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 December 31, 2022
or

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

For the transition period from _____ to _____.

Commission File Number: 001-37761

VISTAGEN THERAPEUTICS, INC.

(Exact name of registrant as specified in its charter)

Nevada	**20-5093315**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

343 Allerton Avenue
South San Francisco, CA 94080
(Address of principal executive offices including zip code)

(650) 577-3600
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	VTGN	Nasdaq Capital Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting 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 February 7, 2023, 219,326,526 shares of the registrant's common stock, $0.001 par value, were issued and outstanding.

Vistagen Therapeutics, Inc.
Quarterly Report on Form 10-Q
for the Quarter Ended December 31, 2022

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PART I. FINANCIAL INFORMATION

Item 1. Condensed Consolidated Financial Statements

VISTAGEN THERAPEUTICS, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS
(Amounts in Dollars, except share amounts)

	December 31, 2022 (unaudited)	March 31, 2022 (Note 2)
ASSETS		
Current assets:		
Cash and cash equivalents	$ 25,037,300	$ 68,135,300
Prepaid expenses and other current assets	953,200	2,745,800
Deferred contract acquisition costs - current portion	67,000	116,900
Total current assets	26,057,500	70,998,000
Property and equipment, net	540,700	414,300
Right-of-use asset - operating lease	2,364,100	2,662,000
Deferred offering costs	411,400	321,800
Deferred contract acquisition costs - non-current portion	234,200	146,400
Security deposits	100,900	100,900
Total assets	$ 29,708,800	$ 74,643,400
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 1,598,800	$ 2,758,600
Accrued expenses	1,085,200	1,329,200
Notes payable	419,100	-
Deferred revenue - current portion	712,300	1,244,000
Operating lease obligation - current portion	470,400	433,300
Financing lease obligation - current portion	1,600	-
Total current liabilities	4,287,400	5,765,100
Non-current liabilities:		
Deferred revenue - non-current portion	2,492,200	1,557,600
Operating lease obligation - non-current portion	2,246,800	2,605,400
Financing lease obligation - non-current portion	7,900	-
Total non-current liabilities	4,746,900	4,163,000
Total liabilities	9,034,300	9,928,100
Commitments and contingencies (Note 10)		
Stockholders' equity:		
Preferred stock, $0.001 par value; 10,000,000 shares authorized at December 31, 2022 and March 31, 2022: no shares outstanding at December 31, 2022 and March 31, 2022	-	-
Common stock, $0.001 par value; 325,000,000 shares authorized at December 31, 2022 and March 31, 2022; 207,052,010 and 206,676,620 shares issued at December 31, 2022 and March 31, 2022, respectively	207,100	206,700
Additional paid-in capital	339,060,200	336,080,700
Treasury stock, at cost, 135,665 shares of common stock held at December 31, 2022 and March 31, 2022	(3,968,100)	(3,968,100)
Accumulated deficit	(314,624,700)	(267,604,000)
Total stockholders' equity	20,674,500	64,715,300
Total liabilities and stockholders' equity	$ 29,708,800	$ 74,643,400

See accompanying notes to Condensed Consolidated Financial Statements.

VISTAGEN THERAPEUTICS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(Unaudited)
(Amounts in Dollars, except share amounts)

	Three Months Ended December 31,		Nine Months Ended December 31,	
	2022	2021	2022	2021
Revenues:				
Sublicense revenue	$ 179,600	$ 357,900	$ (402,900)	$ 1,070,000
Total revenues	179,600	357,900	(402,900)	1,070,000
Operating expenses:				
Research and development	6,854,000	7,780,000	35,039,800	23,173,600
General and administrative	3,092,100	3,118,100	11,586,200	8,982,300
Total operating expenses	9,946,100	10,898,100	46,626,000	32,155,900
Loss from operations	(9,766,500)	(10,540,200)	(47,028,900)	(31,085,900)
Other income, net:				
Interest income, net	5,300	5,100	13,700	15,300
Loss before income taxes	(9,761,200)	(10,535,100)	(47,015,200)	(31,070,600)
Income taxes	-	-	(5,500)	(3,400)
Net loss and comprehensive loss	(9,761,200)	(10,535,100)	(47,020,700)	(31,074,000)
Accrued dividend on Series B Preferred stock	-	(208,100)	-	(945,100)
Net loss attributable to common stockholders	$ (9,761,200)	$ (10,743,200)	$ (47,020,700)	$ (32,019,100)
Basic and diluted net loss attributable to common stockholders per common share	$ (0.05)	$ (0.05)	$ (0.23)	$ (0.16)
Weighted average shares used in computing basic and diluted net loss attributable to common stockholders per common share	206,838,084	202,328,683	206,749,238	195,179,267

See accompanying notes to Condensed Consolidated Financial Statements.

VISTAGEN THERAPEUTICS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)
(Amounts in Dollars)

	Nine Months Ended December 31,	
	2022	**2021**
Cash flows from operating activities:		
Net loss	$ (47,020,700)	$ (31,074,000)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	96,200	114,900
Stock-based compensation	2,734,900	2,078,700
Warrant modification expense	77,400	-
Amortization of operating lease right-of-use asset	297,900	462,800
Expense related to write-off of deferred offering costs	-	232,000
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	3,037,900	(2,114,000)
Operating lease liability	(321,500)	(574,300)
Deferred sublicense revenue, net of deferred contract acquisition costs	365,000	(969,400)
Accounts payable and accrued expenses	(1,509,500)	2,175,300
Net cash used in operating activities	(42,242,400)	(29,668,000)
Cash flows from property and investing activities:		
Purchases of laboratory and other equipment	(212,000)	(200,300)
Net cash used in investing activities	(212,000)	(200,300)
Cash flows from financing activities:		
Net proceeds from issuance of common stock and warrants, including option exercises	104,400	116,000
Net proceeds from exercise of warrants	-	6,207,400
Net proceeds (expenses) from sale of common stock under At the Market (ATM) facility, net of deferred offering costs	(89,600)	4,040,100
Net proceeds from sale of common stock under Employee Stock Purchase Plan	63,100	99,500
Repayment of financing lease obligations	(1,000)	(2,800)
Repayment of note payable	(720,500)	-
Net cash (used in) provided by financing activities	(643,600)	10,460,200
Net decrease in cash and cash equivalents	(43,098,000)	(19,408,100)
Cash and cash equivalents at beginning of period	68,135,300	103,108,300
Cash and cash equivalents at end of period	$ 25,037,300	$ 83,700,200
Supplemental disclosure of noncash activities:		
Insurance premiums settled by issuing note payable	$ 1,139,700	$ -
Acquisition of office equipment subject to financing lease	$ 10,600	$ -
Accrued dividends on Series B Preferred	$ -	$ 945,100
Accrued dividends on Series B Preferred settled upon conversion by issuance of common stock	$ -	$ 7,217,800

