required bifurcation from the host debt instrument. At the issuance date of the Note, the Company bifurcated from the respective host debt instrument the automatic conversion and automatic redemption features and recorded derivative liabilities of $2.2 million. The derivative liabilities were revalued at each reporting date and immediately prior to conversion with changes in fair value recorded to Change in fair value of derivative liabilities in the statement of operations. The Note derivative liabilities were settled in March 2018 for $3.0 million. The Company recognized a loss of $0.8 million related to the settlement as change in fair value of derivative liabilities.

The resulting debt discount from the derivative liabilities was presented as a direct deduction from the carrying amount of the Note payable and was amortized to interest expense using the effective interest rate method. The Company recognized $0.1 million of coupon interest and $0.3 million of discount amortization for the nine months ended September 30, 2018.

In March and April 2018, the Company issued 7,666,716 shares of Series A Preferred Stock (Note 8) for total net proceeds of $64.9 million. In connection with the issuance, the derivative liabilities of $3.0 million were settled and the principal amount of the Note of $10.0 million together with $0.2 million of accrued interest thereon, was automatically converted into 1,330,369 shares of Series A Preferred Stock (Note 8).

8. REDEEMABLE CONVERTIBLE PREFERRED STOCK AND COMMON STOCK

General

In March 2019, the Company authorized the sale and issuance of 3,958,046 shares of Series B Preferred Stock with a par value per share of $0.0001 at a price of $12.63 per share for aggregate net proceeds of $49.8 million. Issuance costs were $0.2 million.

In June 2019, the Board of Directors of the Company approved a 1.62-for-one forward stock split of the Company’s outstanding shares of common stock and convertible preferred stock. Accordingly, all share and per share amounts for all periods presented in the accompanying financial statements and notes thereto have been retroactively adjusted, where applicable, to reflect this forward stock split. Shares of common stock underlying outstanding stock options and other equity instruments were proportionately increased and the respective per share value and exercise prices, if applicable, were proportionately decreased in accordance with the terms of the agreements governing such securities. Upon completion of the Company’s IPO in June 2019, all the outstanding preferred stock of the Company automatically converted into 19,435,131 shares of the Company’s common stock.

As of September 30, 2019, the Company had 10,000,000 shares of preferred stock authorized and none issued and outstanding. As of December 31, 2018, the Company had 15,552,000 shares of preferred stock authorized, of which 6,480,000 shares were issued and outstanding and were designated as $0.0001 par value Series Seed Preferred Stock and 8,997,085 shares were issued and outstanding and were designated as $0.0001 par value Series A Preferred Stock.

Reserve for future issuance

The Company has reserved the following number of shares of common stock for future issuance upon the conversion of preferred stock, exercise of options or grant of equity awards:

	September 30, 2019	December 31, 2018
Redeemable convertible preferred stock outstanding, as converted	—	15,477,085
Options and restricted stock issued and outstanding	6,848,909	6,366,739
Shares available for future stock option grants	2,858,621	844,287
Total	9,707,530	22,688,111

9. LEASES

Lease Agreements—The Company leases office and laboratory space in its New York City location under an operating lease agreement entered in September 2017, with an original term of 49 months. In connection with the lease, the Company paid a security deposit of less than $0.1 million in the form of an unconditional and irrevocable letter of credit, which is secured with cash on deposit classified as restricted cash. The original lease was initially modified in October 2018, which extended the original term of the lease and included space on two additional floors. The Company accounted for the new agreement as a modification of the original agreement and recorded an additional right-of-use asset and corresponding lease liability based on the incremental borrowing rate determined as of the effective date of the modified lease. The additional floors were recognized as additional lease components. One of these lease components provided an incentive allowance to reimburse the Company for the cost of qualified leasehold improvement. During the three and nine months ended September 30, 2019, the Company incurred qualified costs of $0.4 million which were payable to the Company as of September 30, 2019 and will be recognized over the remaining lease term.

In July 2019, the Company entered into a second modification to further extend the term to 76 months, rent additional space and surrender a portion of the originally leased space. The Company accounted for the new agreement as a modification of the existing agreement with the additional space recognized as a separate lease component. The Company recorded an additional right-of-use asset and a corresponding lease liability calculated based on the incremental borrowing rate determined as of the effective date of the second lease modification. The agreement does not include any options to extend or terminate the lease, and no restrictions or covenants are imposed by the lease agreement.

The Company identified and assessed the following significant assumption in recognizing the right-of-use assets and corresponding liabilities:

- *Incremental borrowing rate*—The Company's lease agreement does not provide a readily determinable implicit rate. As the Company does not have any external borrowings for comparable terms of the lease, the Company estimated the incremental borrowing rate based on the credit quality of the Company and by comparing interest rates available in the market for similar borrowings adjusted for the impact of collateral over the term of the lease.

The Company is required to pay for operating costs, including insurance, maintenance, and taxes, which are billed annually based on the Company's share of the total rentable square footage. These additional charges are considered variable lease cost and are recognized in the period in which the costs are incurred.

The components of the lease expense were as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
	(in thousands)			
Operating lease cost	$ 565	$ 98	$ 1,465	$ 293
Variable lease cost	187	27	464	82
Total lease cost	$ 752	$ 125	$ 1,929	$ 375
Weighted-average remaining lease term	6.1 years	3.1 years	6.1 years	3.1 years
Weighted-average discount rate	9.50%	8.50%	9.17%	8.50%

Cash paid for amounts included in the measurement of the lease liabilities, net of qualified costs, were $0.7 million for the nine months ended September 30, 2019. Cash paid for amounts included in the measurement of the lease liabilities were $0.1 million for the nine months ended September 30, 2018, respectively.

As of September 30, 2019 and December 31, 2018, the maturities of the Company's remaining operating lease liabilities were as follows:

	September 30, 2019	December 31, 2018
	(in thousands)	
2019	$ 411	$ 1,647
2020	2,299	1,818
2021	2,379	1,882
2022	2,463	1,947
2023	2,549	2,016
Thereafter	4,901	2,264
Present value adjustment	(3,642)	(2,705)
Present value of lease payments	$ 11,360	$ 8,869

10. STOCK-BASED COMPENSATION

In August 2017, the Company adopted the Prevail Therapeutics Inc. 2017 Equity Incentive Plan or the 2017 Plan under which the Company granted incentive stock options, nonqualified stock options, stock appreciate rights or the SARs, restricted stock, unrestricted stock, restricted stock awards, performance awards, or other awards that are convertible into or based on Company stock. The maximum number of shares that could have been be issued under the 2017 Plan was 2,511,000 shares as of December 31, 2017. In March 2018, the Company amended the 2017 Plan and increased the number of shares available to be issued under the 2017 Plan to 4,003,427. Shares underlying any award that are forfeited, expired, or repurchased shall be excluded from the maximum number that could have been issued. In December 2018 and April 2019, the Company amended the 2017 Plan and increased the number of shares available to be issued under the 2017 Plan to 4,862,027 and 6,029,733, respectively. Upon the effectiveness of the 2019 Plan (as defined below), no further grants were or will be made under the 2017 Plan. All outstanding stock awards under the 2017 Plan will continue to be governed by their existing terms.

In June 2019, the Company adopted the Prevail Therapeutics Inc. 2019 Equity Incentive Plan or the 2019 Plan, under which the Company may grant incentive stock options, nonqualified stock options, SARs, restricted stock, unrestricted stock, restricted stock awards, performance awards or other awards that are convertible into or based on Company stock. The aggregate number of shares that may be issued pursuant to stock awards under the 2019 Plan was 2,858,621 as of September 30, 2019. In addition, the number of shares reserved for issuance under the 2019 Plan will automatically increase on January 1 of each year, beginning on January 1, 2020 and continuing through and including January 1, 2029, by 4% of the total number of shares of the Company's common stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by the Company's Board of Directors.

In June 2019 the Company adopted the 2019 Employee Stock Purchase Plan or the 2019 ESPP, under which the Company may permit employees to purchase shares of common stock. The maximum number of shares that may be issued under the 2019 ESPP was 330,000 shares as of September 30, 2019. In addition, the number of shares reserved for issuance under the 2019 ESPP will automatically increase on January 1 of each year, beginning on January 1, 2020 and continuing through and including January 1, 2027, by the lesser of (1) 1% of the total number of shares of the Company's common stock outstanding on December 31 of the preceding calendar year, (2) 1,500,000 shares or (3) such lesser number of shares as determined by the Company's Board of Directors. No purchases were made pursuant to this plan as of September 30, 2019.

The Company's Board of Directors determines the exercise price for all stock options and SARs and the vesting schedule for all equity awards. The exercise price for a stock option awarded under the 2019 Plan shall not be less than 100% of the fair market value of the Company's common stock on the date of grant. Options granted under the 2019 Plan vest 25% after the first year and monthly thereafter over the following three years and expire ten years from the date of grant.

Stock Options

The following tables summarize stock option activity under the 2017 Plan and the 2019 Plan:

	Number of Awards	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
		(in thousands except share data)		
Outstanding, December 31, 2018	4,017,736	$ 0.83	9.3	$ 7,939
Granted	1,818,792	8.93		
Exercised	(101,688)	0.17		
Cancelled/Forfeited	(109,359)	0.17		
Outstanding, September 30, 2019	5,625,481	$ 3.47	8.9	$ 49,558
Exercisable, September 30, 2019	1,229,677	0.51	8.4	14,476
Vested and expected to vest, September 30, 2019	5,625,481	3.47	8.9	49,558

As of December 31, 2018, the total unrecognized compensation expense related to unvested employee and non-employee options was $7.1 million, which the Company expects to recognize over an estimated weighted-average period of 3.3 years. As of September 30, 2019, the total unrecognized compensation expense related to unvested employee and non-employee options was $15.4 million, which the Company expects to recognize over an estimated weighted-average period of 3.1 years.

The Company uses the Black-Scholes option pricing model to estimate the fair value of stock options on the date of grant. The Company determined the assumptions for the Black-Scholes option-pricing valuation model as discussed below. Each of these inputs is subjective and generally requires significant judgment to determine. The weighted average fair value and assumptions used to determine the fair value of stock options granted was as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Weighted average grant date fair value of common stock	$ 7.22	$ 1.89	$ 6.19	$ 2.46
Expected term	6.0	6.0	6.0	6.1
Risk-free interest rate	1.4%	2.9%	2.4%	2.7%
Expected volatility	81.6%	75.5%	79.1%	73.8%
Dividend rate	-	-	-	-

Expected Term — The expected term represents the period that the stock-based awards are expected to be outstanding. As the Company does not have sufficient historical experience for determining the expected term of the stock option awards granted, the Company based its expected term for awards issued to employees and non-employees using the simplified method, which is presumed to be the midpoint between the vesting date and the end of the contractual term.

Risk-Free Interest Rate — The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the date of grant for zero-coupon U.S. Treasury constant maturity notes with terms approximately equal to the stock-based awards' expected term.

Expected Volatility — Since the Company does not have a trading history of common stock, the expected volatility was derived from the average historical stock volatilities of the common stock of several public companies within the industry that the Company considers to be comparable to its business over a period equivalent to the expected term of the stock-based awards.

Dividend Rate — The expected dividend rate is zero as the Company has not paid and does not anticipate paying any dividends in the foreseeable future.

Fair Value of Common Stock— Prior to the IPO, the fair value of the shares of common stock underlying the stock-based awardswere determined by the Company's Board of Directors with input from management. Since there was no public market for the common stock prior to June 20, 2019, the Company's Board of Directors had determined the fair value of the common stock at the time of grant of the stock-based award by considering a number of objective and subjective factors, including having valuations of the common stock performed by a third-party valuation specialist. The fair value of thecommon stock is now determined by the public market.

Restricted Stock

As of September 30, 2019, and December 31, 2018, 2,349,000 shares of common stock are subject to a repurchase right by the Company.

Non-vested Restricted Stock Award (RSA) Outstanding

The following table presents a summary of the Company's non-vested restricted stock award activity under all plans and related information for the nine months ended September 30, 2019:

	Number of Restricted Stock Awards Outstanding	Weighted Average Grant Date Fair Value Per Share
Non-vested restricted stock awards outstanding as of December 31, 2018	1,566,001	$ 0.18
Restricted stock awards vested	(440,431)	0.18
Non-vested restricted stock awards outstanding as of September 30, 2019	1,125,570	0.18

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
	(in thousands)			
Aggregate grant date fair value of restricted stock awards vested	$ 25,362	$ 109,902	$ 76,095	$ 109,902

Restricted stock awards are generally granted at the fair market value of the Company's common stock on the date of grant and vest 25% after the first year and monthly thereafter over the following three years. Forfeitures are based on actual forfeitures in the given period.

There were $0.2 million of total unrecognized compensation cost related to non-vested restricted stock awards granted under the Company's equity incentive plans as of September 30, 2019. This cost is expected to be recognized over a weighted-average period of 1.8 years.

Total stock-based compensation expense is recognized for restricted stock and stock options granted to employees and non-employees and has been reported in the Company's statements of operations as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
	(in thousands except share data)			
Research and development	$ 676	$ 430	$ 1,741	$ 993
General and administrative	620	48	1,276	96
Total stock-based compensation expense	$ 1,296	$ 478	$ 3,017	$ 1,089

Convertible Preferred Stock

Immediately prior to the closing of the Company's IPO, 19,435,131 shares of outstanding convertible preferred stock converted into 19,435,131 shares of common stock.

Preferred Stock

The Company's amended and restated certificate of incorporation, which became effective upon the completion of the IPO, authorizes 10,000,000 shares of preferred stock, of which no shares were issued or outstanding as of September 30, 2019.

11. RELATED PARTY TRANSACTIONS

Since the Company's inception in July 2017, the Company has engaged in transactions with related parties, which included OrbiMed, principal owners of the Company and REGENXBIO.

In August 2017, the OrbiMed purchased the initial Common Stock of the entity. In August 2017, the Company entered into a Series Seed Preferred Stock Purchase Agreement with OrbiMed.

In August 2017, the Company entered into a Patent License Agreement and Stock Purchase Agreement with REGENXBIO Inc. See Note 3.

During the nine months ended September 30, 2019, the Company exercised all of the options under the REGENXBIO Option Gene License and paid the additional up-front fee of $0.6 million per option, or an aggregate of $1.8 million, to REGENXBIO which was recorded as research and development expense. In addition, in accordance with the REGENXBIO GBA1 License, the Company paid an annual maintenance fee of approximately $0.1 million, which was also recorded as research and development expense. The Company incurred expenses of less than $0.1 million to OrbiMed during the three and nine months ended September 30, 2019 which was recorded as general and administrative expense.

Aggregate payments to related parties for the three and nine months ended September 30, 2019 totaled $0.1 million and $2.0 million, respectively, which was primarily recorded as research and development expense.

12. NET LOSS PER SHARE

The following outstanding potentially dilutive common stock equivalents have been excluded from the calculation of diluted net loss per share for the periods presented due to their anti-dilutive effect:

	As of September 30,	
	2019	2018
Common stock options issued and outstanding	5,625,481	3,391,222
Restricted stock subject to future vesting	1,125,570	1,712,814
Total	6,751,051	5,104,036

Neither the Company's redeemable convertible preferred stock nor restricted stock subject to future vesting participates in losses.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
	(in thousands except share data)			
Net loss	$ (20,299)	$ (5,199)	$ (45,347)	$ (12,339)
Weighted-average number of shares-basic and diluted	32,864,156	5,244,585	26,950,854	4,989,604
Net loss per share—basic and diluted	(0.62)	(0.99)	(1.68)	(2.47)

13. COMMITMENTS AND CONTINGENCIES

Contingencies—From time to time, the Company may be involved in disputes or regulatory inquiries that arise in the ordinary course of business. When the Company determines that a loss is both probable and reasonably estimable, a liability is recorded and disclosed if the amount is material to the financial statements taken as a whole. When a material loss contingency is only reasonably possible, the Company does not record a liability, but instead discloses the nature and the amount of the claim, and an estimate of the loss or range of loss, if such an estimate can reasonably be made.

The Company does not have accruals established for any litigation liabilities as of September 30, 2019 and December 31, 2018.

In June 2019, the Company received a letter on behalf of Alector, a biopharmaceutical company employing antibodies for the treatment of neurodegeneration, stating concerns regarding whether confidential information of Alector was used in connection with work on behalf of our company and patents and patent applications filed on behalf of our company, as well as alleging that Alector has certain rights to our patents and patent applications. The Company believes these allegations of wrongdoing and Alector's claims of rights to any of our intellectual property are without basis or merit, as our gene therapy programs and underlying patents and patent applications were based on work done by Dr. Abeliovich derived from publicly available information or from work outside of and wholly separate from any matters on which he consulted for Alector or information he received while consulting for Alector.Dr. Abeliovich intends to vigorously defend any claim or lawsuit making allegations relating to these matters, however, there can be no assurance regarding any resolution or the outcome of these matters. If the Company becomes party to any demand, claim or allegations related to these matters, the Company also intends to vigorously defend any such proceedings. The Company records accruals for such contingencies when it is probable that a liability will be incurred and the amount of loss can be reasonably estimated. The Company is unable to estimate the probability and amount of potential loss as of September 30, 2019 and has not recorded an accrual.

The Company is also party to various agreements, principally relating to licensed technology, that require future payments relating to milestones, or royalties on future sales of specified products. No material milestone or royalty payments under these agreements are expected to be payable in the immediate future. See Note 3 for further details of these agreements.

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

You should read the following discussion and analysis of our financial condition and results of operations together with our financial statements and related notes appearing elsewhere in this Quarterly Report on Form 10-Q and our audited financial statements and related notes thereto for the year ended December 31, 2018, included in our final prospectus, or the IPO Prospectus, for our initial public offering, or IPO, dated June 19, 2019, and filed with the Securities and Exchange Commission, or SEC, pursuant to Rule 424(b)(4) under the Securities Act of 1933, as amended, or the Securities Act, on June 20, 2019.

Some of the information contained in this discussion and analysis or set forth elsewhere in this report, including information with respect to our plans and strategy for our business and related financing, includes forward-looking statements that involve risks and uncertainties. As a result of many factors, including those factors set forth in the "Risk Factors" section of this Quarterly Report on Form 10-Q the IPO Prospectus, our actual results could differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis. You should carefully read the "Risk Factors" section of this Quarterly Report on Form 10-Q the IPO Prospectus to gain an understanding of the important factors that could cause actual results to differ materially from our forward-looking statements. Please also see the section entitled "Special Note Regarding Forward-Looking Statements." You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Quarterly Report on Form 10-Q.

Overview

We are a gene therapy company leveraging breakthroughs in human genetics with the goal of developing and commercializing disease-modifying adeno associated virus, or AAV, -based gene therapies for patients with devastating neurodegenerative diseases. We are applying a precision medicine approach to neurodegeneration by studying our gene therapies in genetically defined patient populations. We believe this will increase the probability of creating disease-modifying therapies that improve patients' lives. Our first program is PR001 for the treatment of Parkinson's disease with *GBA1* mutation, or PD-GBA, and neuronopathic Gaucher disease, or nGD. We are focused on developing a broad pipeline of gene therapies for a range of neurodegenerative diseases, including PR006 for the treatment of frontotemporal dementia with *GRN* mutation, or FTD-GRN, and PR004 for the treatment of certain synucleinopathies.

In May 2019, the U.S. Food and Drug Administration, or FDA, declared our Investigational New Drug, or IND, application associated with our lead program, PR001, for the treatment of PD-GBA as open. We have opened patient enrollment for our Phase 1/2 clinical trial in PD-GBA, or our PROPEL trial, and are on track to initiate patient dosing by the end of 2019. The PROPEL trial will enroll up to 16 patients to investigate the safety and tolerability of PR001 and will also measure key biomarkers and exploratory efficacy endpoints.

We also submitted an IND to the FDA for PR001 for the treatment of pediatric patients with nGD. Following discussions with the FDA and based on preclinical studies that demonstrated increased efficacy at a higher dose, we are modifying the design of the Phase 1/2 clinical trial in nGD to commence at a dose higher than originally proposed. Our IND for PR001 for the treatment of pediatric nGD has been placed on clinical hold pending FDA review of an amendment to the nGD IND, which will detail this modification. No safety events or adverse findings have been observed in any studies of PR001. To support the planned higher dose, we recently completed an additional non-human primate, or NHP, safety study in which no PR001-related safety events or adverse findings were observed. The start of the Phase 1/2 trial in nGD is anticipated to be delayed approximately one quarter and to begin enrollment in the first half of 2020. The modification to the nGD Phase 1/2 trial design is not anticipated to delay the overall timeline to trial completion. In addition, we are targeting submission of an IND for PR006 for the treatment of FTD-GRN at the end of 2019, and we plan to initiate our Phase 1/2 clinical trial for FTD-GRN in the first half of 2020. In a mouse model of FTD-GRN, PR006 increased progranulin expression, reduced markers of neuroinflammation, and reduced measures of lysosomal pathology and no PR006-related safety events or adverse findings were observed. In a GLP NHP safety study, PR006 treatment increased progranulin levels in the brain in a dose-dependent manner. An extremely minor degree of nerve fiber degeneration in spinal cord and glial cellularity in dorsal root sensory ganglia was observed and was not considered adverse. We believe PR006 has the potential to be a first-in-class, disease-modifying treatment for patients with FTD-GRN.

In October 2019, we announced our strategic collaboration with Lonza, with whom we have been working since 2018, with an initial focus on process development and GMP, or good manufacturing practices, manufacturing of our two lead programs, PR001 and PR006. Under this collaboration, focused on the baculovirus/Sf9 production system for gene therapies, Lonza will manufacture our pipeline of novel AAV-based gene therapy programs for patients with neurodegenerative diseases for late-stage clinical and commercial supply at its gene therapy center of excellence in Houston, Texas.

Since our inception, we have focused primarily on organizing and staffing our company, raising capital, establishing and protecting our intellectual property portfolio, in-licensing the rights to AAV9 in particular fields, developing and progressing our gene therapy

product candidates through preclinical studies, establishing our manufacturing supplier base and preparing for the initiation of our clinical trials. We do not have any product candidates approved for sale and have not generated any revenue from product sales as of September 30, 2019. On June 24, 2019, we completed our IPO whereby we sold an aggregate of 7,353,000 shares of our common stock at a price of $17.00 per share. The aggregate net proceeds received by us from the offering were approximately $113.2 million, after deducting underwriting discounts and commissions and offering expenses payable by us of $11.8 million. Prior to our IPO, we have funded our operations primarily through equity and convertible debt financings and have raised an aggregate of approximately $129.0 million of gross proceeds through these offerings.

We have incurred significant operating losses to date. Our ability to generate product revenue sufficient to achieve profitability will depend heavily on the successful development and eventual commercialization of one or more of our current or future product candidates and programs. Our net losses were $45.3 million and $12.3 million for the nine months ended September 30, 2019 and 2018, respectively. We expect our expenses and losses to increase as we continue to advance our product candidates from discovery and research, through preclinical development, into human clinical trials and seek regulatory approval of our product candidates. Furthermore, we expect to incur additional costs associated with operating as a public company, including significant legal, audit, accounting, director and officer liability insurance, investor relations and other expenses that we did not incur as a private company. Our net losses may fluctuate significantly from quarter-to-quarter and year-to-year, depending on the timing of our clinical trials and our expenditures on other research and development activities.