See accompanying notes to Condensed Consolidated Financial Statements.

VISTAGEN THERAPEUTICS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
FOR THE NINE MONTHS ENDED DECEMBER 31, 2022 AND 2021
(Unaudited)
(Amounts in Dollars, except share amounts)

	Series A Preferred Stock		Series B Preferred Stock		Series C Preferred Stock		Series D Preferred Stock		Common Stock		Additional Paid-in Capital	Treasury Stock	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount				
Balances at March 31, 2021	**500,000**	**$ 500**	**1,131,669**	**$ 1,100**	**2,318,012**	**$ 2,300**	**402,149**	**$ 400**	**180,751,234**	**$180,800**	**$315,603,100**	**$ (3,968,100)**	**$ (219,841,700)**	**$ 91,978,500**
Accrued dividends on Series B Preferred	-	-	-	-	-	-	-	-	-	-	(361,800)	-	-	(361,800)
Stock-based compensation expense (including ESPP)	-	-	-	-	-	-	-	-	-	-	590,400	-	-	590,400
Proceeds from exercise of warrants	-	-	-	-	-	-	-	-	1,516,768	1,500	1,108,200	-	-	1,109,700
Conversion of Series D Preferred stock into common stock	-	-	-	-	-	-	(402,149)	(400)	9,249,427	9,200	(8,800)	-	-	-
Sale of common stock pursuant to 2019 Employee Stock Purchase Plan	-	-	-	-	-	-	-	-	16,251	-	31,600	-	-	31,600
Issuance of common stock upon cashless exercise of options	-	-	-	-	-	-	-	-	82,504	100	-	-	-	100
Issuance of common stock upon exercise of options for cash	-	-	-	-	-	-	-	-	15,824	-	12,900	-	-	12,900
Net loss for quarter ended June 30, 2021	-	-	-	-	-	-	-	-	-	-	-	-	(7,744,500)	(7,744,500)
Balances at June 30, 2021	**500,000**	**500**	**1,131,669**	**1,100**	**2,318,012**	**2,300**	**-**	**-**	**191,632,008**	**191,600**	**316,975,600**	**(3,968,100)**	**(227,586,200)**	**85,616,900**
Accrued dividends on Series B Preferred	-	-	-	-	-	-	-	-	-	-	(375,200)	-	-	(375,200)
Stock-based compensation expense (including ESPP)	-	-	-	-	-	-	-	-	-	-	764,500	-	-	764,500
Proceeds from exercise of warrants	-	-	-	-	-	-	-	-	3,297,777	3,300	3,141,800	-	-	3,145,100
Net proceeds from issuance of common stock under ATM facility	-	-	-	-	-	-	-	-	1,502,378	1,500	4,256,300	-	-	4,257,800
Issuance of common stock upon cashless exercise of options	-	-	-	-	-	-	-	-	43,622	-		-	-	-
Issuance of common stock upon exercise of options for cash	-	-	-	-	-	-	-	-	83,000	100	45,000	-	-	45,100
Net loss for quarter ended September 30, 2021	-	-	-	-	-	-	-	-	-	-	-	-	(12,794,400)	(12,794,400)
Balances at September 30, 2021	**500,000**	**500**	**1,131,669**	**1,100**	**2,318,012**	**2,300**	**-**	**-**	**196,558,785**	**196,500**	**324,808,000**	**(3,968,100)**	**(240,380,600)**	**80,659,800**
Accrued dividends on Series B Preferred	-	-	-	-	-	-	-	-	-	-	(208,100)	-	-	(208,100)
Stock-based compensation expense	-	-	-	-	-	-	-	-	-	-	723,800	-	-	723,800

(including ESPP)														
Proceeds from exercise of warrants	-	-	-	-	-	-	-	-	2,484,246	2,500	1,950,100	-	-	1,952,600
Net proceeds from issuance of common stock under ATM facility	-	-	-	-	-	-	-	-	15,420	-	41,300	-	-	41,300
Conversion of Series C Preferred into common stock	-	-	-	-	(2,318,012)	(2,300)	-	-	2,318,012	2,300	-	-	-	-
Conversion of Series B Preferred into common stock, including common stock issued in payment of accrued dividends	-	-	(1,131,669)	(1,100)	-	-	-	-	4,427,447	4,400	7,214,500	-	-	7,217,800
Conversion of Series A Preferred into common stock	(500,000)	(500)	-	-	-	-	-	-	750,000	800	(300)	-	-	-
Issuance of common stock upon exercise of options for cash	-	-	-	-	-	-	-	-	50,000	100	57,900	-	-	58,000
Sale of common stock pursuant to 2019 Employee Stock Purchase Plan	-	-	-	-	-	-	-	-	40,960	-	67,800	-	-	67,800
Net loss for quarter ended December 31, 2021	-	-	-	-	-	-	-	-	-	-	-	-	(10,535,100)	(10,535,100)
Balances at December 31, 2021	**-**	**$ -**	**-**	**$ -**	**-**	**$ -**	**-**	**$ -**	**206,644,870**	**$ 206,600**	**$ 334,655,000**	**$ (3,968,100)**	**$ (250,915,700)**	**$ 79,977,800**

CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY (Continued)
FOR THE NINE MONTHS ENDED DECEMBER 31, 2022 AND 2021
(Unaudited)
(Amounts in Dollars, except share amounts)

	Series A Preferred Stock		Series B Preferred Stock		Series C Preferred Stock		Series D Preferred Stock		Common Stock		Additional Paid-in Capital	Treasury Stock	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount				
Balances at March 31, 2022	-	$ -	-	$ -	-	$ -	-	$ -	**206,676,620**	**$ 206,700**	**$ 336,080,700**	**$ (3,968,100)**	**$ (267,604,000)**	**$ 64,715,300**
Stock-based compensation expense	-	-	-	-	-	-	-	-	-	-	956,900	-	-	956,900
Issuance of common stock upon exercise of options for cash	-	-	-	-	-	-	-	-	100,000	100	99,900	-	-	100,000
Sale of common stock pursuant to 2019 Employee Stock Purchase Plan	-	-	-	-	-	-	-	-	75,000	100	56,000	-	-	56,100
Net loss for quarter ended June 30, 2022	-	-	-	-	-	-	-	-	-	-	-	-	(19,776,300)	(19,776,300)
Balances at June 30, 2022	-	-	-	-	-	-	-	-	**206,851,620**	**206,900**	**337,193,500**	**(3,968,100)**	**(287,380,300)**	**46,052,000**
Stock-based compensation expense	-	-	-	-	-	-	-	-	-	-	1,031,800	-	-	1,031,800
Issuance of common stock upon exercise of options for cash	-	-	-	-	-	-	-	-	11,000	-	4,400	-	-	4,400
Issuance of common stock upon cashless exercise of options	-	-	-	-	-	-	-	-	109,390	100	(100)	-	-	-
Net loss for quarter ended September 30, 2022	-	-	-	-	-	-	-	-	-	-	-	-	(17,483,200)	(17,483,200)
Balances at September 30, 2022	-	-	-	-	-	-	-	-	**206,972,010**	**207,000**	**338,229,600**	**(3,968,100)**	**(304,863,500)**	**29,605,000**
Stock-based compensation expense	-	-	-	-	-	-	-	-	-	-	746,300	-	-	746,300
Increase in fair value attributable to warrant modification	-	-	-	-	-	-	-	-	-	-	77,400	-	-	77,400
Sale of common stock pursuant to 2019 Employee Stock Purchase Plan	-	-	-	-	-	-	-	-	80,000	100	6,900	-	-	7,000
Net loss for quarter ended December 31, 2022	-	-	-	-	-	-	-	-	-	-	-	-	(9,761,200)	(9,761,200)
Balances at December 31, 2022	-	$ -	-	$ -	-	$ -	-	$ -	**207,052,010**	**$ 207,100**	**$ 339,060,200**	**$ (3,968,100)**	**$ (314,624,700)**	**$ 20,674,500**

See accompanying notes to Condensed Consolidated Financial Statements.

Note 1. Description of Business

Vistagen Therapeutics, Inc., a Nevada corporation (which may be referred to as *Vistagen*, the *Company*, *we*, *our*, or *us*), is advancing the development of therapeutics for certain disorders of the central nervous system (*CNS*) with the potential to be faster-acting, and with fewer side effects and safety concerns than treatments currently available for those conditions. Our most advanced clinical-stage candidates, PH94B and PH10, may provide relief from multiple forms of anxiety and depression. They belong to a new class of drugs known as pherines. These investigational neuroactive steroids are formulated as nasal sprays at very low concentrations and are designed to achieve rapid-onset anti-anxiety (PH94B) or antidepressant (PH10) effects. We believe these drug candidates directly activate chemosensory neurons located in the nasal passages, which neurons then impact olfactory amygdala "fear off" (anti-anxiety) and "fear on" (antidepressant) neural circuits in the brain, without requiring systemic uptake or direct activity on CNS neurons in the brain. Our goal is to become a biopharmaceutical company that develops and commercializes innovative therapies for anxiety, depression, and other CNS indications where current treatment options are inadequate to meet the needs of millions of patients in the United States (*U.S.*) and worldwide.

Our Product Candidates

PH94B Nasal Spray

PH94B is a synthetic investigational neuroactive steroid from the androstane family of pherines. When administered intranasally in microgram doses, PH94B activates receptors in the membrane of peripheral nasal chemosensory neurons connected to subsets of neurons in the olfactory bulbs that in turn connect to neurons in the limbic amygdala involved in the pathophysiology of social anxiety disorder (*SAD*) and potentially other anxiety and mood disorders. PH94B does not exert effects on receptor targets with known abuse potential (e.g., dopamine, nicotinic, and opiate receptors) and has neither agonistic nor antagonistic effects on $GABA_A$ α1/β2/γ2 ion channels. PH94B is pharmacologically active without requiring apparent systemic uptake and distribution to achieve its rapid-onset and short duration of anxiolytic effects. The FDA has designated PH94B as a Fast Track product candidate, and we are currently developing PH94B for the treatment of anxiety symptoms in adult subjects with SAD and for anxiety symptoms in adult subjects with adjustment disorder (*AjDA*).

The proposed MOA of PH94B is fundamentally differentiated from all currently approved anti-anxiety medications, including the three antidepressants approved by the FDA for the treatment of SAD, as well as all benzodiazepines and beta blockers, which, although not FDA-approved for treatment of SAD, are prescribed for treatment of SAD on an off-label basis. Pre-clinical and Phase 2 clinical data to date suggest that PH94B has the potential to achieve rapid-onset anti-anxiety effects without systemic uptake or transport into the brain, significantly reducing the risk of side effects and other safety concerns such as potential abuse, misuse and addiction associated with certain other pharmaceuticals that act directly on the CNS and are sometimes prescribed for anxiety disorders.