We do not have any products approved for sale. We do not expect to generate any revenue from product sales unless and until we successfully complete development and obtain regulatory approval for one or more of our product candidates, which we expect will take a number of years. If we obtain regulatory approval for any of our product candidates, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution. Accordingly, until such time as we can generate substantial product revenues to support our cost structure, if ever, we expect to finance our cash needs through equity offerings, debt financings or other capital sources, including potentially collaborations, licenses and other similar arrangements. However, we may be unable to raise additional funds or enter into such other arrangements when needed on favorable terms or at all. Our failure to raise capital or enter into such other arrangements when needed could have a negative impact on our financial condition and on our ability to pursue our business plans and strategies. If we are unable to raise additional capital when needed, we could be forced to delay, limit, reduce or terminate our product candidate development or future commercialization efforts or grant rights to third parties to develop and market our product candidates even if we would otherwise prefer to develop and market such product candidates ourselves.

As of September 30, 2019, and December 31, 2018, we had cash and cash equivalents of $183.1 million and $63.0 million, respectively.

License Agreements

License Agreement with REGENXBIO Inc. for GBA1

In August 2017, we entered into a license agreement, or the REGENXBIO GBA1 License, with REGENXBIO. Under the REGENXBIO GBA1 License, REGENXBIO granted us an exclusive, worldwide license under certain patents and patent applications to make, have made, use, import, sell and offer for sale products for the treatment of disease, including but not limited to Parkinson's disease and Gaucher disease, whether or not caused by mutations in the gene that produces the GBA1 enzyme in humans by *in vivo* gene therapy using AAV9 delivering the gene (or any portion thereof) encoding for GBA1.

As consideration for the licensed rights under the REGENXBIO GBA1 License, we issued 2,430,000 shares of our common stock in a concurrent private placement to REGENXBIO. We are also obligated, pursuant to the REGENXBIO GBA1 License, to pay REGENXBIO: (1) an annual maintenance fee; (2) mid- to high-single digit royalty percentages on net sales of licensed products, subject to reduction in specified circumstances; and (3) mid-teen to low-twenties royalty percentages of any sublicense fees we receive from sublicensees for the licensed intellectual property rights. See Note 3 to our financial statements appearing elsewhere in this report for additional information regarding this license.

License Agreement with REGENXBIO Inc. for Option Genes

In May 2018, we entered into a license agreement, or the REGENXBIO Option Genes License, with REGENXBIO pursuant to which REGENXBIO granted us three distinct exclusive options for specified genes, or the Option Genes, which were exercisable at our sole discretion through May 10, 2019. Each option represented the right to obtain an exclusive, worldwide license under certain patents and patent applications to make, have made, use, import, sell and offer for sale products for the treatment or prevention of disease,

including but not limited to Parkinson's disease, whether or not caused by mutations in any Option Gene that is the subject of the applicable license, in humans by in vivo gene therapy using AAV9 delivering the applicable licensed Option Gene and/or RNA interference or antisense modalities that target the applicable licensed Option Gene.

In April 2019, we exercised all of the options under the REGENXBIO Option Genes License and paid the additional up-front fee of $0.6 million per option, or an aggregate of $1.8 million, to REGENXBIO. See Note 3 to our financial statements appearing elsewhere in this report for additional information regarding this license.

Under the terms of the REGENXBIO Option Genes License, we will also be required to pay REGENXBIO: (1) an annual maintenance fee; (2) mid- to high-single digit royalty percentages on net sales of the licensed product, subject to reduction in specified circumstances; and (3) mid-teen to low-twenties royalty percentages of any sublicense fees we receive from sublicensees for the licensed intellectual property rights. If a licensed product includes the GBA1 gene and otherwise would be subject to royalties under the REGENXBIO GBA1 License, then royalties for that licensed product will only be due under the REGENXBIO Option Genes License. See the section titled "Business—License Agreements—License Agreement with REGENXBIO Inc. for Option Genes" and Note 3 to our financial statements appearing elsewhere in this report for additional information regarding this license.

Financial Operations Overview

Research and Development Expenses

Since inception, research and development expenses are primarily comprised of costs incurred for the manufacture of clinical supply and process development initiatives, clinical startup costs incurred in preparation for clinical trials and activities related to regulatory filings for our product candidates and preclinical and discovery work on our gene therapy product candidates. Research and development expenses are recognized as incurred. Payments made prior to the receipt of goods or services rendered are capitalized and recognized as expense as the goods are delivered or services are performed. We do not track our internal research and development expenses at the program level. Research and development expenses include or could include:

- employee-related expenses, including salaries, bonuses, benefits, stock-based compensation, other related costs for those employees involved in research and development efforts;
- external research and development expenses incurred under agreements with CROs, investigative sites and consultants and vendors engaged to conduct our preclinical studies or provide the research and development services;
- costs related to manufacturing material for our preclinical studies, clinical trials, and manufacturing process development efforts, including fees paid to CDMOs;
- laboratory supplies and research materials;
- costs related to compliance with regulatory requirements; and
- facilities, depreciation and other allocated expenses, which include direct and allocated expenses for rent, maintenance of facilities, insurance and equipment.

We expect our research and development expenses to increase as we continue the development of our product candidates and manufacturing processes, as well as conduct discovery and research activities for our preclinical programs. We cannot determine with certainty the timing of the initiation, the duration or the cost to complete current or future preclinical studies and clinical trials of our product candidates due to the inherently unpredictable nature of preclinical and clinical development. Clinical and preclinical development timelines, the probability of success and development costs can differ materially from expectations. We anticipate that we will make determinations as to which product candidates to pursue and how much funding to direct to each product candidate on an ongoing basis in response to the results of ongoing and future preclinical studies and clinical trials, regulatory developments and our ongoing assessments as to each product candidate's commercial potential. We will need to raise substantial additional capital in the future. Our clinical development costs are expected to increase significantly as we commence clinical trials. Our future expenses may vary significantly each period based on factors such as:

- per patient trial costs;
- the number of patients enrolled in each trial;
- the number of trials required for approval;
- the number of sites included in the trials;

- the countries in which the trials are conducted;
- the length of time required to enroll eligible patients;
- the drop-out or discontinuation rates of patients;
- potential additional safety monitoring requested by regulatory agencies;
- the duration of patient participation in the trials and follow-up;
- the phase of development of the product candidate; and
- the efficacy and safety profile of the product candidate.

General and Administrative Expenses

General and administrative expenses are comprised of employee-related expenses and third-party service costs, such as legal, audit, insurance, and finance and accounting consultants. Employee-related expenses include salaries, bonuses, benefits, stock-based compensation, and other related costs, for those employees in general and administrative functions.

We expect our general and administrative expenses will increase in the future as we increase our general and administrative headcount to support our expanding research and development operations and activities and incur costs associated with operating as a public company, including maintaining public company compliant standards and requirements.

Change in Fair Value of Derivative Liability

To derive the fair value of the derivative liabilities embedded within a convertible note issued to one of our investors, we estimated the fair value of the convertible note with and without the derivative liabilities using a discounted cash flow approach. The difference between the "with" and "without" convertible note prices determined the fair value of the derivative liabilities at issuance and immediately prior to conversion. This convertible note converted into shares of our Series A Preferred Stock in March 2018.

Interest Income (Expense), Net

We have institutional money market accounts that pay interest on a monthly basis. In connection with the issuance of the convertible note, we incurred interest expense at 8% per annum. In addition, we recorded amortization of the debt issuance cost as interest expense.

Results of Operations

Comparison of the three months ended September 30, 2019 and 2018

The following table summarizes our results of operations:

	Three Months Ended September 30,	
	2019	2018
	(in thousands)	
Operating Expenses:		
Research and development	$ 16,836	$ 4,599
General and administrative	4,452	920
Total operating expenses	21,288	5,519
Operating loss	(21,288)	(5,519)
Interest income (expense), net	989	320
Net loss	$ (20,299)	$ (5,199)

Research and Development Expenses

Research and development expenses increased by $12.2 million to $16.8 million for the three months ended September 30, 2019 as compared to the same period in 2018. The increase was primarily due to our development programs, as we incurred increased manufacturing costs of $5.1 million, increased cost for clinical start-up activities of $4.2 million, and increased costs of $1.4 million

for preclinical studies, lab materials, and facilities. The remaining increase is attributed to increased headcount resulting in a $1.5 million increase in personnel costs, including a $0.2 million increase for stock-based compensation.

General and Administrative Expenses

General and administrative expenses increased by $3.5 million to $4.5 million for the three months ended September 30, 2019 as compared to the same period in 2018. The increase was primarily due to increased headcount resulting in a $1.2 million increase in personnel costs, including a $0.6 million increase in stock-based compensation expense, a $1.1 million increase in legal fees, and a $1.2 million increase in professional services fees and other expenses, primarily consisted of accounting and consulting services, director's and officer's insurance, depreciation and facility cost.

Interest Income (Expense), Net

During the three months ended September 30, 2019 and 2018, we generated $1.0 million and $0.3 million, respectively, in interest income from our institutional money market accounts.

Comparison of the nine months ended September 30, 2019 and 2018

The following table summarizes our results of operations:

	Nine Months Ended September 30,	
	2019	2018
	(in thousands)	
Operating Expenses:		
Research and development	$ 37,202	$ 9,110
General and administrative	10,050	2,520
Total operating expenses	47,252	11,630
Operating loss	(47,252)	(11,630)
Change in fair value of derivative liabilities	—	(781)
Interest income (expense), net	1,905	72
Net loss	$ (45,347)	$ (12,339)

Research and Development Expenses

Research and development expenses increased by $28.1 million to $37.2 million for the nine months ended September 30, 2019 as compared to the same period in 2018. The increase was primarily related to our development programs, as we incurred increased manufacturing costs of $11.7 million, increased costs for clinical activities in the amount of $6.6 million, and increased costs of $3.6 million for preclinical studies, lab materials, depreciation and facilities. The remaining increase was attributed to increased headcount resulting in a $4.7 million increase in personnel costs, including a $0.7 million increase for stock-based compensation and a $1.5 million increase in license fees.

General and Administrative Expenses

General and administrative expenses increased by $7.5 million to $10.1 million for the nine months ended September 30, 2019 as compared to the same period in 2018. The increase was primarily due to a $3.0 million increase in personnel costs, including a $1.2 million increase in stock-based compensation expense, a $1.7 million increase in legal fees, and a $2.8 million increase in professional services fees and other expenses, primarily consisted of accounting and consulting services, director's and officer's insurance, depreciation and facility cost.

Change in Fair Value of Derivative Liability

We recorded a loss in the amount of $0.8 million attributable to changes in fair value of the derivative liability during the nine months ended September 30, 2018. No such loss was incurred for the nine months ended September 30, 2019.

Interest Income (Expense), Net

During the nine months ended September 30, 2019, we generated $1.9 million in interest income from our institutional money market accounts. During the nine months ended September 30, 2018, we incurred interest expense of $0.5 million related to a convertible note issued to one of our investors, which converted into shares of our Series A Preferred Stock in March 2018. This was partially offset by $0.5 million of interest income generated from our institution money market accounts during the nine months ended September 30, 2018.

Liquidity and Capital Resources

Since our inception, we have incurred significant operating losses. Our net losses were $45.3 million and $12.3 million for the nine months ended September 30, 2019 and 2018, respectively. As of September 30, 2019 and December 31, 2018, we had an accumulated deficit of $66.3 million and $20.9 million, respectively. To date, we have focused primarily on organizing and staffing our company, raising capital, establishing and protecting our intellectual property portfolio, in-licensing AAV9, developing and progressing our gene therapy product candidates through preclinical studies, preparing and for the initiating of clinical trials, and establishing our manufacturing process to ensure the continued supply of product. Our primary use of cash is to fund operating expenses, which consist primarily of research and development expenditures, and to a lesser extent, general and administrative expenditures.

We do not have any products approved for sale. We do not expect to generate any revenue from product sales unless and until we successfully complete development and obtain regulatory approval for one or more of our product candidates, which we expect will take a number of years. Since our inception, we have funded our operations primarily through equity and convertible debt financings. In March 2019, we raised an aggregate of approximately $49.8 million of net proceeds from our Series B Preferred Stock financing. In June 2019, we completed our IPO whereby we sold an aggregate of 7,353,000 shares of our common stock for aggregate net proceeds of approximately $113.2 million.

As of September 30, 2019, we had cash and cash equivalents of $183.1 million. Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to capital preservation and liquidity.

Cash Flows

Historical Cash Flows

The following table shows a summary of our cash flows for the periods presented:

	Nine Months Ended September 30,	
	2019	2018
	(in thousands)	
Net cash used in operating activities	$ (40,955)	$ (8,380)
Net cash used in investing activities	(2,050)	(304)
Net cash provided by financing activities	163,065	64,907
Net increase in cash, cash equivalents and restricted cash	$ 120,060	$ 56,223

Operating Activities

Cash used in operating activities for the nine months ended September 30, 2019 was $41.0 million as compared to $8.4 million for the same period in 2018. The increase in cash used was primarily the result of increased operating expenses for research and development activities, including third party vendors and employee-related expenses. In addition, our net loss was $45.3 million, which included non-cash charges of $3.2 million, consisting primarily of $3.0 million of stock-based compensation expense, and $0.2 million of depreciation and amortization expense. The change in our net operating assets was primarily the result of a $6.9 million increase in prepaid expenses and other current assets, comprised of $4.1 million relating to our external manufacturing services, $1.3 million for director's and officer's insurance, $1.5 million relating to other external research and development activities and allowance on facility space. In addition, the change in net operating assets also included a $7.3 million increase in accounts payable and accrued expenses, primarily associated with research and development expenses, along with a $1.8 million non-cash increase in the operating lease right-of-use-asset and an increase in operating lease liabilities of $2.5 million as a result of the July 2019 lease modification.

Comparatively, for the nine months ended September 30, 2018, our net loss was $12.3 million, which included non-cash charges of $2.4 million, consisting primarily of $0.8 million attributable to changes in fair value of the derivative liabilities associated with the convertible note, $0.5 million related to the amortization of the convertible note issuance costs, discount and other non-cash interest,

and $1.1 million of stock-based compensation expense. The change in our net operating assets was primarily the result of a $09 million increase in prepaid expenses and other current assets and a $2.5 million increase in accounts payable and accrued expenses, primarily associated with research and development expenses.

Investing Activities

Cash used for investing activities was $2.1 million for the nine months ended September 30, 2019 as compared to $0.3 million for the same period in 2018, primarily due to the increase in purchases of property and equipment in connection with the office and lab space build out.

Financing Activities

Cash provided by financing activities for the nine months ended September 30, 2019 was $163.1 million as compared to $64.9 million for the same period in 2018, due to the funds received from the Series B Preferred Stock financing in March 2019, which generated $49.9 million of net proceeds, and the IPO in June 2019, which generated $113.2 million net proceeds, as compared to the Series A Preferred Stock financing in March and April 2018, which generated $64.9 million of net proceeds.

Funding Requirements

We believe our existing cash and cash equivalents will be sufficient to meet our anticipated cash requirements for at least 12 months. However, our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement that involves risks and uncertainties, and actual results could vary materially. We have based this estimate on assumptions that may prove to be wrong, and we could expend our capital resources sooner than we expect. Additionally, the process of testing product candidates in clinical trials is costly, and the timing of progress and expenses in these trials is uncertain.

Our future capital requirements will depend on many factors, including:

- the scope and rate of progress of our preclinical and toxicology studies, and clinical trials for PR001, PR006 and PR004 and any future product candidates;
- the scope and costs of manufacturing study materials and manufacturing process development, both internally and externally, and clinical manufacturing activities;
- the cost, timing and outcome of regulatory review of our product candidates;
- the costs of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending intellectual property-related claims;
- the terms and timing of establishing and maintaining collaborations, licenses and other similar arrangements;
- our efforts to enhance operational systems and our ability to attract, hire and retain qualified personnel, including personnel to support the development of our product candidates;
- the costs associated with being a public company;
- the results of any litigation or other legal proceedings to which we or our officers or directors may be a party;
- the timing of any milestone and royalty payments to current and future licensors, if any;
- the extent to which we acquire or in-license other best-in-class AAV-based viral vectors, product candidates or technologies; and
- the cost associated with commercializing any product candidates, if and when they receive marketing approval.

Until such time, if ever, as we can generate substantial product revenues to support our cost structure, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations and other similar arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be or could be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. Debt financing and equity financing, if available, 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 funds through collaborations, or other similar arrangements with third parties, we may have to relinquish valuable rights to

our technologies, future revenue streams, research programs or productcandidates or grant licenses on terms that may not be favorable to us and/or may reduce the value of our common stock. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market our product candidates even if we would otherwise prefer to develop and market such product candidates ourselves.

Contractual Obligations and Commitments

The following table summarizes our commitments to settle contractual obligations at September 30, 2019:

	Payments Due By Period(1)				
	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
	(in thousands)				
Operating lease commitments	$ 15,002	$ 411	$ 4,678	$ 5,012	$ 4,901
Total	$ 15,002	$ 411	$ 4,678	$ 5,012	$ 4,901

(1) Total payments due by period per the table represent actual cash payments due. These payments are subject to a present value adjustment of $3.6 million for financial reporting. See Note 9 to our financial statements.

We enter into contracts in the normal course of business with CROs, CDMOs and other third parties for preclinical studies, clinical trials and testing and manufacturing services. Most contracts do not contain minimum purchase commitments and are cancelable by us upon prior written notice. Payments due upon cancellation consist of payments for services provided or expenses incurred, including non-cancelable obligations of our service providers, up to one year after the date of cancellation. These payments are not included in the table above as the amount and timing of such payments are not known. One contract with a CDMO does include cancellation fees for batches within 180 days of a statement of work. We have also entered into license agreements under which we are obligated to make royalty payments and incur annual maintenance fees. We have not included future royalty payments under these agreements in the table above since the payment obligations are contingent upon future events, such as generating product sales. As of September 30, 2019, we were unable to estimate the timing or likelihood of generating future product sales.

Critical Accounting Policies and Significant Judgments and Estimates

The preparation of our financial statements in conformity with accounting principles generally accepted in the U.S. requires us to make estimates and judgments that affect the amounts reported in those financial statements and accompanying notes. Although we believe that the estimates we use are reasonable, due to the inherent uncertainty involved in making those estimates, actual results reported in future periods could differ from those estimates.

We believe that the accounting policies described below involve a high degree of judgment and complexity. Accordingly, these are the policies we believe are the most critical to aid in fully understanding and evaluating our financial condition and results of our operations.

Research and Development Costs, Accrued Research and Development Costs and Related Prepaid Expenses

Research and development costs are expensed as incurred. Research and development expenses consist principally of personnel costs, including salaries, stock-based compensation, and benefits for employees, third-party license fees and other operational costs related to our research and development activities, including allocated facility-related expenses and external costs of outside vendors, and other direct and indirect costs. Research and development advance payments are deferred and capitalized. The capitalized amounts are expensed as the related goods are delivered or services are performed.

Leases

We determine if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use, or ROU, assets, operating lease liabilities, and long-term operating lease liabilities in our balance sheets.

ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As our leases do not provide a readily determinable implicit rate, we use our

incremental borrowing rate based on the information available at commencement date in determining the present value oflease payments. The operating lease ROU asset also includes any lease prepayments, offset by lease incentives.

Our facilities operating leases have lease and non-lease components for which we have elected to apply the practical expedient and account for each lease component and related non-lease component as one single component. Operating lease cost is recognized on a straight-line basis over the lease term.

Stock-Based Compensation

We measure all stock options and other stock-based awards granted to our employees, directors, consultants and other non-employee service providers based on the fair value on the date of the grant, and we recognize compensation expense of those awards over the requisite service period, which is generally the vesting period of the respective award. We recognize forfeitures at the time forfeitures occur.

We classify stock-based compensation expense in our statement of operations in the same way the award recipient's payroll costs are classified or in which the award recipients' service payments are classified. We use the Black-Scholes option-pricing model to estimate the fair value of stock options on the date of grant. Using the Black-Scholes option-pricing model requires management to make significant assumptions and judgments. We determined these assumptions for the Black-Scholes option-pricing valuation model as discussed below.

- *Expected Term*—The expected term represents the period that the stock-based awards are expected to be outstanding. As we do not have sufficient historical experience for determining the expected term of the stock option awards granted, we based our expected term for awards issued to employees and non-employees using the simplified method which is presumed to be the midpoint between the vesting date and the end of the contracted term.
- *Risk-Free Interest Rate*—The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the date of grant for zero-coupon U.S. Treasury constant maturity notes with terms approximately equal to the stock-based awards' expected term.
- *Expected Volatility*—Since we do not have a trading history of common stock, the expected volatility was derived from the average historical stock volatilities of the common stock of several public companies within the industry that we consider to be comparable to our business over a period equivalent to the expected term of the stock-based awards.
- *Dividend Rate*—The expected dividend rate is zero as we have not paid and do not anticipate paying any dividends in the foreseeable future.
- *Fair Value of Common Stock*-Prior to the IPO, the fair value of the shares of common stock underlying the stock-based awards has historically been determined by the Board of Directors with input from management. Since there was no public market for the common stock prior to June 20, 2019, the Board of Directors had determined the fair value of the common stock at the time of grant of the stock-based award by considering a number of objective and subjective factors, including having valuations of the common stock performed by a third-party valuation specialist. The fair value of the common stock is now determined by the public market.

The following table summarizes the assumptions for the Black-Scholes option-pricing valuation model used to estimate the fair value of stock options granted during the periods presented:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Weighted average grant date fair value of common stock	$ 7.22	$ 1.89	$ 6.19	$ 2.46
Expected term	6.0	6.0	6.0	6.1
Risk-free interest rate	1.4%	2.9%	2.4%	2.7%
Expected volatility	81.6%	75.5%	79.1%	73.8%
Dividend rate	—	—	—	—

As of December 31, 2018, the total unrecognized compensation expense related to unvested employee and non-employee options was $7.1 million, which we expect to recognize over an estimated weighted-average period of 3.3 years. As of September 30, 2019, the total unrecognized compensation expense related to unvested employee and non-employee options was $15.4 million which we expect to recognize over an estimated weighted- average period of 3.1 years. The aggregate intrinsic value of options outstanding as of September 30, 2019 was $50.8 million, of which $15.7 million related to vested options and $35.1 million related to unvested options.

Income Taxes

We account for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the financial statements or our tax returns. Under this method, deferred tax assets and liabilities are determined on the basis of the differences between the financial statements and tax basis of the assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes.

We recognize deferred tax assets to the extent that we believe that these assets are more likely than not to be realized. In making such a determination, management considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. Valuation allowances are provided, if based upon the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. If management determines that we would be able to realize our deferred tax assets in the future in excess of their net recorded amount, management would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

We record uncertain tax positions in accordance with ASC 740 on the basis of a two-step process in which (1) management determines whether it is more likely than not that the tax positions will be sustained on the basis of the technical merits of the position and (2) for those tax positions that meet the more-likely-than-not recognition threshold, management recognizes the largest amount of tax benefit that is more than 50% likely to be realized upon ultimate settlement with the related tax authority.

We provide reserves for potential payments of tax to various tax authorities related to uncertain tax positions. These reserves are based on a determination of whether and how much of a tax benefit taken by us in our tax filings or positions is more likely than not to be realized following resolution of any potential contingencies related to the tax benefit. Potential interest related to the underpayment of income taxes will be classified as a component of interest expense and any related penalties will be classified in operating expenses in the statement of operations.

Emerging Growth Company Status

In April 2012, the Jumpstart Our Business Startups Act, or the JOBS Act, was enacted. Section 107 of the JOBS Act provides that an emerging growth company may take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. Therefore, an emerging growth company can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies.

We have irrevocably elected not to avail ourselves of this extended transition period and, as a result, we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies.

Recently Adopted Accounting Pronouncements

Descriptions of recently issued accounting pronouncements that may potentially impact our financial position, result of operations or cash flows are disclosed in Note 2 to our financial statements included elsewhere in this report.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined by applicable SEC rules and regulations.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

We are exposed to market risks in the ordinary course of our business. Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily the result of fluctuations in interest rates.

Interest Rate Risk

As of September 30, 2019 and December 31, 2018, we had cash and cash equivalents of $183.1 million and $63.0 million, respectively. Interest-earning instruments carry a degree of interest rate risk. However, due to the nature of these investments, the primary aim of which is capital preservation and liquidity, a hypothetical 10% change in interest rates during any of the periods presented would not have had a material impact on our financial statements included elsewhere in this report. We do not enter into investments for trading or speculative purposes and have not used any derivative financial instruments to manage our interest rate risk exposure, although we may choose to do so in the future.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

We maintain "disclosure controls and procedures," as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Exchange Act that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to our management, including our principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure.

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2019. Based on the evaluation of our disclosure controls and procedures as of September 30, 2019, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the period covered by this Quarterly Report on Form 10-Q that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving the desired control objectives. Our management recognizes that any control system, no matter how well designed and operated, is based upon certain judgments and assumptions and cannot provide absolute assurance that its objectives will be met. Similarly, an evaluation of controls cannot provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings.

From time to time, we may become subject to arbitration, litigation or claims arising in the ordinary course of business. We are not currently a party to any arbitration or legal proceeding that, if determined adversely to us, would have a material adverse effect on our business, operating results or financial condition. The results of any future claims or proceedings cannot be predicted with certainty, and regardless of the outcome, litigation can have an adverse impact on us because of defense and litigation costs, diversion of management resources, and other factors.

Item 1a. Risk Factors.

Investing in our common stock involves a high degree of risk. You should carefully consider the following risks and uncertainties, together with all of the other information contained in this prospectus, including our financial statements and related notes included elsewhere in this quarterly report on Form 10-Q, before making an investment decision. The risks described below are not the only ones facing us. The occurrence of any of the following risks, or of additional risks and uncertainties not presently known to us or that we currently believe to be immaterial, could materially and adversely affect our business, financial condition or results of operations. In such case, the trading price of our common stock could decline.

Risks Related to Our Financial Position and Need for Additional Capital

We have a limited operating history, hav losses for the foreseeable future. We ma .

Since our inception in 2017, we have incurred significant operating losses.

Our net losses were $45.3 million and $12.3 million for the nine months ended September 30, 2019 and 2018, respectively. As of September 30, 2019 and December 31, 2018 we had an accumulated deficit of $66.3 million and $20.9 million, respectively. Since our inception, we have focused primarily on organizing and staffing our company, raising capital, establishing and protecting our intellectual property portfolio, in-licensing adeno associated virus 9, or AAV9, in particular fields, developing and progressing our gene therapy product candidates through preclinical studies and preparing for clinical trials, and establishing our manufacturing platform. Consequently, we have no meaningful operations upon which to evaluate our business, and predictions about our future success or viability may not be as accurate as they could be if we had a longer operating history or a history of successfully developing and commercializing gene therapies.

We have no products approved for commercial sale. We have never been profitable and do not expect to be profitable in the foreseeable future. Our ability to generate revenue and become profitable depends upon our ability to successfully complete the development of our product candidates and to obtain the necessary regulatory approvals for their commercialization. We are developing our lead product candidate, PR001, an AAV9 vector delivering the GBA1 gene, for several related indications, including patients with PD-GBA and patients with neuronopathic Gaucher disease. We have not yet initiated our planned Phase 1/2 clinical trials for either of these indications. We have not yet demonstrated an ability to successfully complete a clinical program, including large-scale, pivotal clinical trials, obtain marketing approval, manufacture product at a commercial scale, or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization.

We expect to continue to incur significant expenses and additional operating losses for the foreseeable future as we seek to advance our product candidates through preclinical and clinical development, expand our research and development activities, develop new product candidates, complete clinical trials, seek regulatory approval and, if we receive regulatory approval, commercialize our products. Furthermore, the costs of advancing product candidates into each succeeding clinical phase tend to increase substantially over time. The total costs to advance any of our product candidates to marketing approval in even a single jurisdiction would be substantial. Because of the numerous risks and uncertainties associated with gene therapy product development, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to begin generating revenue from the commercialization of products or achieve or maintain profitability. Our expenses will also increase substantially if and as we operate as a public company and add clinical, scientific, operational, financial and management information systems and personnel, including personnel to support our product development and planned future commercialization efforts, as well as to support our transition to a public reporting company.

Before we generate any revenue from product sales, each of our programs and product candidates will require additional preclinical and/or clinical development, potential regulatory approval in multiple jurisdictions, manufacturing, building of a commercial organization, substantial investment and significant marketing efforts. Our expenses could increase beyond expectations if we are required by the FDA European Medicines Agency, or EMA, or other regulatory authorities to perform preclinical studies and clinical trials in addition to those that we currently anticipate. These risks are further described under "—Risks Related to Discovery, Development, Clinical Testing, Manufacturing and Regulatory Approval" and "—Risks Related to Commercialization." As a result, we expect to continue to incur net losses and negative cash flows for the foreseeable future. These net losses and negative cash flows have had, and will continue to have, an adverse effect on our stockholders' equity and working capital.

As we continue to build our business, we expect our financial condition and operating results may fluctuate significantly from quarter to quarter and year to year due to a variety of factors, many of which are beyond our control. Accordingly, you should not rely upon the results of any particular quarterly or annual period as indications of future operating performance. If we are unable to develop and commercialize one or more of our product candidates either alone or with collaborators, or if revenues from any product candidate that receives marketing approval are insufficient, we will not achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability. If we are unable to achieve and then maintain profitability, the value of our equity securities will be adversely affected.

We will require additional capital to fun

We expect to spend substantial amounts to advance our product candidates into clinical development and to complete the clinical development of, seek regulatory approvals for and commercialize our product candidates, if approved. We will require additional capital to fund our operations, which we may raise through equity offerings, debt financings, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements or other sources to enable us to complete the development and potential commercialization of our product candidates. Adequate additional financing may not be available to us on acceptable terms, or at all. Our failure to raise capital as and when needed would have a negative effect on our financial condition and our ability to pursue our business strategy. In addition, attempting to secure additional financing may divert the time and attention of our management from day-to-day activities and harm our product candidate development efforts. If we are unable to raise capital when needed or on acceptable terms, we would be forced to delay, reduce or eliminate certain of our research and development programs.

Our operations have consumed significant amounts of cash since inception. As of September 30, 2019, our cash and cash equivalents were $183.1 million. We estimate that such funds will be sufficient to enable us to fund our operating expenses and capital expenditure requirements at least through the first half of 2021. This estimate is based on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Changing circumstances could cause us to consume capital significantly faster than we currently anticipate, and we may need to spend more than currently expected because of circumstances beyond our control. Because the length of time and activities associated with successful development of our product candidates is highly uncertain, we are unable to estimate the actual funds we will require for development and any approved marketing and commercialization activities. Our future funding requirements, both near and long-term, will depend on many factors, including, but not limited to:

- the initiation, progress, timing, costs and results of our planned clinical trials for PR001;
- continuing our current research programs and our preclinical development of product candidates, including PR001, PR006 and PR004, from our current research programs;
- seeking to identify, assess, acquire and/or develop additional research programs and additional product candidates;
- the preclinical testing and clinical trials for any product candidates we identify and develop;
- the cost of establishing a sales, marketing and distribution infrastructure to commercialize any product candidates for which we may obtain marketing approval;
- the outcome, timing and cost of meeting regulatory requirements established by the FDA, EMA and other regulatory authorities;
- the cost of expanding and protecting our intellectual property portfolio, including filing, prosecuting, defending and enforcing our patent claims and other intellectual property rights;

- the cost of defending potential intellectual property disputes, including patent infringement actions brought by third parties against us or any of our product candidates;
- the effect of competing technological and market developments;
- the cost of further developing and scaling our potential manufacturing facility and processes;
- the cost and timing of completion of commercial-scale manufacturing activities;
- the cost of making royalty, milestone or other payments under current and any future in-license agreements;
- the extent to which we in-license or acquire other products and technologies; and
- the initiation, progress, timing and results of our commercialization of our product candidates, if approved for commercial sale.

To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a holder of common stock. Debt financing and preferred equity financing, if available, 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 collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may be required to relinquish valuable rights to our technologies, future revenue streams or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

We are heavily dependent on the success PR001 does not progress to the next phas commercialize PR001, our business may b

To date, we have invested a significant portion of our efforts and financial resources in the development of PR001. Our future success and ability to generate product revenue is substantially dependent on our ability to successfully develop, obtain regulatory approval for and successfully commercialize this product candidate.

We currently have no products that are approved for commercial sale and may never be able to develop marketable products. We expect to invest a meaningful portion of our efforts and expenditures over the next few years in PR001, which will require clinical development, management of clinical and manufacturing activities, regulatory approval in multiple jurisdictions, manufacturing sufficient supply, building of a commercial organization, substantial investment and significant marketing efforts before we can generate any revenues from any commercial sales. Accordingly, our business currently depends heavily on the successful development, regulatory approval and commercialization of PR001, which may never occur.

PR001 is still in early development, and we may not be successful in advancing PR001 into and through clinical development. While we have an open IND for PR001 for the treatment of PD-GBA, we have not yet begun dosing any patients. In addition, we submitted an IND to the FDA for PR001 for the treatment of pediatric patients with nGD. Following discussions with the FDA, and based on preclinical studies that demonstrated increased efficacy at a higher dose, we are modifying the design of the Phase 1/2 clinical trial in nGD to commence at a dose higher than originally proposed. Our IND for PR001 for the treatment of pediatric nGD has been placed on clinical hold pending FDA review of an amendment to the nGD IND, which will detail this modification. The start of the Phase 1/2 trial in nGD is anticipated to be delayed approximately one quarter and to begin enrollment in the first half of 2020, however, the modification to the trial design is not anticipated to delay the overall timeline to trial completion.

We cannot be certain that PR001 will be successful in clinical trials or receive regulatory approval. Even if we receive regulatory approval to market PR001 from the FDA, EMA or other regulatory bodies, we cannot be certain that our product candidate will be successfully commercialized, widely accepted in the marketplace or more effective than other commercially available therapies. We also cannot be certain that third-party payors will adequately reimburse for treatments involving our product candidate. Additionally, the research, testing, manufacturing, labeling, approval, sale, marketing and distribution of gene therapy products are and will remain subject to extensive and evolving regulation by the FDA, EMA and other regulatory authorities. We are not permitted to market PR001 in the United States until it receives approval of a biologics license application, or BLA, from the FDA, and we cannot market it in the European Union until we receive approval for a Marketing Authorization Application, or MAA, from the EMA, or other required regulatory approval in other countries.

PR001 is our most advanced product candidate, and because some of ourother product candidates are based on similar technology, if PR001 shows unexpected adverse events or a lack of efficacy in the indications we intend to treat, or if we experience other regulatory or developmental issues, our development plans and business could be significantly harmed. Further, competitors may be developing products with similar technology and may experience problems with their products that could identify problems that would potentially harm our business.

We may not be successful in our efforts

Part of our strategy involves identifying novel product candidates based on our deep understanding of human genetics. The process by which we identify product candidates may fail to yield product candidates for clinical development for a number of reasons, including those discussed in these risk factors and also:

- we may be unable to develop programs that have a clearly defined and genetically driven disease mechanism, are well suited to gene therapy, have compelling preclinical data, are in genetically defined populations, have biomarkers that may provide early clinical proof-of-mechanism or that have a large potential market opportunity;
- we may not be able to assemble sufficient resources to acquire or discover additional product candidates;
- competitors may develop alternatives that render our potential product candidates obsolete or less attractive;
- potential product candidates we develop may nevertheless be covered by third parties' patents or other exclusive rights;
- potential product candidates may, on further study, be shown to have harmful side effects, toxicities or other characteristics that indicate that they are unlikely to be products that will receive marketing approval and achieve market acceptance;
- potential product candidates may not be effective in treating their targeted diseases;
- the market for a potential product candidate may change so that the continued development of that product candidate is no longer reasonable;
- a potential product candidate may not be capable of being produced in commercial quantities at an acceptable cost, or at all; or
- the regulatory pathway for a potential product candidate may be too complex and difficult to navigate successfully or economically.

In addition, we may choose to focus our efforts and resources on a potential product candidate that ultimately proves to be unsuccessful. As a result, we may fail to capitalize on viable commercial products or profitable market opportunities, be required to forego or delay pursuit of opportunities with other product candidates or other diseases that may later prove to have greater commercial potential, or relinquish valuable rights to such product candidates through collaboration, licensing or other royalty arrangements in cases in which it would have been advantageous for us to retain sole development and commercialization rights. If we are unable to identify additional suitable product candidates for clinical development, this would adversely impact our business strategy, our financial position and share price and could potentially cause us to cease operations.

Risks Related to Discovery, Development, Clinical Testing, Manufacturing and Regulatory Approval

We intend to identify and develop produc the time, cost and potential success of p

We have concentrated our research and development efforts on our gene therapy product candidates. Our future success depends on the successful development of these novel therapeutic approaches. To date, very few products that utilize gene transfer have been approved in the United States or Europe. There have been a limited number of clinical trials of gene transduction technologies, with only two product candidates ever approved by the FDA.

Our gene therapy product candidates are based on a viral vector which we can deploy with gene therapy constructs, which relies on the ability of AAV to efficiently transmit a therapeutic gene to certain kinds of cells. The mechanism of action by which this vector targets particular tissues is still not completely understood. Therefore, it is difficult for us to determine that our vectors will be able to properly deliver gene transfer constructs to enough tissue cells to reach therapeutic levels. We cannot be certain that our viral vectors will be able to meet safety and efficacy levels needed to be therapeutic in humans or that they will not cause significant adverse events or toxicities. We cannot be certain that we will be able to avoid triggering toxicities in our future preclinical studies or clinical trials. Any such results could impact our ability to develop a product candidate, including our ability to enroll patients in our clinical trials. As a result of these factors, it is more difficult for us to predict the time and cost of product candidate development, and we cannot predict whether the application of our approach to gene therapy, or any similar or competitive programs, will result in the

identification, development, and regulatory approval of any product candidates, or that other gene therapy programs will not be considered better or more attractive. There can be no assurance that any development problems we experience in the future related to our current gene therapy product candidates or any of our research programs will not cause significant delays or unanticipated costs, or that such development problems can be solved. We may also experience delays and challenges in achieving sustainable, reproducible, and scalable production. Any of these factors may prevent us from completing our preclinical studies or clinical trials or commercializing any product candidates we may develop on a timely or profitable basis, if at all.

Gene therapies are novel, complex and di the development or commercialization of

The manufacture of gene therapy products is technically complex and necessitates substantial expertise and capital investment. Production difficulties caused by unforeseen events may delay the availability of material for our clinical studies.

We presently contract with third parties for the manufacturing of our program materials and are working to develop commercial-scale manufacturing capabilities with these third parties. We currently have no plans to build our own clinical or commercial-scale manufacturing facilities. The use of contracted manufacturing and reliance on collaboration partners is relatively cost efficient and has eliminated the need for our direct investment in manufacturing facilities and additional staff early in development. Although we rely on contract manufacturers, we have personnel with manufacturing and quality experience to oversee our contract manufacturers.

To date, our third-party manufacturers have met our manufacturing requirements for our program materials. We expect third-party manufacturers to be capable of providing sufficient quantities of our program materials to meet anticipated clinical trial scale demands. To meet our projected needs for additional clinical trials and commercial manufacturing, we will need to secure multiple suppliers. We believe that there are alternate sources of supply for our program materials that can satisfy our clinical and commercial requirements, although we cannot be certain that identifying and establishing relationships with such sources, if necessary, would not result in significant delay or material additional costs.

To date, our third-party manufacturers have met our quality standards for our program materials. The manufacturers of pharmaceutical products must comply with strictly enforced current good manufacturing practices, or cGMP, requirements, state and federal regulations, as well as foreign requirements when applicable. Any failure of us or our contract manufacturing organizations to adhere to or document compliance to such regulatory requirements could lead to a delay or interruption in the availability of our program materials for clinical study or enforcement action from the FDA or foreign regulatory authorities. If we or our manufacturers were to fail to comply with the FDA, EMA, or other regulatory authority, it could result in sanctions being imposed on us, including clinical holds, fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of product candidates or products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our product candidates. Our potential future dependence upon others for the manufacture of our product candidates may also adversely affect our future profit margins and our ability to commercialize any product candidates that receive regulatory approval on a timely and competitive basis.

Biological products are inherently difficult to manufacture. Our program materials are manufactured using technically complex processes requiring specialized equipment and facilities, highly specific raw materials, cells, and reagents, and other production constraints. Our production process requires a number of highly specific raw materials, cells and reagents with limited suppliers. Even though we aim to have backup supplies of raw materials, cells and reagents whenever possible, we cannot be certain they will be sufficient if our primary sources are unavailable. A shortage of a critical raw material, cell line, or reagent, or a technical issue during manufacturing may lead to delays in clinical development or commercialization plans. Any changes in the manufacturing of components of the raw materials we use could result in unanticipated or unfavorable effects in our manufacturing processes, resulting in delays.

We are developing a scalable baculovirus production system for our gene therapy pipeline. If we are not able to successfully develop or transition to this new manufacturing process, we may be unable to meet our supply needs, which could adversely affect our future profit margins and our ability to progress our clinical development programs or commercialize any product candidates that receive regulatory approval on a timely and competitive basis.

Because gene therapy is novel and the re complex, uncertain and subject to change for any product candidates we may develo

The regulatory requirements that will govern any novel gene therapy product candidates we develop are not entirely clear and are subject to change. Within the broader genetic medicine field, very few therapeutic products have received marketing authorization from the FDA or EMA. Even with respect to more established products that fit into the categories of gene therapies or cell therapies, the regulatory landscape is still developing. Regulatory requirements governing gene therapy products and cell therapy products have changed frequently and will likely continue to change in the future. Moreover, there is substantial, and sometimes uncoordinated, overlap in those responsible for regulation of existing gene therapy products and cell therapy products. For example, in the United States, the FDA has established the Office of Tissues and Advanced Therapies within its Center for Biologics Evaluation and Research, or CBER, to consolidate the review of gene therapy and related products, and the Cellular, Tissue and Gene Therapies Advisory Committee to advise CBER on its review. Our product candidates will need to meet safety and efficacy standards applicable to any new biologic under the regulatory framework administered by the FDA. In addition to FDA oversight and oversight by institutional review boards, or IRBs, under guidelines promulgated by the National Institutes of Health, or NIH, gene therapy clinical trials are also subject to review and oversight by an institutional biosafety committee, or IBC, a local institutional committee that reviews and oversees research utilizing recombinant or synthetic nucleic acid molecules at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment. While the NIH guidelines are not mandatory unless the research in question is being conducted at or sponsored by institutions receiving NIH funding of recombinant or synthetic nucleic acid molecule research, many companies and other institutions not otherwise subject to the NIH Guidelines voluntarily follow them. Although the FDA decides whether individual gene therapy protocols may proceed, the review process and determinations of other reviewing bodies can impede or delay the initiation of a clinical trial, even if the FDA has reviewed the trial and approved its initiation.

The same applies in the European Union. The EMA's Committee for Advanced Therapies, or CAT, is responsible for assessing the quality, safety, and efficacy of advanced-therapy medicinal products. Advanced-therapy medicinal products include gene therapy medicines, somatic-cell therapy medicines and tissue-engineered medicines. The role of the CAT is to prepare a draft opinion on an application for marketing authorization for a gene therapy medicinal candidate that is submitted to the EMA. In the European Union, the development and evaluation of a gene therapy product must be considered in the context of the relevant EU guidelines. The EMA may issue new guidelines concerning the development and marketing authorization for gene therapy products and require that we comply with these new guidelines. As a result, the procedures and standards applied to gene therapy products and cell therapy products may be applied to any gene therapy product candidate we may develop, but that remains uncertain at this point.

Adverse developments in preclinical studies or clinical trials conducted by others in the field of gene therapy and gene regulation products may cause the FDA, the EMA, and other regulatory bodies to revise the requirements for approval of any product candidates we may develop or limit the use of products utilizing gene regulation technologies, either of which could harm our business. In addition, the clinical trial requirements of the FDA, the EMA, and other regulatory authorities 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 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. Further, as we are developing novel potential treatments for diseases in which, in some cases, there is little clinical experience with potential new endpoints and methodologies, 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, and the resulting clinical data and results may be more difficult to analyze. Any natural history studies that we may conduct or rely upon in our clinical development may not be accepted by the FDA, EMA or other regulatory authorities. Regulatory agencies administering existing or future regulations or legislation may not allow production and marketing of products utilizing gene regulation technology in a timely manner or under technically or commercially feasible conditions. In addition, regulatory action or private litigation could result in expenses, delays, or other impediments to our research programs or the commercialization of resulting products.

The regulatory review committees and advisory groups described above and the new guidelines they promulgate may lengthen the regulatory review process, require us to perform additional preclinical studies or clinical trials, 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 limitations or restrictions. As we advance our research programs and develop future product candidates, we will be required to consult with these regulatory and advisory groups and to comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of any product candidates we identify and develop.

Clinical trials are expensive, time-consu
encounter substantial delays in our clini

The clinical trials and manufacturing of our product candidates are, and the manufacturing and marketing of our products, if approved, will be, subject to extensive and rigorous review and regulation by numerous government authorities in the United States and in other

countries where we intend to test and market our product candidates. Before obtaining regulatory approvals for the commercial sale of any of our product candidates, we must demonstrate through lengthy, complex and expensive preclinical testing and clinical trials that our product candidates are both safe and effective for use in each target indication. In particular, because our product candidates are subject to regulation as biological drug products, we will need to demonstrate that they are safe, pure and potent for use in their target indications. Each product candidate must demonstrate an adequate risk versus benefit profile in its intended patient population and for its intended use.

Clinical testing is expensive and can take many years to complete, and is subject to uncertainty. We cannot guarantee that any clinical trials will be conducted as planned or completed on schedule, if at all. Failure can occur at any time during the clinical trial process. Even if our future clinical trials are completed as planned, we cannot be certain that their results will support the safety and effectiveness of our product candidates for their targeted indications or support continued clinical development of such product candidates. Our future clinical trial results may not be successful.

In addition, even if such trials are successfully completed, we cannot guarantee that the FDA or foreign regulatory authorities will interpret the results as we do, and more trials could be required before we submit our product candidates for approval. To the extent that the results of the trials are not satisfactory to the FDA or foreign regulatory authorities for support of a marketing application, we may be required to expend significant resources, which may not be available to us, to conduct additional trials in support of potential approval of our product candidates.

To date, we have not completed any clinical trials required for the approval of our product candidates. We may experience delays in conducting any clinical trials and we do not know whether our clinical trials will begin on time, need to be redesigned, recruit and enroll patients on time or be completed on schedule, or at all. Events that may prevent successful or timely completion of clinical development include:

- inability to generate sufficient preclinical, toxicology, or other in vivo or in vitro data to support the initiation of clinical trials;
- delays in sufficiently developing, characterizing or controlling a manufacturing process suitable for advanced clinical trials;
- delays in developing suitable assays for screening patients for eligibility for trials with respect to certain product candidates;
- delays in reaching agreement with the FDA, EMA or other regulatory authorities as to the design or implementation of our clinical trials;
- obtaining regulatory approval to commence a clinical trial;
- reaching an agreement on acceptable terms with clinical trial sites or prospective contract research organizations, or CROs, the terms of which can be subject to extensive negotiation and may vary significantly among different clinical trial sites;
- obtaining IRB approval at each site;
- recruiting suitable patients to participate in a clinical trial;
- developing and validating the companion diagnostic to be used in a clinical trial, if applicable;
- having patients complete a clinical trial or return for post-treatment follow-up;
- clinical sites, CROs or other third parties deviating from trial protocol or dropping out of a trial;
- failure to perform in accordance with the FDA's good clinical practice, or GCP, requirements, or applicable regulatory guidelines in other countries;
- addressing patient safety concerns that arise during the course of a trial, including occurrence of adverse events associated with the product candidate that are viewed to outweigh its potential benefits;
- adding a sufficient number of clinical trial sites; or
- manufacturing sufficient quantities of product candidate for use in clinical trials.