PALISADE-1. In May 2021, we initiated our PALISADE Phase 3 Program for PH94B in SAD with PALISADE-1, a single-administration assessment Phase 3 public speaking challenge clinical study of PH94B for the acute treatment of anxiety in adults with SAD. Following discussions with the FDA in mid-2020 during the early phase of the COVID-19 pandemic, we agreed to design PALISADE-1 in a manner substantially similar to the single-administration assessment Phase 2 public speaking challenge study of PH94B in SAD, which involved self-administration of only a single dose of PH94B by subjects randomized to the treatment arm. All subjects were given an anxiety-provoking public speaking challenge, conducted only in a clinical setting, and their change in Subjective Units of Distress Scale (*SUDS*) score was determined.

In July 2022, we announced top line results from PALISADE-1. Although the safety and tolerability of PH94B in PALISADE-1 were favorable and consistent with previously reported results from previous clinical trials, PALISADE-1 did not achieve its primary efficacy endpoint, as measured by change from baseline using the SUDS as compared to placebo. We believe the following hypotheses are among the potential explanations for the unexpected outcome in PALISADE-1: (i) the study was conducted through surges of the COVID-19 pandemic, introducing significant additional variability in terms of changing social dynamics, subject stress, study site and CRO personnel turnover, mask wearing, and scheduling and monitoring complexities; (ii) the public speaking challenge study design may not have been scalable to a large Phase 3 study, especially during the pandemic, given the complexities of consistently administering the highly provocative challenge and rigorously adhering to the study protocol across numerous study sites and over an extended time period; and (iii) some subjects in the study may have had reduced potential to respond to PH94B due to impaired olfactory cell function potentially caused by the COVID-19 virus, nasal swab testing for COVID-19 or influenza, and/or heavy cannabis use, smoking or vaping.

PALISADE-2. In October 2021, we initiated PALISADE-2, which involves the same clinic-based public speaking challenge study design and use of the SUDS as the primary efficacy endpoint as PALISADE-1. In July 2022, after receiving top line results from PALISADE-1, we paused recruitment and enrollment in PALISADE-2 to allow independent third-party biostatisticians to conduct an interim analysis of available data from subjects randomized in PALISADE-2 up to the date we paused the study. In September 2022, based on their review of unblinded data from the 140 subjects who had completed PALISADE-2, the independent third-party biostatisticians recommended that we continue PALISADE-2 as planned, without revealing the underlying data to us. In addition, we recently submitted to the FDA various adjustments to the PALISADE-2 study protocol. Should we opt to resume PALISADE-2, the proposed amendments address certain methodological issues we believe may have contributed to the unexpected outcome of PALISADE-1.

In December 2022, two of our peer biopharmaceutical companies announced that the top line results of their recently completed SAD studies using the single assessment public speaking challenge study design, with SUDS as the primary efficacy endpoint, also did not achieve their primary efficacy endpoint in their respective study. Upon reviewing the information and data available to us at this time, we believe it is not yet advisable to make a decision about resuming PALISADE-2 before discussing our broader Phase 3 development plan for PH94B with the FDA and further assessing potential impact of the proposed adjustments to the PALISADE-2 protocol in light of the recent results of SAD studies by our peers involving the public speaking challenge methodology. We are currently preparing to meet with the FDA to discuss that plan, which includes, among other things, a multiple-assessment, randomized, double-blind, placebo-controlled Phase 3 study of PH94B in adults, using the LSAS as the primary efficacy outcome measure to evaluate the efficacy of PH94B over time in patients with SAD to support a potential New Drug Application (*NDA*). We expect to announce our plans for PALISADE-2 concurrently with other updates to our PH94B Phase 3 development plan for SAD.

PALISADE Open Label Study. The long-term administration of 3.2 µg of PH94B up to four times a day as needed in the PALISADE Open Label Study (*PALISADE OLS*) was safe, well tolerated, and led to improvement in LSAS scores. The PALISADE OLS was a Phase 3, open-label safety trial designed to evaluate the safety and tolerability of multiple, as-needed administrations (up to four times a day) of PH94B in adults with SAD. This study also evaluated the change from baseline in monthly standard clinical measurements and behavioral assessment scales (LSAS, CGI-S, CGI-I, and PGI-C) in response to anxiety-provoking social situations in daily-life after the administration of PH94B. Safety and tolerability of PH94B were assessed and summarized during monthly visits from baseline to end of treatment in AEs, laboratory values, 12-lead electrocardiograms (*ECGs*), physical examinations, and vital sign assessments following exposure to PH94B. Following the completion of PALISADE-1, PALISADE OLS was terminated early, solely for strategic business reasons, and not due to any safety concerns with PH94B. We believe unpublished preliminary data from the final dataset from PALISADE OLS provide evidence to further support the safety and efficacy of PH94B for treating SAD, as measured by AE frequency and improvement in SAD severity as measured by the LSAS, CGI-I, and PGI-C, respectively. Overall, we believe the long-term administration of 3.2 µg of PH94B, up to four times a day as needed, appears to be safe and well tolerated in adult subjects with SAD.

Potential Next Steps in SAD Phase 3 Development Plan. We believe data from approximately 400 subjects in the PALISADE OLS over a period of one month and beyond, combined with the data from the previous Phase 2 randomized, double-blind, placebo-controlled, crossover study of PH94B after two weeks of use, as discussed above, demonstrate the potential for PH94B to achieve robust overall reduction in symptoms of SAD and improvement in severity of the disorder over time, as measured by the LSAS. These data also appear to suggest that studies involving multiple administrations of PH94B over time on an as-needed basis, up to four times per day, when subjects experience daily, real-life, socially stressful situations may most accurately reflect the true efficacy of PH94B in patients with SAD and represent the actual way in which they would use PH94B. Utilizing the LSAS as the primary efficacy outcome measure in our next Phase 3 study is consistent with the pivotal registration trials for all three currently approved treatments for SAD. As those studies indicate, the LSAS is capable of measuring a drug's efficacy in patients with SAD due to its ability to capture patient feedback on fear and anxiety regarding various social situations, as well avoidance of such situations. Hence, we believe using the LSAS as the primary efficacy endpoint for our further Phase 3 development of PH94B has the potential to demonstrate its efficacy and true impact on patients' lives.

Accordingly, we are preparing to meet with the FDA to discuss our broader Phase 3 development plan for PH94B in SAD, which plan includes, among other things, the possibility of conducting a multiple-assessment, randomized, double-blind, placebo-controlled Phase 3 study of PH94B in adults, using the LSAS as the primary efficacy outcome measure to evaluate the efficacy of PH94B over time in patients with SAD to support a potential PH94B New Drug Application (*NDA*). Unlike the PALISADE Phase 3 studies, which involved assessment of only a single self-administration of PH94B in a clinic-based public speaking challenge with the SUDS as the primary outcome measure, the Phase 3 study contemplated as part of our broader plan would involve multiple self-administrations of PH94B, on an as-needed basis, up to four times per day, in a real-world setting over a multiple week period, with the LSAS as the primary efficacy endpoint, consistent with the FDA's precedent-setting approvals of the three antidepressants for treatment of SAD. Given that LSAS measures overall improvement in disease severity by measuring the reduction in fear and anxiety over time, as well as the avoidance of anxiety-provoking social and performance situations, as noted, we believe the LSAS will be appropriate to measure and reflect the true impact of PH94B on patients' lives.

Exploratory Phase 2A Development for AjDA and Future Development Opportunities. In January 2023, we completed our small exploratory Phase 2A clinical study of PH94B, designed to assess its therapeutic potential in adults experiencing adjustment disorder with anxiety (*AjDA*). Adjustment disorder (*AjD*) refers to a maladaptive emotional or behavioral response to an identifiable stressor. AjD occurs within three months of exposure to the stressor as evidenced by marked distress that is out of proportion to the socially or culturally expected reactions to the stressor, or that represents significant impairment in social, occupational or other important areas of daily functioning. Current pharmacological treatments for AjDA vary widely and include antidepressants (SSRIs and SNRIs), benzodiazepines, buspirone and natural products such as cannabidiol. Our randomized, double-blind, placebo-controlled exploratory Phase 2A study in AjDA involved daily use of PH94B administered four times per day in a real-world outpatient setting for 28 days. We anticipate top line results by the end of the first calendar quarter of 2023. We may also have potential opportunities to develop PH94B for other anxiety-related disorders.

PH10

PH10 is an investigational pherine nasal spray for the treatment of major depressive disorder (*MDD*) with a potential rapid-onset MOA that is fundamentally differentiated from the MOA of all currently approved treatments for MDD and other depression disorders. PH10, which is administered at microgram-level doses, engages and activates chemosensory neurons in the nasal passages, connected to neural circuits in the brain that produce antidepressant effects. Specifically, PH10's proposed MOA involves binding to receptors for chemosensory neurons in the nasal passages to regulate the olfactory amygdala "fear on" neural circuits believed to increase activity of the limbic-hypothalamic sympathetic nervous system and increase the release of catecholamines. Importantly, unlike all currently approved oral antidepressants and rapid-onset ketamine-based therapy (*KBT*), including both intravenous ketamine and intranasal ketamine (esketamine), we believe PH10 does not require systemic uptake to produce rapid-onset of antidepressant effects and does not cause the side effects and safety concerns potentially associated with KBT.

In December 2022, we announced that the FDA granted Fast Track designation for PH10 as a potential treatment for MDD.

In a small (n=30) exploratory randomized, double-blind, placebo-controlled parallel design Phase 2A study MDD conducted in Mexico, at a 6.4 µg dose administered intranasally twice daily for 8 weeks, PH10 significantly reduced depressive symptoms as early as one week based on the 17-item Hamilton Depression Scale (*HAM-D-17*) scores compared to placebo ($p = 0.022$). Peer-reviewed results of the study published in the British Journal of Pharmaceutical and Medical Research (Monti, et al., *Br J Phar Med Res* (2019) 4(06):2157 – 2168) also showed that PH10 was well-tolerated and did not cause psychological side effects (such as dissociation and hallucinations) or other safety concerns that may be associated with KBT.

Following the submission of a U.S. Investigational New Drug (*IND*) application for a Phase 1 study of PH10 in the U.S. in healthy volunteers, in December 2022, we were advised by the FDA that we may proceed with the study. The primary objective of this U.S. single center, Phase 1, randomized, double-blinded, placebo-controlled study is to investigate the safety and tolerability of PH10 in healthy adult subjects (n=12). In January 2023, we announced that the first cohort of healthy volunteers had been dosed in the Phase 1 study and we anticipate completion of the study by the end of the first calendar quarter of 2023.

AV-101

AV-101 (4-chlorokynurenine) is an oral prodrug of 7-chloro-kynurenic acid (7-Cl-KYNA), which is a potent and selective antagonist of the glycine co-agonist site of the NMDA receptor (NMDAR) that inhibits the function of the NMDAR. Unlike ketamine and other NMDAR antagonists, 7-Cl-KYNA is not an ion channel blocker. At doses administered in the Company's studies completed to date, AV-101 has been observed to be well tolerated and has not exhibited dissociative or hallucinogenic psychological side effects or safety concerns, unlike several other modulators of the NMDAR. Based on observations and findings from preclinical studies, we believe that AV-101, in combination with FDA-approved oral probenecid, has the potential to become a new oral treatment alternative for certain CNS indications involving the NMDAR. We are presently conducting an exploratory Phase 1B drug-drug interaction clinical study of AV-101 in combination with probenecid and expect to complete dosing of the final cohort in the study in the first half of 2023.

The FDA has granted Fast Track designation for development of AV-101 as a potential adjunctive treatment for MDD and as a non-opioid treatment for neuropathic pain.

Subsidiaries

VistaGen Therapeutics, Inc., a California corporation d/b/a VistaStem (*VistaStem*), is our wholly owned subsidiary. For the relevant periods, our Condensed Consolidated Financial Statements in this Quarterly Report on Form 10-Q (*Report*) also include the accounts of VistaStem's two wholly owned inactive subsidiaries, Artemis Neuroscience, Inc., a Maryland corporation (*Artemis*), which was dissolved in April 2022, and VistaStem Canada, Inc., a corporation organized under the laws of Ontario, Canada (*VistaStem Canada*), which was dissolved in June 2022.