- We may experience numerous unforeseen events during, or as a result of, clinical trials that could delay or prevent our ability to receive marketing approval or commercialize our product candidates or significantly increase the cost of such trials, including:
- we may experience changes in regulatory requirements or guidance, or receive feedback from regulatory authorities that requires us to modify the design of our clinical trials;
- clinical trials of our product candidates may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon development programs;
- the number of patients required for clinical trials of our product candidates may be larger than we anticipate, enrollment in these clinical trials may be slower than we anticipate or participants may drop out of these clinical trials at a higher rate than we anticipate;
- our third-party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all;
- we or our investigators might have to suspend or terminate clinical trials of our product candidates for various reasons, including non-compliance with regulatory requirements, a finding that our product candidates have undesirable side effects or other unexpected characteristics, or a finding that the participants are being exposed to unacceptable health risks;
- the cost of clinical trials of our product candidates may be greater than we anticipate and we may not have funds to cover the costs;
- the supply or quality of our product candidates or other materials necessary to conduct clinical trials of our product candidates may be insufficient or inadequate;
- regulators may revise the requirements for approving our product candidates, or such requirements may not be as we anticipate; and
- any future collaborators that conduct clinical trials may face any of the above issues, and may conduct clinical trials in ways they view as advantageous to them but that are suboptimal for us.

If we are required to conduct additional clinical trials or other testing of our product candidates beyond those that we currently contemplate, if we are unable to successfully complete clinical trials of our product candidates or other testing, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we may:

- incur unplanned costs;
- be delayed in obtaining marketing approval for our product candidates or not obtain marketing approval at all;
- obtain marketing approval in some countries and not in others;
- obtain marketing approval for indications or patient populations that are not as broad as intended or desired;
- obtain marketing approval with labeling that includes significant use or distribution restrictions or safety warnings, including boxed warnings;
- be subject to additional post-marketing testing requirements; or
- have the product removed from the market after obtaining marketing approval.

We could encounter delays if a clinical trial is suspended or terminated by us, by the IRBs of the institutions in which such trials are being conducted, by the Data Safety Monitoring Board, or DSMB, for such trial or by the FDA, EMA or other regulatory authorities. Such authorities may impose such a suspension or termination due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA, EMA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a drug, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial.

Our most advanced product candidates, PR001, PR006 and PR004, will require extensive clinical testing before we are prepared to submit a BLA or MAA for regulatory approval. We cannot predict with any certainty if or when we might complete the clinical development for our product candidates and submit a BLA or MAA for regulatory approval of any of our product candidates or whether any such BLA or MAA will be approved. We may also seek feedback from the FDA, EMA or other regulatory authorities on

our clinical development program, and the FDA, EMA or such regulatory authorities may not provide such feedback on a timely basis, or such feedback may not be favorable, which could further delay our development programs.

We cannot predict with any certainty whether or when we might complete a given clinical trial. If we experience delays in the commencement or completion of our clinical trials, or if we terminate a clinical trial prior to completion, the commercial prospects of our product candidates could be harmed, and our ability to generate revenues from our product candidates may be delayed. In addition, any delays in our clinical trials could increase our costs, slow down the development and approval process and jeopardize our ability to commence product sales and generate revenues. Any of these occurrences may harm our business, financial condition and results of operations. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates.

The affected populations for our other p the addressable markets for our product t

We select the targets for development of our product candidates based on genetically defined patient populations where we believe there is a large addressable market opportunity. However, our projections of the number of people who have the diseases we are seeking to treat, as well as the subset of people with these diseases who have the potential to benefit from treatment with our product candidates, are estimates based on our knowledge and understanding of these diseases. The total addressable market opportunity for our product candidates will ultimately depend upon a number of factors including the diagnosis and treatment criteria included in the final label, if approved for sale in specified indications, acceptance by the medical community, patient access and product pricing and reimbursement. Incidence and prevalence estimates are frequently based on information and assumptions that are not exact and may not be appropriate, and the methodology is forward-looking and speculative. The process we have used in developing an estimated incidence and prevalence range for the indications we are targeting has involved collating limited data from multiple sources. Accordingly, the incidence and prevalence estimates included in our filings with the SEC should be viewed with caution. Further, the data and statistical information used in our filings with the SEC, including estimates derived from them, may differ from information and estimates made by our competitors or from current or future studies conducted by independent sources.

The use of such data involves risks and uncertainties and is subject to change based on various factors. Our estimates may prove to be incorrect and new studies may change the estimated incidence or prevalence of the diseases we seek to address. The number of patients with the diseases we are targeting in the United States, the European Union, Israel and elsewhere may turn out to be lower than expected or may not be otherwise amenable to treatment with our products, or new patients may become increasingly difficult to identify or access, all of which would harm our results of operations and our business.

Negative public opinion of gene therapy the development or commercial success of

Our potential therapeutic products involve introducing genetic material into a patient's cells. The clinical and commercial success of our potential products will depend in part on public acceptance of the use of gene therapy and gene regulation for the prevention or treatment of human diseases. Public attitudes may be influenced by claims that gene therapy and gene regulation are unsafe, unethical or immoral, and consequently, our products may not gain the acceptance of the public or the medical community. Adverse public attitudes may adversely impact our ability to enroll clinical trials. Moreover, our success will depend upon physicians prescribing, and their patients being willing to receive, treatments that involve the use of product candidates we may develop in lieu of, or in addition to, existing treatments with which they are already familiar and for which greater clinical data may be available.

More restrictive government regulations or negative public opinion would have a negative effect on our business or financial condition and may delay or impair the development and commercialization of our product candidates or demand for any products once approved. For example, in 2003, trials using early versions of murine gamma-retroviral vectors, which integrate with, and thereby alter, the host cell's DNA, have led to several well-publicized adverse events, including reported cases of leukemia. Although none of our current product candidates utilize murine gamma-retroviral vectors, our product candidates use AAV viral vectors. Among the risks in any gene therapy product based on viral vectors are the risks of immunogenicity, elevated liver enzymes, and insertional oncogenesis, which is the process whereby the insertion of a functional gene near a gene that is important in cell growth or division results in uncontrolled cell division, which could potentially enhance the risk of malignant transformation. If our vectors demonstrate a similar effect we may decide or be required to halt or delay further clinical development of PR001. Adverse events in our or others' clinical trials, even if not ultimately attributable to our product candidates, and the resulting publicity could result in increased governmental 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. The risk of cancer remains a concern for gene therapy and we cannot assure that it will not occur in any of our

planned or future clinical trials or in any clinical trials conducted by other companies. In addition, there is the potential risk of delayed adverse events following exposure to gene therapy products due to persistent biological activity of the genetic material or other components of products used to carry the genetic material. If any such adverse events occur, commercialization of our product candidates or further advancement of our clinical trials could be halted or delayed, which would have a negative impact on our business and operations.

Compassionate use or expanded access of and our business.

Expanded access, sometimes called "compassionate use," is the use of investigational new drug products outside of clinical trials to treat patients with serious or immediately life-threatening diseases or conditions when there are no comparable or satisfactory alternative treatment options. In April 2019, University of Florida submitted an investigator-sponsored IND to the FDA requesting an expanded access study in which infants with Type 2 Gaucher disease could receive PR001. This IND has been placed on clinical hold by the FDA. We do not have control over the University of Florida's communications with the FDA or the timing of any resolution of this clinical hold. We do not expect this clinical hold to affect the development timeline for our currently active IND for PR001 for the treatment of PD-GBA, however, the existence of this clinical hold could negatively impact public opinion of PR001, and the requests being made of University of Florida with respect to its IND could affect the clinical trial design and other aspects of the development of our own program for Gaucher disease.

In addition, patients who receive access to unapproved drugs through compassionate use or expanded access programs have life-threatening illnesses and often have exhausted all other available therapies. The risk for serious adverse events in this patient population is high which could have a negative impact on the safety profile of our product candidates, including PR001, which could cause significant delays or an inability to successfully commercialize our product candidates, which could materially harm our business. Further, we may in the future need to restructure or pause ongoing compassionate use and/or expanded access programs, which could prompt adverse publicity or other disruptions related to current or potential participants in such programs.

Other companies have been the target of disruptive social media campaigns related to a request for access to unapproved drugs for patients with significant unmet medical need. If we experience a similar social media campaign regarding our decision to provide or not provide our product candidates under an expanded access corporate policy, our reputation may be negatively affected and our business may be harmed.

Recent media attention to individual patients' expanded access requests has resulted in the introduction of legislation at the local and national level referred to as "Right to Try" laws, such as the Right to Try Act, which are intended to give patients access to unapproved therapies. New and emerging legislation regarding expanded access to unapproved drugs for life-threatening illnesses could negatively impact our business in the future.

A possible consequence of both activism and legislation in this area is the need for us to initiate an unanticipated expanded access program or to make our product candidates more widely available sooner than anticipated. We are a small company with limited resources and unanticipated trials or access programs could result in diversion of resources from our primary goals.

We and our contract manufacturers for pl products. The third-party manufacturing may have limited capacity or fail to mee

We currently have relationships with a limited number of suppliers for the manufacturing of plasmids and viruses, components of our product candidates. However, if we experience slowdowns or problems with our facility or those of our manufacturing partners and are unable to establish or scale our internal manufacturing capabilities, we will need to continue to contract with manufacturers that can produce the preclinical, clinical and commercial supply of our products. Each supplier may require licenses to manufacture such components if such processes are not owned by the supplier or in the public domain and we may be unable to license such intellectual property rights on reasonable commercial terms or to transfer or sublicense the intellectual property rights we may have with respect to such activities.

All entities involved in the preparation of therapeutics for clinical trials or commercial sale, including our existing contract manufacturers for components our product candidates, are subject to extensive regulation. Components of a finished therapeutic product approved for commercial sale or used in late-stage clinical trials in the European Union must be manufactured in accordance with cGMP. These regulations govern manufacturing processes and procedures (including record keeping) and the implementation and operation of quality systems to control and assure the quality of investigational products and products approved for sale. Poor control of production processes can lead to the introduction of adventitious agents or other contaminants, or to inadvertent changes in the properties or stability of our product candidates that may not be detectable in final product testing. We or our contract manufacturers must supply all necessary documentation in support of a BLA or MAA on a timely basis. Our facilities and quality

systems and the facilities and quality systems of some or all of our third-party contractors must pass a pre-approval inspection for compliance with the applicable regulations as a condition of regulatory approval of our product candidates or any of our other potential products. In addition, the regulatory authorities may, at any time, audit or inspect a manufacturing facility involved with the preparation of our product candidates or our other potential products or the associated quality systems for compliance with the regulations applicable to the activities being conducted, and they could put a hold on one or more of our clinical trials if the facilities of our contract development and manufacturing organizations, or CDMOs, do not pass such audit or inspections. If these facilities do not pass a pre-approval plant inspection, FDA approval of the products will not be granted.

The regulatory authorities also may, at any time following approval of a product for sale, inspect or audit our manufacturing facilities or those of our third-party contractors. If any such inspection or audit identifies a failure to comply with applicable regulations or if a violation of our product specifications or applicable regulations occurs independent of such an inspection or audit, we or the relevant regulatory authority may require remedial measures that may be costly and/or time-consuming for us or a third party to implement and that may include the temporary or permanent suspension of a clinical trial or commercial sales or the temporary or permanent closure of a facility. Any such remedial measures imposed upon us or third parties with whom we contract could harm our business. If we or any of our third-party manufacturers fail to maintain regulatory compliance, the FDA can impose regulatory sanctions including, among other things, refusal to approve a pending application for a new drug product or biologic product, or revocation of a pre-existing approval. As a result, our business, financial condition and results of operations may be harmed. Additionally, if supply from one approved manufacturer is interrupted, there could be a significant disruption in commercial supply. An alternative manufacturer would need to be qualified through a BLA and/or MAA supplement which could result in further delay. The regulatory agencies may also require additional studies if a new manufacturer is relied upon for commercial production. Switching manufacturers may involve substantial costs and is likely to result in a delay in our desired clinical and commercial timelines.

These factors could cause the delay of clinical trials, regulatory submissions, required approvals or commercialization of our product candidates, cause us to incur higher costs and prevent us from commercializing our products successfully, if approved. Furthermore, if our suppliers fail to meet contractual requirements, and we are unable to secure one or more replacement suppliers capable of production at a substantially equivalent cost, our clinical trials may be delayed or we could lose potential revenue.

Any contamination or interruption in our and viruses to deliver necessary compone

Given the nature of gene therapy manufacturing, there is a risk of contamination. Any contamination could adversely affect our ability to produce product candidates on schedule and could, therefore, harm our results of operations and cause reputational damage. Some of the raw materials required in our manufacturing process are derived from biologic sources. Such raw materials are difficult to procure and may be subject to contamination or recall. A material shortage, contamination, recall or restriction on the use of biologically derived substances in the manufacture of our product candidates could adversely impact or disrupt the commercial manufacturing or the production of clinical material, which could adversely affect our development timelines and our business, financial condition, results of operations and prospects.

If we or our collaborators encounter dif delayed or otherwise adversely affected.

The timely completion of clinical trials in accordance with their protocols depends, among other things, on our ability to enroll a sufficient number of patients who remain in the study until its conclusion. Any natural history studies that we may conduct may fail to provide us with patients for our clinical trials because patients enrolled in the natural history studies may not be good candidates for our clinical trials, or may choose to not enroll in our clinical trials. We may encounter delays in enrolling, or be unable to enroll, a sufficient number of patients to complete any of our clinical trials, and even once enrolled we may be unable to retain a sufficient number of patients to complete any of our trials. The enrollment of patients depends on many factors, including:

- perceived risks and benefits of AAV-based gene therapy approaches for the potential treatment of neurological diseases;
- perceived risks of the delivery procedures;
- the size and nature of the patient population, and the severity and difficulty of diagnosing the disease under investigation;
- the patient eligibility criteria defined in the protocol;
- the size of the patient population required for analysis of the trial’s primary endpoints;

- the proximity of patients to study sites;
- the design of the trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- clinicians' and patients' perceptions as to the potential advantages of the product candidate being studied in relation to other available therapies, including any new products that may be approved for the indications we are investigating;
- patients with preexisting antibodies to the gene therapy vector that preclude their participation in the trial;
- our ability to obtain and maintain patient consents; and
- the risk that patients enrolled in clinical trials will drop out of the trials before completion.

In addition, our clinical trials may compete with other clinical trials for product candidates that are in the same therapeutic areas as our product candidates or approved products for the same clinical indications, and this competition may reduce the number and types of patients available to us, because some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. Since the number of qualified clinical investigators is limited, we expect to conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which may reduce the number of patients who are available for our clinical trials in such clinical trial site.

Delays or failures in planned patient enrollment or retention may result in increased costs, program delays or both, which could have a harmful effect on our ability to develop our product candidates, or could render further development impossible. If we or our collaborators 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 may have an adverse effect on our results of operations and prospects.

Our product candidates may cause serious adverse events or undesirable side effects that could prevent their regulatory approval, cause a more restrictive label, or, result in significant negative commercial consequences.

Serious adverse events or undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA, EMA or other authorities. Results of our clinical trials could reveal a high and unacceptable severity and prevalence of side effects, toxicities or unexpected characteristics, including death. Among the risks in any gene therapy product based on viral vectors are the risks of immunogenicity, elevated liver enzymes, and insertional oncogenesis, which is the process whereby the insertion of a functional gene near a gene that is important in cell growth or division results in uncontrolled cell division, which could potentially enhance the risk of malignant transformation.

If unacceptable side effects or deaths arise in the development of our product candidates, we, the FDA, the IRBs at the institutions in which our studies are conducted, DSMB, EMA or CAT could suspend or terminate our clinical trials or the FDA, EMA or other regulatory authorities could order us to cease clinical trials or deny approval of our product candidates for any or all targeted indications. Undesirable side effects or deaths in clinical trials with our product candidates may cause the FDA or comparable foreign regulatory authorities to place a clinical hold on the associated clinical trials, to require additional studies, or otherwise to delay or deny approval of our product candidates for any or all targeted indications. Treatment-related side effects could also affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. In addition, these side effects may not be appropriately recognized or managed by the treating medical staff. We expect to have to train medical personnel using our product candidates to understand the side effect profiles for our clinical trials and upon any commercialization of any of our product candidates. Inadequate training in recognizing or managing the potential side effects of our product candidates could result in patient injury or death. Any of these occurrences may harm our business, financial condition and prospects significantly.

If any of our product candidates receives marketing approval, and we or others later identify undesirable side effects caused by any such product, including during any long-term follow-up observation period recommended or required for patients who receive treatment using our products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may suspend, limit or withdraw approvals of such product, or seek an injunction against its manufacture and distribution;
- we may be required to recall a product or change the way such product is administered to patients;

- additional restrictions may be imposed on the marketing of the particular product or the manufacturing processes for the product;
- regulatory authorities may require additional warnings on the label, such as a boxed warning or contraindication, or issue safety alerts, Dear Healthcare Provider letters, press releases or other communications containing warnings or other safety information about the product;
- we may be required to implement a Risk Evaluation and Mitigation Strategy, or REMS, or create a medication guide outlining the risks of such side effects for distribution to patients;
- the products could become less competitive;
- we may be subject to fines, injunctions, or the imposition of civil or criminal penalties;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of the particular product candidate, if approved, and could significantly harm our business, results of operations and prospects.

Potential product liability lawsuits against products that we may develop.

The use of our product candidates in clinical trials and the sale of any products for which we obtain marketing approval exposes us to the risk of product liability claims. Product liability claims might be brought against us by consumers, health care providers, pharmaceutical companies or others selling or otherwise coming into contact with our products. On occasion, large judgments have been awarded in class action lawsuits based on products that had unanticipated adverse effects. If we cannot successfully defend against product liability claims, we could incur substantial liability and costs. In addition, regardless of merit or eventual outcome, product liability claims may result in:

- impairment of our business reputation and significant negative media attention;
- withdrawal of participants from our clinical trials;
- significant costs to defend the related litigation and related litigation;
- distraction of management's attention from our primary business;
- substantial monetary awards to patients or other claimants;
- inability to commercialize our product candidates;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- decreased demand for our product candidates, if approved for commercial sale; and
- loss of revenue.

Positive results, if any, obtained in preclinical studies or earlier clinical trials may not be indicative of results in future clinical trials or other studies, and failure to replicate positive results from early studies may inhibit our ability to progress our clinical programs and develop and commercialize product candidates.

Results from previous preclinical studies or clinical trials are not necessarily predictive of future clinical trial results, and interim results of a clinical trial are not necessarily indicative of final results. Our product candidates may fail to show the desired safety and efficacy in clinical development despite positive results in preclinical studies or having successfully advanced through initial clinical trials.

Positive results in preclinical testing and early clinical trials do not ensure that later clinical trials will generate the same results or otherwise provide adequate data to demonstrate the efficacy and safety of a product candidate. Frequently, product candidates that have shown promising results in early clinical trials have subsequently suffered significant setbacks in later clinical trials. In addition, the design of a clinical trial can determine whether its results will support approval of a product and flaws in the design of a clinical trial may not become apparent until the clinical trial is well advanced. We have limited experience designing clinical trials and may be

unable to design and execute a clinical trial to support regulatory approval. There is a high failure rate for drugs and biologic products proceeding through clinical trials. Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials even after achieving promising results in preclinical testing and earlier-stage clinical trials. These setbacks have been caused by, among other things, preclinical findings made while clinical trials were underway or safety or efficacy observations made in clinical trials, including previously unreported adverse events.

Data obtained from preclinical and clinical activities are subject to varying interpretations, which may delay, limit or prevent regulatory approval. In addition, we may experience regulatory delays or rejections as a result of many factors, including due to changes in regulatory policy during the period of our product candidate development. Any such delays could negatively impact our business, financial condition, results of operations and prospects.

The regulatory approval processes of the unpredictable, and if we are ultimately u our business will be substantially harme

The time required to obtain approval by the FDA, EMA and other regulatory authorities is unpredictable but typically takes many years following the commencement of clinical trials and depends upon numerous factors, including the substantial discretion of the regulatory authorities. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions. We have not obtained regulatory approval for any product candidate and it is possible that none of our product candidates in clinical programs or any other product candidates we may seek to develop in the future will ever obtain regulatory approval. Neither we nor any future collaborator is permitted to market any of our product candidates in the United States or the European Union until we receive regulatory approval of a BLA from the FDA or a MAA from the EMA, respectively. It is possible that the FDA may refuse to accept for substantive review any BLAs or the EMA any of our MAAs, that we submit for our product candidates or may conclude after review of our data that our application is insufficient to obtain marketing approval of our product candidates.

Our product candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that a product candidate is safe and effective for its proposed indication;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of a BLA or other submission or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies;
- the FDA or comparable foreign regulatory authorities may fail to approve the companion diagnostics we contemplate developing with partners; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

Prior to obtaining approval to commercialize a product candidate in the United States, the European Union or elsewhere, we or our collaborators must demonstrate with substantial evidence from well-controlled clinical trials, and to the satisfaction of the FDA, EMA or foreign regulatory agencies, that such product candidates are safe and effective for their intended uses. Results from nonclinical studies and clinical trials can be interpreted in different ways. Even if we believe the nonclinical or clinical data for our product candidates are promising, such data may not be sufficient to support approval by the FDA, EMA or other regulatory authorities. The FDA or EMA may also require us to conduct additional preclinical studies or clinical trials for our product candidates either prior to or

post-approval, or it may object to elements of our clinical development program. Depending on the extent of these or any other FDA or EMA required studies, approval of any regulatory approval applications that we submit may be delayed by several years, or may require us to expend significantly more resources than we have available.

Of the large number of potential products in development, only a small percentage successfully complete the FDA, EMA or other foreign regulatory approval processes and are commercialized. The lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our product candidates, which would significantly harm our business, results of operations and prospects.

In addition, even if we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may impose significant limitations in the form of narrow indications, warnings, or a REMS. Regulatory authorities may not approve the price we intend to charge for our products, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. Any of the foregoing scenarios could materially harm the commercial prospects for our product candidates.

Even if we obtain FDA or EMA approval f never obtain approval for or commercial i market potential.

In order to market any products in any particular jurisdiction, we must establish and comply with numerous and varying regulatory requirements on a country-by-country basis regarding safety and efficacy.

Approval by the FDA in the United States or the EMA in the European Union does not ensure approval by regulatory authorities in other countries or jurisdictions. However, the failure to obtain approval in one jurisdiction may negatively impact our ability to obtain approval elsewhere. In addition, clinical trials conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory approval in one country does not guarantee regulatory approval in any other country.