Note 2. Basis of Presentation

The accompanying unaudited Condensed Consolidated Financial Statements have been prepared in accordance with accounting principles generally accepted in the United States of America (*U.S. GAAP*) for interim financial information and with the instructions to Form 10-Q and Rule 8-03 of Regulation S-X. Accordingly, they do not contain all of the information and footnotes required for complete consolidated financial statements. In the opinion of management, the accompanying unaudited Condensed Consolidated Financial Statements reflect all adjustments, which include only normal recurring adjustments, necessary to present fairly our interim financial information. The accompanying Condensed Consolidated Balance Sheet at March 31, 2022 has been derived from our audited consolidated financial statements at that date but does not include all disclosures required by U.S. GAAP. The operating results for the three and nine months ended December 31, 2022 are not necessarily indicative of the operating results to be expected for our fiscal year ending March 31, 2023, or for any other future interim or other period.

The accompanying unaudited Condensed Consolidated Financial Statements and notes to the Condensed Consolidated Financial Statements contained in this Report should be read in conjunction with our audited Consolidated Financial Statements for our fiscal year ended March 31, 2022 contained in our Annual Report on Form 10-K, as filed with the Securities and Exchange Commission (*SEC*) on June 23, 2022 (*Form 10-K*).

The accompanying unaudited Condensed Consolidated Financial Statements have been prepared assuming we will continue as a going concern. As a clinical-stage biopharmaceutical company having not yet developed commercial products or achieved sustainable revenues, we have experienced recurring losses and negative cash flows from operations resulting in a deficit of approximately $314.6 million accumulated from inception (May 1998) through December 31, 2022. We expect losses and negative cash flows from operations to continue for the foreseeable future as we engage in further development of PH94B, PH10 and AV-101.

Since our inception in May 1998 through December 31, 2022, we have financed our operations and technology acquisitions primarily through the issuance and sale of our equity and debt securities for cash proceeds of approximately $208.7 million, as well as from an aggregate of approximately $22.7 million of government research grant awards (excluding the fair market value of government sponsored and funded clinical trials), strategic collaboration payments and intellectual property licensing, and other revenues. Additionally, we have issued equity securities with an approximate value at issuance of $38.2 million in noncash acquisitions of product licenses and in settlements of certain liabilities, including liabilities for professional services rendered to us or as compensation for such services.

Liquidity, Capital Resources and Going Concern

During our fiscal year ended March 31, 2022 (*Fiscal 2022*), holders of outstanding warrants to purchase an aggregate of approximately 7.3 million shares of our common stock exercised such warrants, and we received cash proceeds of approximately $6.2 million. In May 2021, we entered into an Open Market Sale Agreement SM (the *Sales Agreement*) with respect to an at-the-market offering program (the *ATM*) under which we may offer and sell, from time to time, shares of our common stock having an aggregate offering price of up to $75.0 million through our sales agent. During Fiscal 2022, we sold an aggregate of 1,517,798 shares of our common stock and received net cash proceeds of approximately $4.3 million under the ATM. We have not sold any additional shares of our common stock under the Sales Agreement from October 2, 2021 through the date of this Report. During our fiscal year ended March 31, 2021 (*Fiscal 2021*), we received approximately $119 million in net cash proceeds, primarily from public offerings conducted in August 2020 and December 2020, the exercise of approximately 6.6 million outstanding warrants and the upfront license payment pursuant to our sublicense and collaboration agreement for PH94B (the *AffaMed Agreement*), which is described more completely in Note 11, *Sublicensing and Collaborative Agreements*. The financings and other transactions consummated during Fiscal 2022 and Fiscal 2021 have provided the primary sources of our liquidity during Fiscal 2022 and through the date of this Report in our current fiscal year. During the nine months ended December 31, 2022, we have received approximately $167,500 in proceeds from the exercise of outstanding stock options and sales under our 2019 Employee Stock Purchase Plan (the *2019 ESPP*).

We had cash and cash equivalents of approximately $25.0 million at December 31, 2022, which we believe will not be sufficient to fund our planned operations for the twelve months following the issuance of these Condensed Consolidated Financial Statements, which raises substantial doubt regarding our ability to continue as a going concern. We are continuing to evaluate our cash resources as we prepare for further discussions with the FDA regarding the next steps in our late-stage development of PH94B for the treatment of SAD, collect and analyze topline results from our exploratory Phase 2A clinical study of PH94B in adults experiencing AjDA, conduct the small Phase 1 clinical safety study of PH10 to facilitate potential Phase 2B development, on our own or with a collaborator, as a potential stand-alone rapid-onset treatment for MDD and conduct our Phase 1 safety study of AV-101 in combination with probenecid to facilitate potential exploratory Phase 2A development of AV-101. We are continuing to evaluate the potential implications for the conduct and timing of other clinical trials and strategies for the development and commercialization, on our own or with collaborators, of all of our product candidates. However, as we have not yet developed products that generate recurring revenue and, in the event we successfully complete future clinical and/or nonclinical programs, we will need to obtain and invest substantial additional capital resources to develop and commercialize our drug candidates.

When necessary and advantageous, we will seek additional financial resources to fund our planned operations through (i) sales of our equity and/or debt securities in one or more public offerings and/or private placements, (ii) non-dilutive government grants and research awards and (iii) non-dilutive strategic partnering collaborations to advance development and commercialization of our product candidates. For example, we may seek to enter research, development and/or commercialization collaborations similar to the AffaMed Agreement, which applies only to development and commercialization of PH94B in Greater China, South Korea and Southeast Asian territories, to provide non-dilutive funding for our operations, while also reducing a portion of our future cash outlays and working capital requirements. Although we may seek additional collaborations that could generate revenue and/or provide non-dilutive funding for development and commercialization of our product candidates, no assurance can be provided that any such collaborations, awards or agreements will occur in the future.