Approval processes vary among countries and can involve additional product testing and validation and additional administrative review periods. Seeking foreign regulatory approval could result in difficulties and increased costs for us and require additional preclinical studies or clinical trials which could be costly and time consuming. Regulatory requirements can vary widely from country to country and could delay or prevent the introduction of our products in those countries. We do not have any product candidates approved for sale in any jurisdiction, including in international markets, and we do not have experience in obtaining regulatory approval in international markets. If we fail to comply with regulatory requirements in international markets or to obtain and maintain required approvals, or if regulatory approvals in international markets are delayed, our target market will be reduced and our ability to realize the full market potential of any product we develop will be unrealized.

Even if we receive regulatory approval o regulatory review, which may result in s regulatory requirements or experience un

Any product candidate for which we obtain marketing approval will be subject to ongoing regulatory requirements for, among other things, manufacturing processes, submission of post-approval clinical data and safety information, labeling, packaging, distribution, adverse event reporting, storage, recordkeeping, export, import, advertising and promotional activities. These requirements include submissions of safety and other post-marketing information and reports, establishment registration and drug listing requirements, continued compliance with cGMP requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping and GCP requirements for any clinical trials that we conduct post-approval.

The FDA and EMA closely regulate the post-approval marketing and promotion of genetic therapy medicines to ensure they are marketed only for the approved indications and in accordance with the provisions of the approved labeling. However, companies may share truthful and not misleading information that is otherwise consistent with a product's FDA approved labeling. The FDA and EMA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we market our products for uses beyond their approved indications, we may be subject to enforcement action for off-label marketing. Violations of the U.S. federal Food, Drug, and Cosmetic Act, or FDCA, relating to the promotion of prescription drugs for unapproved uses may lead to enforcement actions and investigations alleging violations of federal and state health care fraud and abuse laws, as well as state consumer protection laws.

In addition, later discovery of previously unknown adverse events or other problems with our products, manufacturers or manufacturing processes, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

- restrictions on manufacturing such products;
- restrictions on the labeling or marketing of a product;
- restrictions on product distribution or use;
- requirements to conduct post-marketing studies or clinical trials;
- warning or untitled letters, or holds on clinical trials;
- withdrawal of the products from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- fines, restitution or disgorgement of profits or revenues;
- suspension or withdrawal of marketing approvals;
- refusal to permit the import or export of our products;
- product seizure or detention; or
- injunctions or the imposition of civil or criminal penalties.

The FDA's policies, and the policies of foreign regulatory agencies, may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. For example, in December 2016, the 21st Century Cures Act, or Cures Act, was signed into law. The Cures Act, among other things, is intended to modernize the regulation of biologics and spur innovation, but its ultimate implementation is unclear.

We also cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, certain policies of the Trump administration may impact our business and industry. Namely, the Trump administration has taken several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, FDA's ability to engage in routine oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. It is difficult to predict how these requirements will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose restrictions on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained which would adversely affect our business, prospects and ability to achieve or sustain profitability.

Interim "top-line" and preliminary data patient data become available and are su data.

From time to time, we may publish interim "top-line" or preliminary data from our clinical trials. Interim data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Preliminary or "top-line" data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, interim and preliminary data should be viewed with caution until the final data are available. Adverse differences between preliminary or interim data and final data could significantly harm our business prospects.

C h a n g e s i n f u n d i n g f o r t h i e l i F t D A t o a n h d i r o e t h a e n r p e r s o n n e l , o r o t h e r w i s e p r e v e n t n e w p r o d n e g a t i v e l y i m p a c t o u r b u s i n e s s .

The ability of the FDA to review and approve new products can be affected by a variety of factors, including government budget and funding levels, ability to hire and retain key personnel, accept the payment of user fees, and statutory, regulatory, and policy changes. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of other government agencies that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable.

Disruptions at the FDA and other agencies may also slow the time necessary for new drugs to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. For example, over the last several years, including for 35 days beginning on December 22, 2018, the U.S. government has shut down several times and certain regulatory agencies, such as the FDA, have had to furlough critical FDA employees and stop critical activities. Our business depends upon the ability of the FDA to accept and review our potential regulatory filings. If a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our ability to advance clinical development of our product candidates.

W e m a y e x p e n d o u r l i m i t e d r e s o u r c e s t o p c a n d i d a t e s o r i n d i c a t i o n s t h a t m a y b e m o

Because we have limited financial and managerial resources, we focus on research programs and product candidates that we identify for specific indications. As a result, we may forego or delay pursuit of opportunities with other product candidates or for other indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to timely capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications 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 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.

Risks Related to Healthcare Laws and Other Legal Compliance Matters

E n a c t e d a n d f u t u r e h e a l t h c a r e l e g i s l a t i o m a r k e t i n g a p p r o v a l o f a n d c o m m e r c i a l i z e

In the United States, the European Union and other jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes to the healthcare system that could affect our future results of operations. In particular, there have been and continue to be a number of initiatives at the U.S. federal and state levels that seek to reduce healthcare costs and improve the quality of healthcare. For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively the ACA, was enacted, which substantially changed the way healthcare is financed by both governmental and private insurers. Among the provisions of the ACA, those of greatest importance to the pharmaceutical and biotechnology industries include the following:

- an annual, non-deductible fee payable by any entity that manufactures or imports certain branded prescription drugs and biologic agents (other than those designated as orphan drugs), which is apportioned among these entities according to their market share in certain government healthcare programs;
- a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;
- a licensure framework for follow on biologic products;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research; and
- establishment of a Center for Medicare & Medicaid Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

Since its enactment, there have been judicial, Congressional and executive branch challenges to certain aspects of the ACA, and we expect there will be additional challenges and amendments to the ACA in the future. While Congress has not passed comprehensive repeal legislation, it has enacted laws that modify certain provisions of the ACA such as removing penalties, effective as of January 1, 2019, for not complying with the ACA's individual mandate to carry health insurance, delaying the implementation of certain ACA-mandated fees, and increasing the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D. On December 14, 2018, a U.S. District Court Judge in Texas ruled that the ACA is unconstitutional in its entirety because the "individual mandate" was repealed by Congress as part of the legislation enacted in 2017, informally titled the Tax Cuts and Jobs Act, or the Tax Act. While such U.S. District Court Judge, as well as the Trump administration and CMS, have stated that the ruling will have no immediate effect pending appeal of the decision, it is unclear how this decision, subsequent appeals, and other efforts to repeal and replace the ACA will impact the ACA and our business.

In addition, other legislative changes have been proposed and adopted in the United States since the ACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, led to aggregate reductions of Medicare payments to providers of 2% per fiscal year. These reductions went into effect in April 2013 and, due to subsequent legislative amendments to the statute will remain in effect through 2027 unless additional action is taken by Congress. In January 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws or any other similar laws introduced in the future may result in additional reductions in Medicare and other health care funding, which could negatively affect our customers and accordingly, our financial operations.

Moreover, payment methodologies may be subject to changes in healthcare legislation and regulatory initiatives. For example, CMS may develop new payment and delivery models, such as bundled payment models. In addition, recently there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several U.S. Congressional inquiries and proposed and enacted federal legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under Medicare, and review the relationship between pricing and manufacturer patient programs. The Trump administration's budget proposal for fiscal years 2019 and 2020 contain further drug price control measures that could be enacted during the budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid, and to eliminate cost sharing for generic drugs for low-income patients. Additionally, on May 11, 2018, President Trump laid out his administration's "Blueprint" to lower drug prices and reduce out-of-pocket costs of prescription drugs that contains additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. The Department of Health and Human Services, or HHS, has already solicited feedback on some of these measures and is implementing others under its existing authority. For example, in May 2019, CMS issued a final rule to allow Medicare Advantage Plans the option of using step therapy for Part B drugs beginning January 1 2020. This final rule codified CMS's policy change that was effective January 1, 2019. Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. We expect that additional U.S. federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that the U.S. federal government will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures

Individual states in the United States have also increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. Legally mandated price controls on payment amounts by third-party payors or other restrictions could harm our business, results of operations, financial condition and prospects. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. This could reduce the ultimate demand for our product candidates or put pressure on our product pricing.

In the European Union, similar political, economic and regulatory developments may affect our ability to profitably commercialize our product candidates, if approved. In addition to continuing pressure on prices and cost containment measures, legislative developments at the EU or member state level may result in significant additional requirements or obstacles that may increase our operating costs. The delivery of healthcare in the European Union, including the establishment and operation of health services and the pricing and reimbursement of medicines, is almost exclusively a matter for national, rather than European Union, law and policy. National governments and health service providers have different priorities and approaches to the delivery of health care and the pricing and reimbursement of products in that context. In general, however, the healthcare budgetary constraints in most EU member states have resulted in restrictions on the pricing and reimbursement of medicines by relevant health service providers. Coupled with ever-increasing European Union and national regulatory burdens on those wishing to develop and market products, this could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to commercialize our product candidates, if approved.

In markets outside of the United States and the European Union, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action in the United States, the European Union or any other jurisdiction. If we or any third parties we may engage are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we or such third parties are not able to maintain regulatory compliance, our product candidates may lose any regulatory approval that may have been obtained and we may not achieve or sustain profitability.

Our business operations and current and payors, patient organizations and custom penalties.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute our product candidates, if approved. Such laws include:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing any remuneration (including any kickback, bribe, or certain rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, lease, order or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, under U.S. federal and state healthcare programs such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- the U.S. federal civil and criminal false claims and civil monetary penalties laws, including the civil False Claims Act, which can be enforced by private individuals on behalf of the government through civil whistleblower or qui tam actions, prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, to the U.S. federal government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. federal government. In addition, the government may assert that a claim including items and services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- the U.S. federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created additional federal civil and criminal liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;

- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 and their implementing regulations, which impose certain obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information without appropriate authorization by covered entities subject to the rule, such as health plans, healthcare clearinghouses and certain healthcare providers as well as their business associates, independent contractors of a covered entity that perform certain services involving the use or disclosure of individually identifiable health information;
- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers;
- the FDCA, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;
- the U.S. Public Health Service Act, which prohibits, among other things, the introduction into interstate commerce of a biological product unless a biologics license is in effect for that product;
- the U.S. Physician Payments Sunshine Act and its implementing regulations, which require certain manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid, or the Children's Health Insurance Program, with specific exceptions, to report annually to CMS information related to certain payments and other transfers of value to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members;
- analogous U.S. state laws and regulations, including: state anti-kickback and false claims laws, which may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by any third-party payor, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to drug pricing and marketing information, which requires tracking gifts and other remuneration and items of value provided to healthcare professionals and entities; state and local laws that require the registration of pharmaceutical sales and medical representatives; 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 HIPAA, thus complicating compliance efforts; and
- similar healthcare laws and regulations in the European Union and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers and laws governing the privacy and security of personal data, including the General Data Protection Regulation, which imposes obligations and restrictions on the collection and use of personal data relating to individuals located in the E.U. and E.E.A. (including with regard to health data).

Ensuring that our internal operations and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, disgorgement, imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations. If any of the physicians or other providers or entities with whom we expect to do business are found to not be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs and imprisonment, which could affect our ability to operate our business. Further, defending against any such actions can be costly, time-consuming and may require significant personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

We are subject to certain U.S. and foreig regulations. We can face serious conseque

U.S. and foreign anti-corruption, anti-money laundering, export control, sanctions, and other trade laws and regulations, or collectively, Trade Laws, prohibit, among other things, companies and their employees, agents, clinical research organizations, legal counsel, accountants, consultants, contractors, and other partners from authorizing, promising, offering, providing, soliciting, or receiving directly or indirectly, corrupt or improper payments or anything else of value to or from recipients in the public or private sector. Violations of Trade Laws can result in substantial criminal fines and civil penalties, imprisonment, the loss of trade privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm, and other consequences. We have direct or indirect interactions with officials and employees of government agencies or government-affiliated hospitals, universities, and other organizations. We also expect our non-U.S. activities to increase over time. We expect to rely on third parties for research, preclinical studies, and clinical trials and/or to obtain necessary permits, licenses, patent registrations, and other marketing approvals. We can be held liable for the corrupt or other illegal activities of our personnel, agents, or partners, even if we do not explicitly authorize or have prior knowledge of such activities.

We are subject to environmental, health expenses in connection with environmenta

Our operations, including our development, testing and manufacturing activities, are subject to numerous environmental, health and safety laws and regulations. These laws and regulations govern, among other things, the controlled use, handling, release and disposal of and the maintenance of a registry for, hazardous materials and biological materials, such as chemical solvents, human cells, carcinogenic compounds, mutagenic compounds and compounds that have a toxic effect on reproduction, laboratory procedures and exposure to blood-borne pathogens. If we fail to comply with such laws and regulations, we could be subject to fines or other sanctions.

As with other companies engaged in activities similar to ours, we face a risk of environmental liability inherent in our current and historical activities, including liability relating to releases of or exposure to hazardous or biological materials. Environmental, health and safety laws and regulations are becoming more stringent. We may be required to incur substantial expenses in connection with future environmental compliance or remediation activities, in which case, the production efforts of our third-party manufacturers or our development efforts may be interrupted or delayed.

Risks Related to Commercialization

We face significant competition from oth fail to compete effectively.

Drug development, particularly in the gene therapy field, is highly competitive and subject to rapid and significant technological advancements. As a significant unmet medical need exists in the neurology field, particularly for the treatment of Parkinson's disease and other neurodegenerative diseases, there are several large and small pharmaceutical companies focused on delivering therapeutics for the treatment of these diseases. Further, it is likely that additional drugs will become available in the future for the treatment of our target indications.

We consider our most direct competitors with respect to PR001 to be companies developing GCase pathway-targeting therapies, including Sanofi Genzyme, a unit of Sanofi S.A., and Lysosomal Therapeutics, Inc. Sanofi Genzyme is developing SAR402671, a small molecule GluCer synthase inhibitor for the treatment of Parkinson's disease with a GBA mutation and for the treatment of Type 3 Gaucher disease in adult patients. In addition, Lysosomal Therapeutics, Inc. is developing LTI-291, a small molecule activator of the GCase enzyme, for the treatment of Parkinson's patients with a heterozygous mutation in the GBA gene. In addition to these investigational programs, there are several products targeting the GCase pathway that are approved or in development for Type 1 Gaucher disease, including approved enzyme replacement therapies, or ERTs, and substrate reduction therapies, or SRTs, but these ERTs and SRTs are not approved for neuronopathic Gaucher disease in the United States. There are other gene therapy companies that are attempting to use both AAV and lentiviral gene therapy approaches to treat Gaucher disease, but to our knowledge, none of those companies has disclosed plans to pursue PD-GBA. Several companies are also developing therapies designed to prevent the progression of Parkinson's disease and FTD. Examples include therapies in development by Alector, Biogen Inc., Denali Therapeutics Inc., Prothena Corporation plc and Roche Holding AG.

Many of our existing or potential competitors have substantially greater financial, technical and human resources than we do and significantly greater experience in the discovery and development of product candidates, as well as in obtaining regulatory approvals of those product candidates in the United States and in foreign countries. Our current and potential future competitors may also have significantly more experience commercializing drugs, particularly gene therapy and other biological products, that have been approved for marketing. Mergers and acquisitions in the pharmaceutical and biotechnology industries could result in even more resources being concentrated among a small number of our competitors.

We will face competition from other drugs or from other non-drug products currently approved or that will be approved in the future in the neurology field, including for the treatment of Parkinson's disease. Therefore, our ability to compete successfully will depend largely on our ability to:

- develop and commercialize drugs that are superior to other products in the market;
- demonstrate through our clinical trials that our product candidates are differentiated from existing and future therapies;
- attract qualified scientific, product development and commercial personnel;
- obtain patent or other proprietary protection for our medicines;
- obtain required regulatory approvals;
- obtain coverage and adequate reimbursement from, and negotiate competitive pricing with, third-party payors; and
- successfully collaborate with pharmaceutical companies in the discovery, development and commercialization of new medicines.

The availability of our competitors' products could limit the demand, and the price we are able to charge, for any product candidate we develop. The inability to compete with existing or subsequently introduced drugs would have an adverse impact on our business, financial condition and prospects. In addition, the reimbursement structure of approved gene therapies by other companies could impact the anticipated reimbursement structure of our gene therapies, if approved, and our business, financial condition, results of operations and prospects.

Established pharmaceutical companies may invest heavily to accelerate discovery and development of novel compounds or to in-license novel compounds that could make our product candidates less competitive. In addition, any new product that competes with an approved product must demonstrate compelling advantages in efficacy, convenience, tolerability and safety in order to overcome price competition and to be commercially successful. Accordingly, our competitors may succeed in obtaining patent protection, discovering, developing, receiving regulatory and marketing approval for or commercializing drugs before we do, which would have an adverse impact on our business and results of operations.

T h e s u c c e s s f u l c o m m e r c i a l i z a t i o n o f o u r h e a l t h i n s u r e r s e s t a b l i s h c o v e r a g e , a d e q a d e q u a t e r e i m b u r s e m e n t f o r o u r p r o d u c t c a b i l i t y t o g e n e r a t e r e v e n u e .

The availability of coverage and adequacy of reimbursement by governmental healthcare programs such as Medicare and Medicaid, private health insurers and other third-party payors are essential for most patients to be able to afford medical services and pharmaceutical products such as our product candidates, assuming FDA approval. Our ability to achieve acceptable levels of coverage and reimbursement for our products or procedures using our products by governmental authorities, private health insurers and other organizations will have an effect on our ability to successfully commercialize our product candidates. Obtaining coverage and adequate reimbursement for our products may be particularly difficult because of the higher prices often associated with drugs administered under the supervision of a physician. Separate reimbursement for the product itself or the treatment or procedure in which our product is used may not be available. A decision by a third-party payor not to cover or separately reimburse for our products or procedures using our products, could reduce physician utilization of our products once approved. Assuming there is coverage for our product candidates or procedures using our product candidates by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. We cannot be sure that coverage and reimbursement in the United States, the European Union or elsewhere will be available for our product candidates or any product that we may develop, and any reimbursement that may become available may not be adequate or may be decreased or eliminated in the future.

Third-party payors increasingly are challenging prices charged for pharmaceutical products and services, and many third-party payors may refuse to provide coverage and reimbursement for particular drugs or biologics when an equivalent generic drug, biosimilar or a less expensive therapy is available. It is possible that a third-party payor may consider our product candidates as substitutable and only offer to reimburse patients for the less expensive product. Even if we show improved efficacy or improved convenience of administration with our product candidates, pricing of existing third-party therapeutics may limit the amount we will be able to charge for our product candidates. These payors may deny or revoke the reimbursement status of a given product or establish prices for new or existing marketed products at levels that are too low to enable us to realize an appropriate return on our investment in our product candidates. If reimbursement is not available or is available only at limited levels, we may not be able to successfully commercialize our product candidates, and may not be able to obtain a satisfactory financial return on our product candidates.

There is significant uncertainty related to the insurance coverage and reimbursement of newly-approved products. In the United States, third-party payors, including private and governmental payors, such as the Medicare and Medicaid programs, play an important role in determining the extent to which new drugs and biologics will be covered. The Medicare and Medicaid programs increasingly are used as models in the United States for how private payors and other governmental payors develop their coverage and reimbursement policies for drugs and biologics. Some third-party payors may require pre-approval of coverage for new or innovative devices or drug therapies before they will reimburse healthcare providers who use such therapies. We cannot predict at this time what third-party payors will decide with respect to the coverage and reimbursement for our product candidates.

No uniform policy for coverage and reimbursement for products exists among third-party payors in the United States. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that will require us to provide scientific and clinical support for the use of our product candidates to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. Furthermore, rules and regulations regarding reimbursement change frequently, in some cases on short notice, and we believe that changes in these rules and regulations are likely.

Our product candidates and other gene therapies are designed to be single-dose treatments. Historically, chronic conditions such as Parkinson's disease and Gaucher disease have not had single-dose treatment options. Given the novelty of this treatment approach, significant uncertainty exists with respect to the pricing structure of gene therapies and the business model of pharmaceutical companies that do not have product candidates that require recurring purchases. If other companies establish a new pricing structure or business model, including payment based on demonstration of long term efficacy, our ability to price or obtain reimbursement for our products may be adversely affected. If such pricing structure or business model do not adequately fund the costs of our research and development, manufacturing and commercialization efforts, our business may be adversely affected.

Additionally, we or our collaborators may develop companion diagnostic tests for use with our product candidates as we are targeting certain genetically defined populations for our treatments. We, or our collaborators, will be required to obtain coverage and reimbursement for these tests separate and apart from the coverage and reimbursement we seek for our product candidates, once approved. While we, or our collaborators, have not yet developed any companion diagnostic test for our product candidates, if we do, there is significant uncertainty regarding our ability to obtain coverage and adequate reimbursement for the same reasons applicable to our product candidates.

Outside the United States, international operations are generally subject to extensive governmental price controls and other market regulations, and we believe the increasing emphasis on cost-containment initiatives in Europe and other countries have and will continue to put pressure on the pricing and usage of our product candidates. In many countries, the prices of medical products are subject to varying price control mechanisms as part of national health systems. Other countries allow companies to fix their own prices for medical products, but monitor and control company profits. Additional foreign price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our product candidates. Accordingly, in markets outside the United States, the reimbursement for our product candidates may be reduced compared with the United States and may be insufficient to generate commercially-reasonable revenue and profits.

Moreover, increasing efforts by governmental and third-party payors in the United States and abroad to cap or reduce healthcare costs may cause such organizations to limit both coverage and the level of reimbursement for newly approved products and, as a result, they may not cover or provide adequate payment for our product candidates. We expect to experience pricing pressures in connection with the sale of our product candidates due to the trend toward managed health care, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and biologics and surgical procedures and other treatments, has become intense. As a result, increasingly high barriers are being erected to the entry of new products.

Even if our product candidates receive marketing approval, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors or others in the medical co

If our product candidates receive marketing approval, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors and others in the medical community. If they do not achieve an adequate level of acceptance, we may not generate significant product revenues or become profitable. The degree of market acceptance of our product candidates, if approved for commercial sale, will depend on a number of factors, including but not limited to:

- the efficacy and potential advantages compared to alternative treatments;
- effectiveness of sales and marketing efforts;
- the cost of treatment in relation to alternative treatments, including any similar generic treatments;
- our ability to offer our products for sale at competitive prices;
- the convenience and ease of administration;
- the availability of centers and medical professionals that can and will perform the applicable procedure;
- the frequency of genotyping in medical practice;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the strength of marketing and distribution support;
- the timing of market introduction of competitive products;
- the availability of third-party payor coverage and adequate reimbursement;
- product labeling or product insert requirements of the FDA, EMA or other regulatory authorities, including any limitations or warnings contained in a product's approved labeling;
- the incidence and severity of any side effects; and
- any restrictions on the use of our product together with other medications.

Because we expect sales of our product candidates, if approved, to generate substantially all of our product revenues, the failure of our product candidates to find market acceptance would harm our business and could require us to seek additional financing.

If we are unable to establish sales, mark may not be successful in commercializing even if they are approved.

We do not have any infrastructure for the sales, marketing or distribution of our products, and the cost of establishing and maintaining such an organization may exceed the cost-effectiveness of doing so. We expect to build a focused sales, distribution and marketing infrastructure to market our product candidates in the United States and European Union, if approved. There are significant expenses and risks involved with establishing our own sales, marketing and distribution capabilities, including our ability to hire, retain and appropriately incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel, and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities could delay any product launch, which would adversely impact the commercialization of our product candidates. Additionally, if the commercial launch of our product candidates for which we recruit a sales force and establish marketing capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses. This may be costly, and our investment would be lost if we cannot retain or reposition our sales and marketing personnel.