Subject to certain restrictions, our Registration Statement on Form S-3 (the *S-3 Shelf Registration Statement*) remains available for future sales of our equity securities in one or more public offerings from time to time. While we may make additional sales of our equity securities under the S-3 Shelf Registration Statement, we do not have an obligation to do so.

Our future working capital requirements will depend on many factors, including, without limitation, potential impacts related to adjustments in the size of our staff, the scope and nature of opportunities related to our success or failure and the success or failure of certain other companies in nonclinical and clinical trials, including the development and commercialization of our current product candidates, and the availability of, and our ability to enter into financing transactions and research, development and commercialization collaborations on terms acceptable to us. In the future, to further advance the clinical development of our product candidates, as well as support our operating activities, we plan to seek additional financing, including both equity-based capital from non-dilutive sources, and continue to carefully manage our operating costs, including, but not limited to, our clinical and nonclinical programs.

Notwithstanding the foregoing, there can be no assurance that future financings will be available to us in sufficient amounts, in a timely manner, or on terms acceptable to us, if at all, or that our current development and commercialization collaboration under the AffaMed Agreement or other strategic partnering collaborations will generate revenue from future potential milestone payments or otherwise. Further, on September 6, 2022, we received a letter from the Listing Qualifications Staff of The Nasdaq Stock Market, LLC (*Nasdaq*) indicating that, based upon the closing bid price of our common stock for the previous 30 consecutive business days, we are not currently in compliance with the requirement to maintain a minimum bid price of $1.00 per share for continued listing on the Nasdaq Capital Market. While the letter has no immediate effect on the listing of our common stock on the Nasdaq Capital Market, failure to meet applicable Nasdaq continued listing standards by March 6, 2023, the expiration of the 180-day period in which to regain compliance, unless extended, could potentially result in a delisting of our common stock, which could materially reduce the liquidity of our common stock, result in a further reduction in the price of our common stock, require us to implement our stockholder-authorized reverse stock split to maintain our listing, and/or impair our ability to raise capital through alternative financing sources on terms acceptable to us, or at all. If we do not regain compliance by March 6, 2023, an additional 180 days may be granted to regain compliance, so long as we meet the Nasdaq Capital Market continued listing requirements (except for the bid price requirement) and notify Nasdaq in writing of our intention to cure the deficiency during the second compliance period by implementing a reverse stock split, if necessary. If we do not qualify for the second compliance period or fail to regain compliance during the second 180-day period, then Nasdaq will notify us of its determination to delist our common stock, at which point we will have an opportunity to appeal the delisting determination to a hearings panel. If we are unable to regain timely compliance with the Nasdaq continued listing standards and/or obtain additional financing on a timely basis when needed, our business, financial condition, and results of operations may be harmed, the price of our common stock may decline, we may be required to reduce, defer, or discontinue certain of our research and development activities, and we may not be able to continue as a going concern. The Condensed Consolidated Financial Statements included in this Report do not include any adjustments that might result from the negative outcome of this uncertainty.

Note 3. Summary of Significant Accounting Policies

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 revenues and expenses during the reporting period. Actual results could differ from those estimates. Significant estimates include those relating to revenue recognition, share-based compensation, right-of-use assets and lease liabilities and assumptions that have been used historically to value warrants and warrant modifications.

Cash and Cash Equivalents

Cash and cash equivalents are considered to be highly liquid investments with maturities of three months or less at the date of purchase.

Revenue Recognition

The AffaMed Agreement, involving clinical development and commercialization of PH94B for an as needed treatment of anxiety in adults with SAD, and potentially other anxiety-related disorders, in Greater China, South Korea, and Southeast Asia, has been our only source of revenue for the nine months ended December 31, 2022 and during both Fiscal 2022 and Fiscal 2021. The terms of the AffaMed Agreement include a $5.0 million non-refundable upfront license fee which we received in August 2020, potential payments based upon achievement of certain development and commercial milestones, and royalties on product sales. In prior years, we have occasionally generated revenue from collaborative research and development arrangements, licensing and technology transfer agreements, including strategic licenses or sublicenses, and government grants.

Under Accounting Standards Codification (*ASC*) Topic 606, *Revenue from Contracts with Customers (ASC 606)*, we recognize revenue when our customers obtain control of promised goods or services, in an amount that reflects the consideration that we expect to receive in exchange for those goods or services. To determine revenue recognition for arrangements that we determine are within the scope of ASC 606, we perform the following five steps: (i) identify the contract with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price, including variable consideration, if any; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy a performance obligation. We only apply the five-step model to contracts when it is probable that we will collect the consideration to which we are entitled in exchange for the goods or services we transfer to a customer.

Once a contract is determined to be within the scope of ASC 606, we assess the goods or services promised within each contract and determine those that are performance obligations. Arrangements that include rights to additional goods or services that are exercisable at a customer's discretion are generally considered options. We assess whether these options provide a material right to the customer and if so, they are considered performance obligations. The exercise of a material right may be accounted for as a contract modification or as a continuation of the contract for accounting purposes.

We assess whether each promised good or service is distinct for the purpose of identifying the performance obligations in the contract. This assessment involves subjective determinations and requires judgments about the individual promised goods or services and whether such are separable from the other aspects of the contractual relationship. Promised goods and services are considered distinct provided that (i) the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer (that is, the good or service is capable of being distinct) and (ii) our promise to transfer the good or service to the customer is separately identifiable from other promises in the contract (that is, the promise to transfer the good or service is distinct within the context of the contract). In assessing whether a promised good or service is distinct in the evaluation of a collaboration arrangement subject to ASC 606, we consider factors such as the research, manufacturing and commercialization capabilities of the collaboration partner and the availability of the associated expertise in the general marketplace. We also consider the intended benefit of the contract in assessing whether a promised good or service is separately identifiable from other promises in the contract. If a promised good or service is not distinct, we are required to combine that good or service with other promised goods or services until we identify a bundle of goods or services that is distinct.