We may not have the resources in the foreseeable future to allocate to the sales and marketing of our product candidates in certain international markets. Therefore, our future sales in these markets will largely depend on our ability to enter into and maintain collaborative relationships for such capabilities, the collaborator's strategic interest in the product and such collaborator's ability to successfully market and sell the product. We may pursue collaborative arrangements regarding the sale and marketing of PR001, PR006 and PR004, if approved, for certain markets overseas; however, we cannot assure that we will be able to establish or maintain such collaborative arrangements, or if able to do so, that they will have effective sales forces.

If we are unable to build our own sales force or negotiate a collaborative relationship for the commercialization of PR001 or any of our other product candidates, if approved, we may be forced to delay the potential commercialization of PR001 or any of our other product candidates or reduce the scope of our sales or marketing activities for PR001 or any of our other product candidates. If we elect to increase our expenditures to fund commercialization activities internationally, we will need to obtain additional capital, which may not be available to us on acceptable terms, or at all. We could enter into arrangements with collaborative partners at an earlier stage than otherwise would be ideal and we may be required to relinquish rights to PR001 or any of our other product candidates or otherwise agree to terms unfavorable to us, any of which may have an adverse effect on our business, operating results and prospects.

If we are unable to establish adequate sales, marketing and distribution capabilities, either on our own or in collaboration with third parties, we will not be successful in commercializing PR001 or any of our other product candidates, if approved, and may not become profitable and may incur significant additional losses. We will be competing with many companies that currently have extensive and well-funded marketing and sales operations. Without an internal team or the support of a third party to perform marketing and sales functions, we may be unable to compete successfully against these more established companies.

If we obtain approval to commercialize a with international operations could adve

If PR001 or any of our other product candidates are approved for commercialization, we may seek to enter into agreements with third parties to market them in certain jurisdictions outside the United States and the European Union. We expect that we would be subject to additional risks related to international pharmaceutical operations, including:

- different regulatory requirements for drug and biologic approvals and rules governing drug and biologic commercialization in foreign countries;
- reduced protection for intellectual property rights;
- foreign reimbursement, pricing and insurance regimes;
- unexpected changes in tariffs, trade barriers and regulatory requirements;
- economic weakness, including inflation, or political instability in particular foreign economies and markets;
- foreign currency fluctuations, which could result in increased operating expenses and reduced revenues, and other obligations incident to doing business in another country;
- business interruptions resulting from geopolitical actions, including war and terrorism or natural disasters including earthquakes, typhoons, floods and fires, or from economic or political instability;
- greater difficulty with enforcing our contracts;
- potential noncompliance with the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act 2010 and similar anti-bribery and anticorruption laws in other jurisdictions; and
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad.

We have no prior experience in these areas. In addition, there are complex regulatory, tax, labor and other legal requirements imposed by individual countries in Europe with which we will need to comply. If we are unable to successfully manage the challenges of international expansion and operations, our business and operating results could be harmed.

Any product candidates for which we inte

The ACA includes a subtitle called the Biologics Price Competition and Innovation Act of 2009, or BPCIA, which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-licensed reference biological product. Under the BPCIA, an application for a biosimilar product may not be submitted to the FDA until four years following the date that the reference product was first licensed by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing the sponsor's own pre-clinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation and meaning are subject to uncertainty. While it is uncertain when such processes intended to implement BPCIA may be fully adopted by the FDA, any such processes could have an adverse effect on the future commercial prospects for our biological products.

There is a risk that any of our product candidates approved as a biological product under a BLA would not qualify for the 12-year period of exclusivity or that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider our product candidates to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing. If competitors are able to obtain marketing approval for biosimilars referencing our candidates, if approved, our products may become subject to competition from such biosimilars, with the attendant competitive pressure and potential adverse consequences.

Risks Related to Our Dependence on Third Parties

We currently contract with third parties Relying on third parties increases the ri therapeutics that we may develop and com could delay, prevent, or impair our clini

We currently rely on third-party manufacturers for the manufacture of plasmids and viruses used in the production of our product candidates. We do not have a long term supply agreement with any of the third-party manufacturers, and we purchase our required supply on a purchase order basis.

We may be unable to establish any agreements with third-party manufacturers or to do so on acceptable terms. Even if we are able to establish agreements with third-party manufacturers, reliance on third-party manufacturers entails additional risks, including:

- the possible breach of the manufacturing agreement by the third party;
- the possible termination or nonrenewal of the agreement by the third party at a time that is costly or inconvenient for us;
- delays due to limited supply or capacity of production facilities and/or failure to meet standards for quality; and
- reliance on the third party for regulatory compliance, quality assurance, safety, and pharmacovigilance and related reporting.

Third-party manufacturers may not be able to comply with cGMP regulations or other regulatory requirements that might be required by the FDA or EMA. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocations, seizures or recalls of product candidates or medicines, operating restrictions, and criminal prosecutions, any of which could adversely affect supplies of our candidates and harm our business, financial condition, results of operations and prospects.

Any therapies that we may develop may compete with other product candidates and products for access to manufacturing facilities. There are a limited number of manufacturers that operate under cGMP regulations and that might be capable of manufacturing for us. Any performance failure on the part of our existing or future manufacturers could delay clinical development or marketing approval.

Our current and anticipated future dependence upon others for the manufacture of any product candidates we may develop or any components required for the manufacture of our product candidates may adversely affect our ability to meet our clinical timelines, our future profit margins and our ability to commercialize any product candidates that receive marketing approval on a timely and competitive basis.

We may collaborate with third parties for the development and commercialization of our product candidates, and establishing and maintaining collaborations may significantly limit our ability to successfully develop, grow revenue and realize value from our product candidates.

We may seek collaborative relationships for the development and commercialization of our product candidates. Failure to establish collaborative relationships for our product candidates may significantly impair their commercial potential. We also may need to enter into collaborative relationships to provide funding to support our other research and development programs. The process of establishing and maintaining collaborative relationships is difficult, time-consuming and involves significant uncertainty, such as:

- a collaboration partner may shift its priorities and resources away from our product candidates due to a change in business strategies, or a merger, acquisition, sale or downsizing;
- a collaboration partner may seek to renegotiate or terminate their relationships with us due to unsatisfactory clinical results, manufacturing issues, a change in business strategy, a change of control or other reasons;
- a collaboration partner may cease development in therapeutic areas which are the subject of our strategic collaboration;
- a collaboration partner may not devote sufficient capital or resources towards our product candidates;
- a collaboration partner may change the success criteria for a product candidate thereby delaying or ceasing development of such candidate;
- a significant delay in initiation of certain development activities by a collaboration partner will also delay payment of milestones tied to such activities, thereby impacting our ability to fund our own activities;
- a collaboration partner may fail to comply with applicable regulatory requirements, thereby jeopardizing our ability to successfully develop and seek approval for our product candidates, on a timely basis or at all, or otherwise exposing us to potential liability;
- a collaboration partner could develop a product that competes, either directly or indirectly, with our product candidate;
- a collaboration partner with commercialization obligations may not commit sufficient financial or human resources to the marketing, distribution or sale of a product;
- a collaboration partner with manufacturing responsibilities may encounter regulatory, resource or quality issues and be unable to meet demand requirements;
- a collaboration partner may terminate a strategic alliance;
- a dispute may arise between us and a partner concerning the research, development or commercialization of a product candidate resulting in a delay in milestones, royalty payments or termination of an alliance and possibly resulting in costly litigation or arbitration which may divert management attention and resources; and
- a partner may use our products or technology in such a way as to make us subject to litigation with a third party.

If any collaborator fails to fulfill its responsibilities in a timely manner, or at all, our research, clinical development, manufacturing or commercialization efforts related to that collaboration could be delayed or terminated, or it may be necessary for us to assume responsibility for expenses or activities that would otherwise have been the responsibility of our collaborator. If we are unable to establish and maintain collaborative relationships on acceptable terms or to successfully transition terminated collaborative agreements, we may have to delay or discontinue further development of one or more of our product candidates, undertake development and commercialization activities at our own expense or find alternative sources of capital. Moreover, any collaborative partners we enter into agreements with in the future may shift their priorities and resources away from our product candidates or seek to renegotiate or terminate their relationships with us.

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third parties perform in an unsatilsdf abcet oh

We expect to rely on CROs and clinical trial sites to ensure our clinical trials are conducted properly and on time. We may also engage third parties such as clinical data management organizations, medical institutions and clinical investigators to conduct or assist in our clinical trials or other clinical development work. While we will have agreements governing their activities, we will have limited influence over their actual performance. We will control only certain aspects of our third-party service providers' activities. Nevertheless, we will be responsible for ensuring that each of our clinical studies is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards. Our reliance on these third-parties does not relieve us of our regulatory responsibilities. If any locations terminate the clinical trial, we would be required to find another party to conduct any new trials. We may be unable to find a new party to conduct new trials of our product candidates or obtain clinical supply of our product candidates or AAV vectors for such trials.

We and our third-party service providers are required to comply with the FDA's GCPs for conducting, recording and reporting the results of IND-enabling studies and clinical studies to assure that the data and reported results are credible and accurate and that the rights, integrity and confidentiality of clinical trial participants are protected. We are also required to register ongoing clinical trials and post the results of completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within specified timeframes. The FDA enforces these GCPs through periodic inspections of trial sponsors, principal investigators and clinical trial sites at which the FDA may determine that our clinical trials did not comply with GCPs. If we or our third-party service providers fail to comply with applicable GCPs, the clinical data generated in our future clinical trials may be deemed unreliable and the FDA may require us to perform additional clinical trials before approving any marketing applications. In addition, our future clinical trials will require a sufficient number of patients to evaluate the safety and effectiveness of our product candidates. Accordingly, if we or our third-party service providers fail to comply with these regulations or fail to recruit a sufficient number of patients, we may be required to repeat such clinical trials, which would delay the regulatory approval process. Failure to comply can also result in fines, adverse publicity, and civil and criminal sanctions.

Our third-party service providers are not our employees, and we are therefore unable to directly monitor whether or not they devote sufficient time and resources to our clinical and nonclinical programs. These third-party service providers may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other drug development activities that could harm our competitive position. If our third-party service providers do not successfully carry out their contractual duties or obligations, fail to meet expected deadlines or comply with applicable regulatory requirements, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements, or for any 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 financial results and the commercial prospects for our product candidates would be harmed, our costs could increase, and our ability to generate revenues could be delayed.

Risks Related to Intellectual Property

We depend on proprietary technology lice
additional proprietary rights from third

We currently in-license certain intellectual property from REGENXBIO. We are a party to agreements with REGENXBIO for certain technology and AAV9 vector-related patents, and we may enter into additional agreements, including license agreements, with other parties in the future that impose diligence, development and commercialization timelines, milestone payments, royalties, insurance and other obligations on us. For example, in exchange for the rights granted to us by REGENXBIO, we are obligated to pay an annual fee, certain royalty percentages on net sales of licensed products, and certain percentages of proceeds on sublicensing fees. We are also obligated to achieve certain development milestones with respect to licensed products in our fields of use within specified time periods. If we fail to comply with our obligations to REGENXBIO or any of our other current or future collaborators, our counterparties may have the right to terminate these agreements, in which event we might not be able to develop, manufacture or market any product candidate that is covered by these agreements, which could adversely affect the value of the product candidate being developed under any such agreement. Termination of these agreements or reduction or elimination of our rights under these agreements may result in us having to negotiate new or reinstated agreements with less favorable terms, or cause us to lose our rights under these agreements, including our rights to important intellectual property or technology.

We may rely on third parties from whom we license proprietary technology to file and prosecute patent applications and maintain patents and otherwise protect the intellectual property we license from them. We may have limited control over these activities or any other intellectual property that may be related to our in-licensed intellectual property. For example, we cannot be certain that such activities by these licensors will be conducted in compliance with applicable laws and regulations or will result in valid and enforceable patents and other intellectual property rights. We may have limited control over the manner in which our licensors initiate an infringement proceeding against a third-party infringer of the intellectual property rights, or defend certain of the intellectual property that may be licensed to us. It is possible that the licensors' infringement proceeding or defense activities may be less vigorous than if we conduct them ourselves. The licensing and acquisition of third-party intellectual property rights is a competitive practice, and companies that may be more established, or have greater resources than we do, may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive in order to commercialize our product candidates. More established companies may have a competitive advantage over us due to their larger size and cash resources or greater clinical development and commercialization capabilities. There can be no assurance that we will be able to successfully complete such negotiations and ultimately acquire the rights to the intellectual property surrounding the additional product candidates that we may seek to acquire. Furthermore, we may be unable to in-license any compositions, methods of use, processes, or other third-party intellectual property rights from third parties, which we identify as necessary for our product candidates.

If we are unable to obtain and maintain protection obtained is not sufficiently b

We rely, and will continue to rely, upon a combination of patents, trade secret protection and confidentiality agreements to protect the intellectual property related to our proprietary technologies, product candidate development programs and product candidates. Our success depends in large part on our ability to secure and maintain patent protection in the United States and other countries with respect to our current product candidates and any future product candidates we may develop. We seek to protect our proprietary position by filing or collaborating with our licensors to file patent applications in the United States and abroad related to our proprietary technologies, development programs and product candidates. The patent prosecution process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. Moreover, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain.

It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. We may not have the right to control the preparation, filing, and prosecution of patent applications, or to maintain the rights to patents licensed to third parties. Therefore, these patents and patent applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our proprietary products and technology, including current product candidates, any future product candidates we may develop, and our gene regulation technology in the United States or in other foreign countries, in whole or in part. Alternately, our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from using our technology or from developing competing products and technologies. There is no assurance that all potentially relevant prior art relating to our patents and patent applications has been found, which can prevent a patent from issuing from a pending patent application or later invalidate or narrow the scope of an issued patent. For example, publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing or, in some cases, not at all. Therefore, we cannot know with certainty whether we were the first to make the inventions claimed in our patents or pending patent applications, or that we were the first to file for patent protection of such inventions. Even if patents do successfully issue and even if such patents cover our current product candidates, any future product candidates we may develop and our gene regulation technology, third parties may challenge their validity, ownership, enforceability or scope thereof, which may result in such patents being narrowed, invalidated, or held unenforceable or circumvented. Any successful challenge to these patents or any other patents owned by or licensed to us could deprive us of rights necessary for the successful commercialization of any of our product candidates or gene regulation technology. In addition, the issuance of a patent does not give us the right to practice the patented invention. Third parties may have blocking patents that could prevent us from marketing our product candidate, if approved, or practicing our own patented technology. Our competitors may be able to circumvent our patents by developing similar or alternative product candidates in a non-infringing manner. Further, if we encounter delays in regulatory approvals, the period of time during which we could market a product candidate and our gene regulation technology under patent protection could be reduced. If any of our patents expire or are challenged, invalidated, circumvented or otherwise limited by third parties prior to the commercialization of our product candidate, and if we do not own or have exclusive rights to other enforceable patents protecting our product candidate or technologies, competitors and other third parties could market products and use processes that are substantially similar, or superior, to ours and our business would suffer.

If the patent applications we hold or have in-licensed with respect to our development programs and product candidates fail to issue, if their validity, breadth or strength of protection is threatened, or if they fail to provide meaningful exclusivity for any of our current or future product candidates or technology, it could dissuade companies from collaborating with us to develop product candidates, encourage competitors to develop competing products or technologies and threaten our ability to commercialize future product candidates. Any such outcome could harm our business.

We are a party to intellectual property license agreements with REGENXBIO which are important to our business, and we expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that future license agreements will impose, various diligence, royalties and other obligations on us. If we fail to comply with our obligations under these agreements, or we are subject to a bankruptcy, or, in some cases, under other circumstances, the licensor may have the right to terminate the license, in which event we would not be able to market product candidate(s) covered by the license. In addition, certain of these license agreements are not assignable by us without the consent of the respective licensor, which may have an adverse effect on our ability to engage in certain transactions.

The patent position of biotechnology and pharmaceutical companies is generally highly uncertain, involves complex legal, scientific and factual questions, and is characterized by the existence of large numbers of patents and frequent litigation based on allegations of patent or other intellectual property infringement or violation. The standards that the U.S. Patent and Trademarks Office, or the USPTO, and its foreign counterparts use to grant patents are not always applied predictably or uniformly. In addition, the laws of jurisdictions outside the United States may not protect our rights to the same extent as the laws of the United States, and many companies have encountered significant problems in protecting and defending such rights in foreign jurisdictions. For example, European patent law restricts the patentability of methods of treatment of the human body more than United States law does. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. Since patent applications in the United States and other jurisdictions are confidential for a period of time after filing, we cannot be certain that we were the first to file for patents covering our inventions. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in the issuance of patents, or may result in the issuance of patents which fail to protect our technology or products, in whole or in part, or which fail to effectively prevent others from commercializing competitive technologies and products.

The issuance of a patent is not conclusive as to its inventorship, ownership, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. We may become involved in opposition, derivation, reexamination, inter partes review, post-grant review or interference proceedings challenging our owned or licensed patent rights. For example, with respect to our licensed patents and patent applications from REGENXBIO, competitors may claim that they invented the inventions claimed in our issued patents or patent applications prior to the inventors of our licensed patents, or may have filed patent applications before the Trustees of the University of Pennsylvania, or UPenn, as owner of the patent rights licensed by us from REGENXBIO. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights. Thus, even if our patent applications issue as patents, they may not issue in a form that will provide us with meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Moreover, patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after it is filed. Various extensions may be available; however the life of a patent, and the protection it affords, is limited. Without patent protection for our current or future product candidates, we may be open to competition from generic versions of such products. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

Third parties may assert claims against us alleging that we have infringed, misappropriated or otherwise violated their intellectual property rights, which could prevent or delay the development and commercialization of our product candidates or subject us to substantial liability.

Our commercial success depends, in part, upon our ability to develop, manufacture, market and sell our product candidates without alleged or actual infringement, misappropriation or other violation of the patents and proprietary rights of third parties. However, our research, development and commercialization activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. Litigation relating to infringement or misappropriation of patent and other intellectual property rights in the pharmaceutical and biotechnology industries is common, including patent infringement lawsuits, interferences, derivation and administrative law proceedings, inter partes review and post-grant review before the USPTO, as well as oppositions and similar processes in foreign jurisdictions. The various markets in which we plan to operate are subject to frequent and extensive litigation regarding patents and other intellectual property rights. Our competitors in both the United States and abroad, many of which have substantially greater resources and have made substantial investments in patent portfolios and competing technologies, may have applied for or obtained or may in the future apply for or obtain, patents that will prevent, limit or otherwise interfere with our ability to make, use and sell, if approved, our product candidates. In addition, many companies in intellectual property-dependent industries, including the biotechnology and pharmaceutical industries, have employed intellectual property litigation as a means to gain an advantage over their competitors. Numerous U.S., EU and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we are developing product candidates, and as the biotechnology and pharmaceutical industries expand and more patents are issued, and as we gain greater visibility and market exposure as a public company, the risk increases that our product candidates may be subject to claims of infringement of the intellectual property rights of third parties. Some claimants may have substantially greater resources than we do and may be able to sustain the costs of complex intellectual property litigation to a greater degree and for longer periods of time than we could. In addition, patent holding companies that focus solely on extracting royalties and settlements by enforcing patent rights may target us.

We may be subject to third-party claims including patent infringement, interference or derivation proceedings, post-grant review and inter partes review before the USPTO or similar adversarial proceedings or litigation in other jurisdictions. Even if such claims are without merit, a court of competent jurisdiction could hold that these third-party patents are valid, enforceable and infringed, and the holders of any such patents may be able to block our ability to commercialize the applicable product candidate unless we obtained a license under the applicable patents, or until such patents expire or are finally determined to be invalid or unenforceable. There may be third-party patents or patent applications with claims to compositions, formulations, or methods of treatment, prevention use, or manufacture of our product candidates or technologies. Because patent applications can take many years to issue, there may be currently pending patent applications which may later result in issued patents that our product candidates may infringe. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents. If any third-party patents were held by a court of competent jurisdiction to cover aspects of our compositions, formulations, or methods of treatment, prevention or use, the holders of any such patents may be able to prohibit our use of those compositions, formulations, methods of treatment, prevention or use or other technologies, effectively blocking our ability to progress the clinical development of or commercialize the applicable product candidate until such patent expires or is finally determined to be invalid or unenforceable or unless we obtained a license.

We also may be subject to third party claims arising from consulting agreements entered into by our officers, employees, independent contractors and/or consultants. Claims may include breach of nondisclosure, nonuse, noncompetition and non-solicitation provisions, intellectual property assignment and ownership, and misuse or misappropriation of intellectual property, trade secrets and other confidential information, among others. If a court of competent jurisdiction finds that we breached the provisions of third party consulting agreements, we may be prohibited from using certain intellectual property, trade secrets and confidential information, effectively blocking our ability to seek patent protection for our inventions and halting the progress of our clinical development and commercialization efforts.

For example, on June 7, 2019, we received a letter on behalf of Alector, a biopharmaceutical company employing antibodies for the treatment of neurodegeneration, stating concerns regarding whether confidential information of Alector was used in connection with work on behalf of our company and patents and patent applications filed on behalf of our company, as well as alleging that Alector has certain rights to our patents and patent applications. On June 18, 2019, following our response to Alector's claims, Alector served Dr. Abeliovich with a demand for arbitration in which it made similar allegations to those stated in its letter to us on June 7, 2019. In the demand, Alector is seeking relief from Dr. Abeliovich in the form of monetary damages, equitable relief in the form of an injunction against Dr. Abeliovich's activities that may involve Alector's confidential information and an assignment to Alector of rights to certain of our patents and patent applications. We believe the demand for arbitration, these allegations of wrongdoing and Alector's claims of rights to any of our intellectual property and requested forms of relief are without basis or merit, as our gene therapy

programs and underlying patents and patent applications were based on work done by Dr. Abeliovich derived from publicly available information or from work outside of and wholly separate from any matters on which he consulted for Alector or information he received while consulting for Alector. Dr. Abeliovich intends to vigorously defend this demand for arbitration and any claim or lawsuit making allegations relating to these matters.If we become party to any demand, claim or allegations related to these matters, we also intend to vigorously defend any such proceedings. In addition, we and Dr. Abeliovich also intend to evaluate any and all potential remedies and counterclaims against Alector to the extent we or Dr. Abeliovich suffer damages resulting from Alector's actions, claims or demands. However, there can be no assurance regarding any resolution or the outcome of these matters.

In addition, defending such claims would cause us to incur substantial expenses and, if successful, could cause us to pay substantial damages if we are found to be infringing a third party's intellectual property rights. These damages potentially include increased damages and attorneys' fees if we are found to have infringed such rights willfully. Further, if a patent infringement suit is brought against us or our third-party service providers, our development, manufacturing or sales activities relating to the product or product candidate that is the subject of the suit may be delayed or terminated, as parties making claims against us may obtain injunctive or other equitable relief. As a result of patent infringement claims, or in order to avoid potential infringement claims, we may choose to seek, or be required to seek, a license from the third party, which may require payment of substantial royalties or fees, or require us to grant a cross-license under our intellectual property rights. These licenses may not be available on reasonable terms or at all. Even if a license can be obtained on reasonable terms, the rights may be nonexclusive, which would give our competitors access to the same intellectual property rights. If we are unable to enter into a license on acceptable terms, we could be prevented from commercializing one or more of our product candidates, or forced to modify such product candidates, or to cease some aspect of our business operations, which could harm our business significantly. We might also be forced to redesign or modify our product candidates so that we no longer infringe the third-party intellectual property rights, which may result in significant cost or delay to us, or which redesign or modification could be impossible or technically infeasible. Even if we were ultimately to prevail, any of these events could require us to divert substantial financial and management resources that we would otherwise be able to devote to our business. Intellectual property litigation, regardless of its outcome, may cause negative publicity, adversely impact prospective customers, cause product shipment delays, or prohibit us from manufacturing, importing, marketing or otherwise commercializing our products, services and technology. In addition, if the breadth or strength of protection provided the patents and patent applications we own or in-license is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

Competitors may infringe our patents or other intellectual property. If we or one of our licensors were to initiate legal proceedings against a third party to enforce a patent covering one of our product candidates, the defendant could counterclaim that our patent is invalid or unenforceable. In patent litigation in the United States and in Europe, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, lack of novelty, obviousness lack of written description, or non-enablement. Third parties might allege unenforceability of our patents because during prosecution of the patent an individual connected with such prosecution withheld relevant information, or made a misleading statement. Interference or derivation proceedings provoked by third parties or brought by us or declared by the USPTO may be necessary to determine the priority of inventions with respect to our patents or patent applications. The outcome of proceedings involving assertions of invalidity and unenforceability during patent litigation is unpredictable. With respect to the validity of patents, for example, we cannot be certain that there is no invalidating prior art of which we and the patent examiner were unaware during prosecution, but that an adverse third party may identify and submit in support of such assertions of invalidity. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our product candidates. Our patents and other intellectual property rights also will not protect our technology if competitors design around our protected technology without infringing our patents or other intellectual property rights.

Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses and could distract our technical and management personnel from their normal responsibilities. In addition, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments, and if securities analysts or investors view these announcements in a negative light, the price of our common stock could be adversely affected. Such litigation or proceedings could substantially increase our operating losses and reduce our resources available for development activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their substantially greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have an adverse effect on our ability to compete in the marketplace.

We may not identify all of our or our licensors' relevant patents or may incorrectly determine that a third-party patent is not relevant or necessary to the commercialization of our product candidates, which might adversely affect our patent,

We cannot guarantee that any of our or our licensors' patent searches or analyses, including but not limited to the identification of relevant patents, analysis of the scope of relevant patent claims or determination of the expiration of relevant patents, are complete or thorough, nor can we be certain that we have identified each and every third-party patent and pending application in the United States, Europe and elsewhere that is relevant to or necessary for the commercialization of our product candidates in any jurisdiction. For example, in the United States, applications filed before November 29, 2000 and certain applications filed after that date that will not be filed outside the United States remain confidential until patents issue. Patent applications in the United States, the European Union and elsewhere are published approximately 18 months after the earliest filing for which priority is claimed, with such earliest filing date being commonly referred to as the priority date. Therefore, patent applications covering our product candidates could be filed by others without our knowledge. Additionally, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our product candidates or the use of our product candidates. After issuance, the scope of patent claims remains subject to construction as determined by an interpretation of the law, the written disclosure in a patent and the patent's prosecution history. Our interpretation of the relevance or the scope of a patent or a pending application may be incorrect, which may negatively impact our ability to market our product candidates. We may incorrectly determine that our product candidates are not covered by a third-party patent or may incorrectly predict whether a third party's pending application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States, the European Union or elsewhere that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our product candidates. Our failure to identify and correctly interpret relevant patents may negatively impact our ability to develop and market our product candidates, if approved.

If we fail to identify or correctly interpret relevant patents, we may be subject to infringement claims. We cannot guarantee that we will be able to successfully settle or otherwise resolve such infringement claims. If we fail in any such dispute, in addition to being forced to pay monetary damages, we may be temporarily or permanently prohibited from commercializing our product candidates. We might, if possible, also be forced to redesign our product candidates in a manner that no longer infringes third-party intellectual property rights. Any of these events, even if we were ultimately to prevail, could require us to divert substantial financial and management resources that we would otherwise be able to devote to our business.

Our intellectual property licenses with the scope of our rights to the relevant licensors.

We currently depend, and will continue to depend, on our license agreements, including our agreements with REGENXBIO, whereby we obtain rights in certain patents and patent applications owned by UPenn. Further development and commercialization of our current or any future product candidates may require us to enter into additional license or collaboration agreements, including, potentially, additional agreements with REGENXBIO or any of our other licensors. The agreements under which we currently license intellectual property or technology from third parties are complex, and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

If any of our licenses or material relationships or any in-licenses upon which our licenses are based including the underlying agreements between REGENXBIO and UPenn are terminated or breached, we may:

- lose our rights to develop and market our products;
- lose patent protection for our products;
- experience significant delays in the development or commercialization of our products;
- not be able to obtain any other licenses on acceptable terms, if at all; or
- incur liability for damages.

These risks apply to any agreements that we may enter into in the future for our products or for any future product candidates. If we experience any of the foregoing, it could have a material adverse effect on our business, financial condition, results or operations and prospects.

Changes in patent laws or patent jurisprudence could adversely affect our ability to commercialize our product candidates.

As is the case with other biotechnology companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biotechnology and genetic medicine industries involve both technological and legal complexity. Therefore, obtaining and enforcing biotechnology and genetic medicine patents is costly, time-consuming and inherently uncertain. In addition, the Leahy-Smith America Invents Act, or the AIA, which was passed in September 2011, resulted in significant changes to the U.S. patent system.

An important change introduced by the AIA is that, as of March 16, 2013, the United States transitioned from a "first-to-invent" to a "first-to-file" system for deciding which party should be granted a patent when two or more patent applications are filed by different parties claiming the same invention. Under a "first-to-file" system, assuming the other requirements for patentability are met, the first inventor to file a patent application generally will be entitled to a patent on the invention regardless of whether another inventor had made the invention earlier. A third party that files a patent application in the USPTO after that date but before us could therefore be awarded a patent covering an invention of ours even if we made the invention before it was made by the third party. This will require us to be cognizant going forward of the time from invention to filing of a patent application and be diligent in filing patent applications, but circumstances could prevent us from promptly filing patent applications on our inventions.

Among some of the other changes introduced by the AIA are changes that limit where a patentee may file a patent infringement suit and providing opportunities for third parties to challenge any issued patent in the USPTO. This applies to all of our U.S. patents, even those issued before March 16, 2013. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in U.S. federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action.

Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action. It is not clear what, if any, impact the AIA will have on the operation of our business. However, the AIA and its implementation could increase the uncertainties and costs surrounding the prosecution of our or our licensors' patent applications and the enforcement or defense of our or our licensors' issued patents.

We may become involved in opposition, interference, derivation, inter partes review or other proceedings challenging our or our licensors' patent rights, and the outcome of any proceedings are highly uncertain. An adverse determination in any such proceeding could reduce the scope of, or invalidate, our owned or in-licensed patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights.

In addition, the United States federal government retains certain rights in inventions produced with its financial assistance under the Bayh-Dole Act. The federal government retains a "nonexclusive, nontransferable, irrevocable, paid-up license" for its own benefit. The Bayh-Dole Act also provides federal agencies with "march-in rights". March-in rights allow the government, in specified circumstances, to require the contractor or successors in title to the patent to grant a "nonexclusive, partially exclusive, or exclusive license" to a "responsible applicant or applicants." If the patent owner refuses to do so, the government may grant the license itself. Some of our licensed patents are subject to the provisions of the Bayh-Dole Act. If our licensors fail to comply with the regulations of the Bayh-Dole Act, they could lose title to any patents subject to such regulations, which could affect our license rights under the patents and our ability to stop others from using or commercializing similar or identical technology and products, or limit patent protection for our technology and products.

Additionally, the U.S. Supreme Court has ruled on several patent cases in recent years either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations, and there are other open questions under patent law that courts have yet to decisively address. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways and could weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future. In addition, the European patent system is relatively stringent in the type of amendments that are allowed during prosecution, but, the complexity and uncertainty of European patent laws has also increased in recent years. Complying with these laws and regulations could limit our ability to obtain new patents in the future that may be important for our business.

Obtaining and maintaining our patent protection depends on compliance with various procedural, documentary, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

The USPTO, European and other patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. In addition, periodic maintenance and annuity fees on any issued patent are due to be paid to the USPTO, European and other patent agencies over the lifetime of the patent. While an inadvertent failure to make payment of such fees or to comply with such provisions can in many cases be cured by additional payment of a late fee or by other means in accordance with the applicable rules, there are situations in which non-compliance with such provisions will result in the abandonment or lapse of the patent or patent application, and the partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in abandonment or lapse of a patent or patent application include failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents within prescribed time limits. If we or our licensors fail to maintain the patents and patent applications covering our product candidates or if we or our licensors otherwise allow our patents or patent applications to be abandoned or lapse, it can create opportunities for competitors to enter the market, which would hurt our competitive position and could impair our ability to successfully progress clinical development of or commercialize our product candidates in any indication for which they may be approved.

We enjoy only limited geographical protection and intellectual property rights throughout the world.

Filing, prosecuting and defending patents covering our product candidates in all countries throughout the world would be prohibitively expensive, and even in countries where we have sought protection for our intellectual property, such protection can be less extensive than those in the United States. The requirements for patentability may differ in certain countries, particularly developing countries, and the breadth of patent claims allowed can be inconsistent. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. In-licensing patents covering our product candidates in all countries throughout the world may similarly be prohibitively expensive, if such opportunities are available at all. And in-licensing or filing, prosecuting and defending patents even in only those jurisdictions in which we develop or commercialize our product candidates may be prohibitively expensive or impractical. Competitors may use our and our licensors' technologies in jurisdictions where we have not obtained patent protection or licensed patents to develop their own products and, further, may export otherwise infringing products to territories where we and our licensors have patent protection, but where enforcement is not as strong as that in the United States or the European Union. These products may compete with our product candidates, and our or our licensors' patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

In addition, we may decide to abandon national and regional patent applications while they are still pending. The grant proceeding of each national or regional patent is an independent proceeding which may lead to situations in which applications may be rejected by the relevant patent office, while substantively similar applications are granted by others. For example, relative to other countries, China has a heightened requirement for patentability and specifically requires a detailed description of medical uses of a claimed drug. Furthermore, generic drug manufacturers or other competitors may challenge the scope, validity or enforceability of our or our licensors' patents, requiring us or our licensors to engage in complex, lengthy and costly litigation or other proceedings. Generic drug manufacturers may develop, seek approval for and launch generic versions of our products. It is also quite common that depending on the country, the scope of patent protection may vary for the same product candidate or technology.

The laws of some jurisdictions do not protect intellectual property rights to the same extent as the laws or regulations in the United States and the European Union, and many companies have encountered significant difficulties in protecting and defending proprietary rights in such jurisdictions. Moreover, the legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets or other forms of intellectual property, particularly those relating to biotechnology products, which could make it difficult for us to prevent competitors in some jurisdictions from marketing competing products in violation of our proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions, whether or not successful, are likely to result in substantial costs and divert our efforts and attention from other aspects of our business, and additionally could put at risk our or our licensors' patents of being invalidated or interpreted narrowly, could increase the risk of our or our licensors' patent applications not issuing, or could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, while damages or other remedies may be awarded to the adverse party, which may be commercially significant. If we prevail, damages or other remedies awarded to us, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license. Furthermore, while we intend to protect our intellectual property rights in our expected significant markets, we cannot ensure that we will be able to initiate or maintain similar efforts in all jurisdictions in which we may wish to market our product candidates. Accordingly, our efforts to protect our intellectual property rights in such countries may be inadequate, which may have an adverse effect on our ability to successfully commercialize our product candidates in all of our expected significant foreign markets. If we or our licensors encounter difficulties in protecting, or are otherwise precluded from effectively protecting, the intellectual property rights important for our business in such jurisdictions, the value of these rights may be diminished and we may face additional competition in those jurisdictions.

In some jurisdictions including European Union countries, compulsory licensing laws compel patent owners to grant licenses to third parties. In addition, some countries limit the enforceability of patents against government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of such patent. If we or any of our licensors are forced to grant a license to third parties under patents relevant to our business, or if we or our licensors are prevented from enforcing patent rights against third parties, our competitive position may be substantially impaired in such jurisdictions.

Patent terms may be inadequate to protec

The term of any individual patent depends on applicable law in the country where the patent is granted. In the United States, provided all maintenance fees are timely paid, a patent generally has a term of 20 years from its application filing date or earliest claimed non-provisional filing date. Extensions may be available under certain circumstances, but the life of a patent and, correspondingly, the protection it affords is limited. Even if we or our licensors obtain patents covering our product candidates, when the terms of all patents covering a product expire, our business may become subject to competition from competitive medications, including generic medications. Given the amount of time required for the development, testing and regulatory review and approval of new product candidates, patents protecting such candidates may expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

If we do not obtain patent term extensio
legislation, thereby potentially extendin

In the United States, a patent that covers an FDA-approved drug or biologic may be eligible for a term extension designed to restore the period of the patent term that is lost during the premarket regulatory review process conducted by the FDA. Depending upon the timing, duration and conditions of FDA marketing approval of our product candidates, one or more of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, or the Hatch-Waxman Act, which permits a patent term extension of up to five years for a patent covering an approved product as compensation for effective patent term lost during product development and the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval, and only claims covering such approved drug product, a method for using it or a method for manufacturing it may be extended. In the European Union, our product candidates may be eligible for term extensions based on similar legislation. In either jurisdiction, however, we may not receive an extension if we fail to apply within applicable deadlines, fail to apply prior to expiration of relevant patents or otherwise fail to satisfy applicable requirements. Even if we are granted such extension, the duration of such extension may be less than our request. If we are unable to obtain a patent term extension, or if the term of any such extension is less than our request, the period during which we can enforce our patent rights for that product will be in effect shortened and our competitors may obtain approval to market competing products sooner. The resulting reduction of years of revenue from applicable products could be substantial.

Our proprietary rights may not adequatel
potential threats to our competitive adva

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations, and may not adequately protect our business, or permit us to maintain our competitive advantage. The following examples are illustrative:

- others may be able to make products that are the same as or similar to our product candidates but that are not covered by the claims of the patents that we own or have exclusively licensed;
- others, including inventors or developers of our owned or in-licensed patented technologies who may become involved with competitors, may independently develop similar technologies that function as alternatives or replacements for any of our technologies without infringing our intellectual property rights;
- we or our licensors or our other collaboration partners might not have been the first to conceive and reduce to practice the inventions covered by the patents or patent applications that we own, license or will own or license;
- we or our licensors or our other collaboration partners might not have been the first to file patent applications covering certain of the patents or patent applications that we or they own or have obtained a license, or will own or will have obtained a license;

- we or our licensors may fail to meet obligations to the U.S. government with respect to in-licensed patents and patent applications funded by U.S. government grants, leading to the loss of patent rights;
- it is possible that our pending patent applications will not result in issued patents;
- it is possible that there are prior public disclosures that could invalidate our or our licensors' patents;
- issued patents that we own or exclusively license may not provide us with any competitive advantage, or may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- we may not exclusively license our patents and, therefore, may not have a competitive advantage if such patents are licensed to others, including for example, under our license agreements with REGENXBIO, pursuant to which REGENXBIO and its upstream licensors (SmithKline Beecham Corporation, or GSK, and UPenn) retain the exclusive right over certain antibodies expressed by AAV9 and GSK and UPenn retain a non-exclusive right over products that deliver RNA interference and antisense drugs using AAV9;
- our competitors might conduct research and development activities in countries where we do not have patent rights, or in countries where research and development safe harbor laws exist, and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- ownership, validity or enforceability of our or our licensors' patents or patent applications may be challenged by third parties; and
- the patents of third parties or pending or future applications of third parties, if issued, may have an adverse effect on our business.

Our reliance on third parties may requir misappropriated or disclosed, and confid of trade secrets and protect other propri

We consider proprietary trade secrets, confidential know-how and unpatented know-how to be important to our business. We may rely on trade secrets and confidential know-how to protect our technology, especially where patent protection is believed by us to be of limited value. However, trade secrets and confidential know-how are difficult to protect, and we have limited control over the protection of trade secrets and confidential know-how used by our licensors, collaborators and suppliers. Because we have relied in the past on third parties to manufacture our product candidates, because we may continue to do so in the future, and because we expect to collaborate with third parties on the development of our current product candidates and any future product candidates we develop, we may, at times, share trade secrets with them. We also conduct joint research and development programs that may require us to share trade secrets under the terms of our research and development partnerships or similar agreements. Under such circumstances, trade secrets and confidential know-how can be difficult to maintain as confidential.

To protect this type of information against disclosure or appropriation by competitors, our policy is to require our employees, consultants, contractors and advisors to enter into confidentiality agreements and, if applicable, material transfer agreements, consulting agreements or other similar agreements with us prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, including our trade secrets. However, current or former employees, consultants, contractors and advisers may unintentionally or willfully disclose our confidential information to competitors, and confidentiality agreements may not provide an adequate remedy in the event of unauthorized disclosure of confidential information. The need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. Given that our competitive position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may have an adverse effect on our business and results of operations. Enforcing a claim that a third party obtained illegally and is using trade secrets and/or confidential know-how is expensive, time consuming and unpredictable, and the enforceability of confidentiality agreements may vary from jurisdiction to jurisdiction. Courts outside the United States are sometimes less willing to protect proprietary information, technology and know-how.

In addition, these agreements typically restrict the ability of our advisors, employees, third-party contractors and consultants to publish data potentially relating to our trade secrets, although our agreements may contain certain limited publication rights. Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either through breach of our agreements with third parties, independent development or publication of information by any of our third-party collaborators. A competitor's discovery of our trade secrets would impair our competitive position and have an adverse impact on our business.

If our trademarks and trade names are no interest abned adwerbsuesliynaffemtaeyd.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition among potential partners or customers in our markets of interest. At times, competitors may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other registered trademarks or trademarks that incorporate variations of our unregistered trademarks or trade names. Over the long term, if we are unable to successfully register our trademarks and trade names and establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected. Our efforts to enforce or protect our proprietary rights related to trademarks, trade secrets, domain names, copyrights or other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could adversely impact our financial condition or results of operations.

We may need to license additional intell available on commercially reasonable ter

The growth of our business may depend in part on our ability to acquire or in-license additional proprietary rights. For example, our programs may involve product candidates that may require the use of additional proprietary rights held by third parties. Our product candidates may also require specific formulations to work effectively and efficiently. These formulations may be covered by intellectual property rights held by others. We may develop products containing our compositions and pre-existing pharmaceutical compositions. These pharmaceutical products may be covered by intellectual property rights held by others. We may be required by the FDA, EMA or other foreign regulatory authorities to provide a companion diagnostic test or tests with our product candidates. These diagnostic test or tests may be covered by intellectual property rights held by others. We may be unable to acquire or in-license any relevant third-party intellectual property rights that we identify as necessary or important to our business operations. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all, which would harm our business. We may need to cease use of the compositions or methods covered by such third-party intellectual property rights, and may need to seek to develop alternative approaches that do not infringe on such intellectual property rights which may entail additional costs and development delays, even if we were able to develop such alternatives, which may not be feasible. Even if we are able to obtain a license under such intellectual property rights, any such license may be non-exclusive, which may allow our competitors access to the same technologies licensed to us.

We may be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed confidential information of their former employers or other third parties.

We do and may employ individuals who were previously employed at universities or other biotechnology or pharmaceutical companies, including our licensors, competitors or potential competitors. Although we seek to protect our ownership of intellectual property rights by ensuring that our agreements with our employees, consultants, collaborators, independent contractors and other third parties with whom we do business include provisions requiring such parties to assign rights in inventions to us and to not use the know-how or confidential information of their former employer or other third parties, we may be subject to claims that we or our employees, consultants, collaborators or independent contractors have inadvertently or otherwise used or disclosed know-how or confidential information of their former employers or other third parties. We may also be subject to claims that former employers or other third parties have an ownership interest in our patents. Litigation may be necessary to defend against these claims. There is no guarantee of success in defending these claims, and if we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable personnel or intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property, which could result in customers seeking other sources for the technology, or in ceasing from doing business with us. Such intellectual property rights could be awarded to a third party, and we could be required to obtain a license from such third party to progress our clinical development programs or commercialize our technology or product candidate. Such a license may not be available on commercially reasonable terms or at all. Even if we are successful, litigation could result in substantial cost and reputational loss and be a distraction to our management and other employees. Moreover, any such litigation or the threat thereof may adversely affect our reputation, our ability to form strategic alliances or sublicense our rights to collaborators, engage with scientific advisors or hire employees or consultants, each of which would have an adverse effect on our business, results of operations and financial condition.

Risks Related to Employee Matters and Managing Growth

We will need to expand our organization, operations.

As of September 30, 2019, we had 48 full-time employees. We will need to significantly expand our organization, and we may have difficulty identifying, hiring and integrating new personnel. Future growth would impose significant additional responsibilities on our management, including the need to identify, recruit, maintain, motivate and integrate additional employees, consultants and contractors. Also, 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. We may not be able to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, give rise to operational mistakes, loss of business opportunities, loss of employees and reduced productivity among remaining employees. Our expected growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of 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 future financial performance and our ability to commercialize our product candidates and compete effectively will depend, in part, on our ability to effectively manage any future growth. Our expected 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 expected growth, our expenses may increase more than expected, our potential ability to generate revenue could be reduced and we may not be able to implement our business strategy. Many of the biotechnology companies that we compete against for qualified personnel and consultants have greater financial and other resources, different risk profiles and a longer history in the industry than we do. If we are unable to continue to attract and retain high-quality personnel and consultants, the rate and success at which we can discover and develop product candidates and operate our business will be limited.

Our future success depends on our abilit

Our industry has experienced a high rate of turnover of management personnel in recent years. We are highly dependent on the development, regulatory, commercialization and business development expertise of Asa Abeliovich, M.D., Ph.D., our founder and Chief Executive Officer, as well as the other principal members of our management, scientific and clinical teams. Although we have formal employment agreements with our executive officers, these agreements do not prevent them from terminating their employment with us at any time and, for certain of our executive officers, entitle them to receive severance payments in connection with their voluntary resignation of employment. Additional details regarding these arrangements can be found in the section "Executive Compensation —Executive Compensation Arrangements."

If we lose one or more of our executive officers or key employees, our ability to implement our business strategy successfully could be seriously harmed. Furthermore, replacing executive officers and key employees may be difficult and may take an extended period of time because of the limited number of individuals in our industry with the breadth of skills and experience required to develop, gain regulatory approval of and commercialize product candidates successfully. Competition to hire from this limited pool is intense, and we may be unable to hire, train, retain or motivate these additional key personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be engaged by entities other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. If we are unable to continue to attract and retain high quality personnel, our ability to advance the clinical development of and commercialize product candidates will be limited.

Our insurance policies are expensive and liabilities.

We do not carry insurance for all categories of risk that our business may encounter. Some of the policies we currently maintain include general liability, clinical trial liability, employment practices liability, property, auto, workers' compensation, umbrella, and directors' and officers' insurance.

Any additional product liability insurance coverage we acquire in the future, may not be sufficient to reimburse us for any expenses or losses we may suffer. Moreover, insurance coverage is becoming increasingly expensive and in the future we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses due to liability. If we obtain marketing approval for our product candidates, we intend to acquire insurance coverage to include the sale of commercial products; however, we may be unable to obtain product liability insurance on commercially reasonable terms or in adequate amounts. A successful product liability claim or series of claims brought against us could cause our share price to decline and, if judgments exceed our insurance coverage, could adversely affect our results of operations and business, including preventing or limiting the commercialization of any product candidates we develop. We do not carry specific biological or hazardous waste insurance coverage, and our property, casualty and general liability insurance policies specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination. Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our clinical trials or regulatory approvals could be suspended.

We also expect that operating as a public company will make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified people to serve on our board of directors, our board committees or as executive officers. We do not know, however, if we will be able to maintain existing insurance with adequate levels of coverage. Any significant uninsured liability may require us to pay substantial amounts, which would adversely affect our cash position and results of operations.

Our employees and independent contractors development and commercialization may e standards and requirements, which could

Misconduct by our employees and independent contractors, including consultants, vendors, and any third parties we may engage in connection with development and commercialization, could include intentional, reckless or negligent conduct or unauthorized activities that violate: (1) the laws and regulations of the FDA, EMA and other similar regulatory authorities, including those laws that require the reporting of true, complete and accurate information to such authorities; (2) manufacturing standards; (3) data privacy, security, fraud and abuse and other healthcare laws and regulations; or (4) other laws that require the reporting of true, complete and accurate financial information and data. Specifically, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Activities subject to these laws could also involve the improper use or misrepresentation of information obtained in the course of clinical trials, creation of fraudulent data in preclinical studies or clinical trials or illegal misappropriation of drug product, which could result in regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other third parties, 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 such laws or regulations. Additionally, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. 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 and results of operations, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgements, possible exclusion from participation in Medicare, Medicaid, other U.S. federal healthcare programs or healthcare programs in other jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, imprisonment, other sanctions, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of our operations.

Our business and operations would suffer

Our computer systems, as well as those of our contractors and consultants, are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our product candidate development programs. For example, the loss of preclinical study or clinical trial data from completed, ongoing or planned trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of or damage to our data or applications, or inappropriate disclosure of personal, confidential or proprietary information, we could incur liability and the further development of our product candidates could be delayed.

In the ordinary course of our business, we collect and store sensitive data, including intellectual property, clinical trial data, proprietary business information, personal data and personally identifiable information of our clinical trial subjects and employees, in our data centers and on our networks. The secure processing, maintenance and transmission of this information is critical to our operations. Despite our security measures, our information technology and infrastructure may be vulnerable to attacks by hackers or internal bad actors, or breached due to employee error, a technical vulnerability, malfeasance or other disruptions. Although, to our knowledge, we have not experienced any such material security breach to date, any such breach could compromise our networks and the information stored there could be accessed, publicly disclosed, lost or stolen. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, significant regulatory penalties, and such an event could disrupt our operations, damage our reputation, and cause a loss of confidence in us and our ability to conduct clinical trials, which could adversely affect our reputation and delay clinical development of our product candidates.

We may engage in acquisitions that could disrupt our business, cause dilution to our stockholders or reduce our financial resources.

In the future, we may enter into transactions to acquire other businesses, products or technologies. If we do identify suitable candidates, we may not be able to make such acquisitions on favorable terms, or at all. Any acquisitions we make may not strengthen our competitive position, and these transactions may be viewed negatively by patients, collaborators, third party payors or investors. We may decide to incur debt in connection with an acquisition or issue our common stock or other equity securities to the stockholders of the acquired company, which would reduce the percentage ownership of our existing stockholders. We could incur losses resulting from undiscovered liabilities of the acquired business that are not covered by the indemnification we may obtain from the seller. In addition, we may not be able to successfully integrate the acquired personnel, technologies and operations into our existing business in an effective, timely and non-disruptive manner. Acquisitions may also divert management attention from day-to-day responsibilities, increase our expenses and reduce our cash available for operations and other uses. We cannot predict the number, timing or size of future acquisitions or the effect that any such transactions might have on our business, financial position or operating results.

Risks Related to Our Common Stock

An active trading market for our common

Prior to our initial public offering in June 2019, there was no public trading market for our common stock. We cannot assure you that an active trading market for our common stock will continue to develop or that it will be sustained. Accordingly, we cannot assure you of the liquidity of any trading market, your ability to sell your shares of our common stock when desired or the prices that you may obtain for your shares of our common stock.

The market price of our common stock ma

Our share price is likely to continue to be volatile. The stock market in general and the market for smaller biopharmaceutical companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. The market price for our common stock may be influenced by many factors, including:

- timing and results of our preclinical studies and clinical trials or those of our competitors;
- the success of existing or new competitive therapies, products or technologies;
- development of new product candidates that may address our markets and make our product candidates less attractive;
- failure or discontinuation of any of our research or development programs;
- changes in the level of expenses related to any of our research or development programs;
- developments related to any existing or future collaborations;
- the recruitment or departure of key personnel;
- regulatory or legal developments in the United States and other countries;

- announcements by us, our partners or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;
- changes in the structure of healthcare payment systems;
- the results of our efforts to discover, develop, acquire or in-license additional product candidates or products;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- changes in failure to meet or exceed financial estimates and projections of the investment community or that we provide to the public;
- actual or expected changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- announcement or expectation of additional financing efforts;
- sales of common stock by us, our executive officers, directors or principal stockholders, or others;
- variations in our financial results or those of companies that are perceived to be similar to us;
- market conditions in the pharmaceutical and biotechnology sectors;
- general economic, industry and market conditions;
- changes in accounting principles; and
- the other factors described in this "Risk Factors" section.

In addition, the stock market in general, and Nasdaq and biopharmaceutical companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. In the past, when the market price of a security has been volatile, holders of that security have sometimes instituted securities class action litigation against the issuer. If any of the holders of our common stock were to bring such a lawsuit against us, we could incur substantial costs defending the lawsuit and the attention of our senior management would be diverted from the operation of our business. Any adverse determination in litigation could also subject us to significant liabilities. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance. Further, a decline in the financial markets and related factors beyond our control may cause the price of our common stock to decline rapidly and unexpectedly.

If securities or industry analysts do not opinion regarding our common stock, our

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. We do not currently have, and may never obtain, research coverage by securities and industry analysts. If no or few securities or industry analysts commence coverage of us, the trading price for our shares could be negatively impacted. In the event we obtain securities or industry analyst coverage, if any of the analysts who cover us issue an adverse or misleading opinion regarding us, our business model, our intellectual property or our share performance, or if any of our preclinical studies or clinical trials and operating results fail to meet the expectations of analysts, our stock price would likely decline. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Our executive officers, directors and pri or significantly influence all matters su

As of September 30, 2019, our executive officers, directors and stockholders who owned more than 5% of our outstanding common stock and their respective affiliates held, in the aggregate, a majority of our outstanding common stock. As a result, if these stockholders choose to act together, they would be able to control or significantly influence all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, would control or significantly influence the election of directors, the composition of our management and approval of any merger, consolidation, sale of all or substantially all of our assets or other business combination that other stockholders may desire. Any of these actions could adversely affect the market price of our common stock.

Future sales and issuances of our common plans, icno ualddd irtei so unlatl dilution of the perc

Additional capital will be needed in the future to continue our planned operations. To the extent we raise additional capital by issuing equity securities, our stockholders may experience substantial dilution. We may sell common stock, convertible securities or other equity securities in one or more transactions at prices and in a manner, we determine from time to time. If we sell common stock, convertible securities or other equity securities in more than one transaction, investors may be materially diluted by subsequent sales. These sales may also result in material dilution to our existing stockholders, and new investors could gain rights superior to our existing stockholders.

Pursuant to the 2019 Equity Incentive Plan, or the 2019 Plan, our management is authorized to grant stock options and other equity-based awards to our employees, directors and consultants. The number of shares of our common stock reserved for issuance under the 2019 Plan will automatically increase on January 1 of each calendar year, starting on January 1, 2020 through January 1, 2029, in an amount equal to 4% of the total number of shares of our common stock outstanding on the last day of the calendar month before the date of each automatic increase, or a lesser number of shares determined by our board of directors prior to the applicable January 1st. If our board of directors elects to increase the number of shares available for future grant by the maximum amount each year, our stockholders may experience additional dilution, which could cause our stock price to fall.

A significant portion of our total outsta market price of our common stock to drop

Sales of a substantial number of shares of our common stock in the public market, or the perception in the market that the holders of a large number of stockholders intend to sell shares of our common stock, could reduce the market price of our common stock. We have 34,098,819 shares of common stock outstanding as of September 30, 2019. We, our directors and officers and a substantial majority of our securityholders are subject to market standoff provisions or lock-up agreements that restrict our and their ability to sell shares of our common stock until December 17, 2019. When this period expires, we and our locked-up security holders will be able to sell our shares in the public market. Sales of a substantial number of such shares, or the perception that such sales may occur, upon expiration of the lock-up agreements or market standoff agreements, could cause our stock price to fall or make it more difficult for you to sell your common stock at a time and price that you deem appropriate.

As of September 30, 2019, holders of an aggregate of 31,749,819 shares of common stock had rights, subject to specified conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders, until such shares can otherwise be sold without restriction under Rule 144 under the Securities Act of 1933, as amended, or the Securities Act, or until the rights terminate pursuant to the terms of the stockholders agreement between us and such holders. We have also registered all shares of common stock subject to equity awards issued or reserved for future issuance under our equity compensation plans on a registration statement on Form S-8. These shares can be freely sold in the public market upon issuance, subject to volume limitations applicable to affiliates under Rule 144 under the Securities Act and the market standoff provisions and lock-up agreements described above. Any sales of securities by these stockholders could have a negative impact on the trading price of our common stock.

We are an emerging growth company and a emerging growth companies and smaller r

We are an "emerging growth company," as defined in the JOBS Act, and may remain an emerging growth company until the last day of the fiscal year following the fifth anniversary of the closing of our initial public offering in June 2019. However, if certain events occur prior to the end of such five-year period, including if we become a "large accelerated filer," our annual gross revenues exceed $1.07 billion or we issue more than $1.0 billion of non-convertible debt in any three-year period, we will cease to be an emerging growth company prior to the end of such five-year period. For so long as we remain an emerging growth company, we are permitted and intend to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include:

- being permitted to provide only two years of audited financial statements, in addition to any required unaudited interim financial statements, with correspondingly reduced "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure in this report;
- not being required to comply with the auditor attestation requirements in the assessment of our internal control over financial reporting;

- not being required to comply with any requirement that may be adopted by the PublicCompany Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements;
- reduced disclosure obligations regarding executive compensation; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

As a result, the information we provide to stockholders will be different than the information that is available with respect to other public companies that are not emerging growth companies. We cannot predict whether this will cause investors to find our common stock less attractive. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our share price may be reduced or more volatile.

Even following the termination of our status as an emerging growth company, we will be able to take advantage of the reduced disclosure requirements applicable to "smaller reporting companies," as that term is defined in Rule 12b-2 of the Exchange Act of 1934, as amended, or the Exchange Act, and, in particular, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. To the extent that we are no longer eligible to use exemptions from various reporting requirements, we may be unable to realize our anticipated cost savings from these exemptions, which could have a material adverse impact on our operating results.

We will incur increased costs as a result time to new compliance initiatives and c

As a public company, and particularly after we are no longer an emerging growth company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. The Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the Nasdaq listing requirements and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect that these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance, which in turn could make it more difficult for us to attract and retain qualified members of our board of directors.

We are evaluating these rules and regulations, and cannot predict or estimate the amount of additional costs we may incur or the timing of such costs. These rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, or Section 404, we will be required to furnish a report by our management on our internal control over financial reporting beginning with our second filing of an Annual Report on Form 10-K with the SEC after we become a public company. However, while we remain an emerging growth company, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. To achieve compliance with Section 404 within the prescribed period, we will be engaged in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will need to continue to dedicate internal resources, potentially engage outside consultants, adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing whether such controls are functioning as documented, and implement a continuous reporting and improvement process for internal control over financial reporting. In addition, if we identify one or more material weaknesses as a result of this implementation and evaluation process, it could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements.

If we fail to maintain an effective system of internal control over financial reporting in the future, our ability to report our financial results or prevent fraud may be adversely affected and our failure would harm our business and the trading

Section 404(a) of the Sarbanes-Oxley Act, or Section 404(a), requires that beginning with our second annual report following our initial public offering, management assess and report annually on the effectiveness of our internal control over financial reporting and identify any material weaknesses in our internal control over financial reporting. Although Section 404(b) of the Sarbanes-Oxley Act, or Section 404(b), requires our independent registered public accounting firm to issue an annual report that addresses the effectiveness of our internal control over financial reporting, we have opted to rely on the exemptions provided in the JOBS Act, and consequently will not be required to comply with SEC rules that implement Section 404(b) until such time as we are no longer an emerging growth company.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and, together with adequate disclosure controls and procedures, are designed to prevent fraud. Any failure to implement required new or improved controls, or difficulties encountered in their implementation could cause us to fail to meet our reporting obligations. In addition, any testing by us conducted in connection with Section 404, or any subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal controls over financial reporting that are deemed to be material weaknesses or that may require prospective or retroactive changes to our financial statements or identify other areas for further attention or improvement. Inadequate internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our common stock.

Our disclosure controls and procedures m

We are subject to the periodic reporting requirements of the Exchange Act. We designed our disclosure controls and procedures to reasonably assure that information we must disclose in reports we file or submit under the Exchange Act is accumulated and communicated to management, and recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures or internal controls and procedures, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met.

These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. For example, our directors or executive officers could inadvertently fail to disclose a new relationship or arrangement causing us to fail to make any related party transaction disclosures. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls. Accordingly, because of the inherent limitations in our control system, misstatements due to error or fraud may occur and not be detected.

Future changes in financial accounting s affect our reported results of operations

Future changes in financial accounting standards may cause adverse, unexpected revenue fluctuations and affect our reported financial position or results of operations. Financial accounting standards in the United States are constantly under review and new pronouncements and varying interpretations of pronouncements have occurred with frequency in the past and are expected to occur again in the future. As a result, we may be required to make changes in our accounting policies. Those changes could affect our financial condition and results of operations or the way in which such financial condition and results of operations are reported. Compliance with new accounting standards may also result in additional expenses. As a result, we intend to invest all reasonably necessary resources to comply with evolving standards, and this investment may result in increased general and administrative expenses and a diversion of management time and attention from business activities to compliance activities. See the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations—Recently Adopted Accounting Standards.” As an emerging growth company, the JOBS Act allows us to delay adoption of new or revised accounting standards applicable to public companies until such pronouncements are made applicable to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

Because we do not anticipate paying any cash dividends in the foreseeable future, capital appreciation, if any, would be your sole source of gain.

We have never declared or paid any cash dividends on our common stock. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. As a result, capital appreciation, if any, of our common stock would be your sole source of gain on an investment in our common stock for the foreseeable future. See Note 2 to our financial statements included elsewhere in this report.

We could be subject to securities class a

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because biopharmaceutical companies have experienced significant stock price volatility in recent years. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

We have significant net operating losses of control. We also benefit from certain which we operate and any adverse change under these regimes could adversely affe

As of December 31, 2018, we had $12.8 million of U.S. federal and $25.5 million of state net operating loss, or NOL, carryforwards. Our U.S. federal NOL carryforwards generated prior to 2018 will expire if not utilized prior to 2038. Under the Tax Act, federal NOLs incurred in tax years ending after December 31, 2017, may be carried forward indefinitely, but the deductibility of federal NOLs generated in tax years beginning after December 31, 2017, is limited.

Our NOL carryforwards are subject to review and possible adjustment by the U.S. and state tax authorities. Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, and corresponding provisions of state law, if a corporation undergoes an "ownership change," which is generally defined as a greater than 50% change (by value) in its equity ownership over a three-year period, the corporation's ability to use its pre-change NOL carryforwards and R&D credits to offset its post-change income may be limited. This could limit the amount of NOLs or R&D credit carryforwards that we can utilize annually to offset future taxable income or tax liabilities. Subsequent ownership changes and changes to the U.S. tax rules in respect of the utilization of NOLs and R&D credits carried forward may further affect the limitation in future years. In addition, at the state level, there may be periods during which the use of NOLs is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed.

Additionally, we have not undertaken a study on our determination of our U.S. R&D credits. Consequently, our U.S. R&D credits may change, and in any event are subject to review and adjustment by the tax authorities.

U.S. federal income tax reform could adv

On December 22, 2017, President Trump signed into law the Tax Act, which significantly revises the Internal Revenue Code. The Tax Act, among other things, contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, limitation of the tax deduction for interest expense to 30% of adjusted taxable income (except for certain small businesses), limitation of the deduction for NOLs carried forward from taxable years beginning after December 31, 2017 to 80% of current year taxable income and elimination of most NOL carrybacks, one-time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. We do not expect changes under the Tax Act to have a material impact on our tax liabilities in the near future. However, we continue to examine the impact that the Tax Act may have on our business in the longer term. Accordingly, notwithstanding the reduction in the U.S. federal corporate income tax rate, the overall impact of the Tax Act is uncertain and our business and financial condition could be adversely affected by the Tax Act. The Tax Act may also have an impact on holders of our common stock. We urge prospective investors to consult with their legal and tax advisors with respect to the Tax Act and the potential tax consequences of investing in or holding our common stock.

Delaware law and provisions in our amended a merger, tender offer or proxy contest dif

Our status as a Delaware corporation and the anti-takeover provisions of the Delaware General Corporation Law, or DGCL may discourage, delay or prevent a change in control by prohibiting us from engaging in a business combination with an interested stockholder for a period of three years after the person becomes an interested stockholder, even if a change of control would be beneficial to our existing stockholders. In addition, our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that may make the acquisition of our company more difficult, including the following:

- a classified board of directors with three-year staggered terms, which could delay the ability of stockholders to change the membership of a majority of our board of directors;
- the ability of our board of directors to issue shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of our board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- the requirement that a special meeting of stockholders may be called only by a majority vote of our entire board of directors, the chairman of our board of directors or our chief executive officer, which could delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors;
- the requirement for the affirmative vote of holders of at least 66 2/3% of the voting power of all of the then-outstanding shares of the voting stock, voting together as a single class, to amend the provisions of our amended and restated certificate of incorporation relating to the management of our business or our amended and restated bylaws, which may inhibit the ability of an acquirer to affect such amendments to facilitate an unsolicited takeover attempt; and
- advance notice procedures with which stockholders must comply to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of us.

In addition, as a Delaware corporation, we are subject to Section 203 of the DGCL. These provisions may prohibit large stockholders, in particular those owning 15% or more of our outstanding voting stock, from merging or combining with us for a certain period of time. A Delaware corporation may opt out of this provision by express provision in its original certificate of incorporation or by amendment to its certificate of incorporation or bylaws approved by its stockholders. However, we have not opted out of this provision.

These and other provisions in our amended and restated certificate of incorporation, amended and restated bylaws and Delaware law could make it more difficult for stockholders or potential acquirors to obtain control of our board of directors or initiate actions that are opposed by our then-current board of directors, including delay or impede a merger, tender offer or proxy contest involving our company. The existence of these provisions could negatively affect the price of our common stock and limit opportunities for you to realize value in a corporate transaction.

Our amended and restated certificate of incorporation designates a state or federal court located within the State of Delaware as the exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or other employees.

Our amended and restated certificate of incorporation provides that, to the fullest extent permitted by law, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, any state court located within the State of Delaware, or if all such state courts lack jurisdiction, the federal district court for the District of Delaware) will be the sole and exclusive forum for the following types of actions or proceedings under Delaware statutory or common law: (1) any derivative action or proceeding brought on our behalf; (2) any action or proceeding asserting a claim of breach of fiduciary duty owed by any current or former director, officer or other employee, to us or our stockholders; (3) any action or proceeding asserting a claim against us or any of our current or former directors, officers or other employees, arising out of or pursuant to any provision of the DGCL, our certificate of incorporation or our bylaws; (4) any action or proceeding to interpret, apply, enforce or determine the validity of our certificate of incorporation or our bylaws; (5) any action or proceeding as to which the DGCL confers jurisdiction on the Court of Chancery of the State of Delaware; or (6) any action asserting a claim against us, or any of our directors, officers or other employees, that is governed by the internal affairs doctrine, in all cases to the fullest extent permitted by law and subject to the court's having personal jurisdiction over the indispensable parties named as defendants. For the avoidance of doubt, these choice of forum provisions will not apply to suits brought to enforce a duty or liability created by the Securities Act, the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction.

These choice of forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees and may discourage these types of lawsuits. Furthermore, if a court were to find the choice of forum provisions contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions.

Item 2.

(a) Recent Sales of Unregistered Securities

None.

(b) Use of Proceeds

On June 24, 2019, we closed our IPO, in which we issued and sold an aggregate of 7,353,000 shares of common stock at a public offering price of $17.00 per share. All of the shares of common stock issued and sold in our IPO were registered under the Securities Act pursuant to a registration statement on Form S-1 (Registration No. 333-2231754), which was declared effective by the SEC on June 19, 2019. Morgan Stanley & Co. LLC, BofA Securities, Inc. and Cowen and Company, LLC acted as joint book-running managers for the IPO. Wedbush Securities, Inc acted as a co-manager for the IPO. The offering commenced on June 19, 2019, and, following the sale of the shares upon the closing of the IPO, the offer terminated.

The aggregate net proceeds to us from the public offering were approximately $113.2 million, after deducting underwriting discounts and commissions and offering expenses payable by us of approximately $11.8 million. No offering expenses were paid directly or indirectly to any of our directors or officers (or their associates) or persons owning 10% or more of any class of our equity securities or to any other affiliates.

As of September 30, 2019, there has been no material change in the planned use of proceeds from our IPO from those disclosed in the IPO Prospectus. We invested the funds received in the IPO in cash and cash equivalents in accordance with our investment policy.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

Exhibit Number	Description	Incorporated by Reference			
		Schedule Form	File Number	Exhibit	Filing Date
3.1	Amended and Restated Certificate of Incorporation of the Registrant.	8-K	001-38939	3.1	June 25, 2019
3.2	Amended and Restated Bylaws of the Registrant.	8-K	001-38939	3.2	June 25, 2019
4.1	Specimen Stock Certificate evidencing the shares of common stock.	S-1	333-231754	4.1	May 24, 2019
31.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
31.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
32.1*++	Certification of Principal Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
101.INS	XBRL Instance Document				
101.SCH	XBRL Taxonomy Extension Schema Document				
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB	XBRL Taxonomy Extension Label Linkbase Document				
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document				

* Filed herewith.

++ This certification is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended.

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.

Company Name

Date: November 12, 2019

By: /s/ Asa Abeliovich, M.D., Ph.D.
Asa Abeliovich, M.D., Ph.D.
President, Chief Executive Officer and Director
(Principal Executive Officer)

Date: November 12, 2019

By: /s/ Brett Kaplan, M.D
Brett Kaplan, M.D.
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Asa Abeliovich, M.D., Ph.D., certify that:

1. I have reviewed this quarterly report on Form 10-Q of Prevail Therapeutics, Inc;

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

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

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) 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) 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

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

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

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

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

Date: November 12, 2019

By: /s/ Asa Abeliovich, M.D., Ph.D.
Asa Abeliovich, M.D., Ph.D.
President, Chief Executive Officer and Director
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Brett Kaplan, M.D., certify that:

1. I have reviewed this quarterly report on Form 10-Q of Prevail Therapeutics, Inc.;

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

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

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) 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) 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

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

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

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

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

Date: November 12, 2019

By: /s/ Brett Kaplan, M.D.
Brett Kaplan, M.D.
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

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

In connection with the Quarterly Report of Prevail Therapeutics, Inc. (the "Company") on Form 10-Q for the period ending September 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

Date: November 12, 2019

By: /s/ Asa Abeliovich, M.D., Ph.D.
Asa Abeliovich, M.D., Ph.D.
President, Chief Executive Officer and Director
(Principal Executive Officer)

In connection with the Quarterly Report of Prevail Therapeutics, Inc. (the "Company") on Form 10-Q for the period ending September 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

Date: November 12, 2019

By: /s/ Brett Kaplan, M.D.
Brett Kaplan, M.D.
Chief Financial Officer
(Principal Financial and Accounting Officer)