The transaction price is then determined and allocated to the identified performance obligations in proportion to their standalone selling prices (*SSP*) on a relative SSP basis. SSP is determined at contract inception and is not updated to reflect changes between contract inception and satisfaction of the performance obligations. Determining the SSP for performance obligations requires significant judgment. In developing the SSP for a performance obligation, we consider applicable market conditions and relevant Company-specific factors, including factors that were contemplated in negotiating the agreement with the customer and estimated costs. In certain circumstances, we may apply the residual method to determine the SSP of a good or service if the standalone selling price is considered highly variable or uncertain. We validate the SSP for performance obligations by evaluating whether changes in the key assumptions used to determine the SSP will have a significant effect on the allocation of arrangement consideration between multiple performance obligations.

If the consideration promised in a contract includes a variable amount, we estimate the amount of consideration to which we will be entitled in exchange for transferring the promised goods or services to a customer. We determine the amount of variable consideration by using the expected value method or the most likely amount method. We include the unconstrained amount of estimated variable consideration in the transaction price. The amount included in the transaction price is constrained to the amount for which it is probable that a significant reversal of cumulative revenue recognized will not occur. At the end of each subsequent reporting period, we re-evaluate the estimated variable consideration included in the transaction price and any related constraint, and if necessary, adjust our estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis in the period of adjustment.

If an arrangement includes development and regulatory milestone payments, we evaluate whether the milestones are considered probable of being reached and estimate the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the associated milestone value is included in the transaction price. Milestone payments that are not within our control or the licensee's control, such as regulatory approvals, are generally not considered probable of being achieved until those approvals are received.

In determining the transaction price, we adjust consideration for the effects of the time value of money if the timing of payments provides us with a significant benefit of financing. We do not assess whether a contract has a significant financing component if the expectation at contract inception is such that the period between payment by the licensee and the transfer of the promised goods or services to the licensee will be one year or less. For arrangements with licenses of intellectual property that include sales-based royalties, including milestone payments based on the level of sales, and the license is deemed to be the predominant item to which the royalties relate, we recognize royalty revenue and sales-based milestones at the later of (i) when the related sales occur, or (ii) when the performance obligation to which the royalty has been allocated has been satisfied.

We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) each performance obligation is satisfied at a point in time or over time, and if over time, based on the use of an output or input method. For the single combined performance obligation under the AffaMed Agreement, the measure of progress is stand-ready straight-line over the period in which we expect to perform the services related to the license of PH94B. Accordingly, we recognize revenue on a straight-line basis over the period in which we expect to perform the services. Revenue related to performance obligation satisfied over time could be materially impacted as a result of changes in the estimated time or effort necessary to satisfy the performance obligation.

The difference between revenue recognized to date and the consideration invoiced or received to date is recognized as either a contract asset/unbilled revenue (revenue earned exceeds cash received) or a contract liability/deferred revenue (cash received exceeds revenue earned). As described more completely in Note 11, *Sublicensing and Collaborative Agreements*, as a result of the outcome of PALISADE-1, we extended our estimate of the time necessary to complete our performance obligation under the AffaMed Agreement. In accordance with the guidance of ASC 606, the extension of the estimated time to complete our performance obligation required recording a cumulative catch-up adjustment in which we derecognized $892,500 and $582,500 of previously recognized revenue during the three and six months ended September 30, 2022, respectively, including $310,000 of revenue that had been recognized in the quarter ended June 30, 2022. We recognized $179,600 of revenue during the quarter ended December 31, 2022. Following the cumulative catch-up adjustment, through December 31, 2022, we have recognized an aggregate of $1,795,500 in revenue under the AffaMed Agreement and, at that date, we have recorded $3,204,500 as deferred revenue. The following table presents changes in our contract liabilities for the nine months ended December 31, 2022 after giving effect to the cumulative catch-up adjustment:

	Balance at March 31, 2022	Additions	Deductions	Balance at December 31, 2022
Deferred Revenue - current portion	$ 1,244,000	$ -	$ (531,700)	$ 712,300
Deferred Revenue - non-current portion	1,557,600	1,114,200	(179,600)	2,492,200
Total	$ 2,801,600	$ 1,114,200	$ (711,300)	$ 3,204,500

During the three and nine months ended December 31, 2022, we recognized $179,600 of revenue and derecognized $402,900 of revenue, respectively, related to the AffaMed Agreement as a result of the cumulative catch-up adjustment, compared to recognizing $357,900 and $1,070,000 of revenue for the three and nine months ended December 31, 2021, respectively.

Contract Acquisition Costs

During the quarter ended September 30, 2020, we made cash payments aggregating $345,000 for sublicense fees, which we were obligated to make pursuant to our PH94B license agreement with Pherin Pharmaceuticals, Inc. (*Pherin*), and fees for consulting services exclusively related to the AffaMed Agreement. Additionally, on June 24, 2020, we issued 233,645 unregistered shares of our common stock, valued at $125,000, as partial compensation for consulting services related exclusively to the consummation of the AffaMed Agreement. These sublicense fees and consulting payments and the fair value of the common stock issued, aggregating $470,000, were incurred solely to obtain the AffaMed Agreement, and, accordingly, have been capitalized as deferred contract acquisition costs in our Condensed Consolidated Balance Sheets. Capitalized contract acquisition costs are amortized over the period in which we expect to satisfy the performance obligation under the AffaMed Agreement and the amortization expense has been included in general and administrative expense in our Condensed Consolidated Statements of Operations and Comprehensive Loss. As described above, we have extended our estimate for the time required to satisfy our performance obligation under the AffaMed Agreement. Accordingly, our amortization of the contract acquisition costs is also subject to a cumulative catch-up adjustment. During the three and six months ended September 30, 2022, we recorded a cumulative catch-up adjustment pursuant to which we reversed previously recorded expense of $83,900 and $54,800, respectively, including $29,100 which had been recognized in the quarter ended June 30, 2022, to general and administrative expense. We recognized expense of $16,900 during the quarter ended December 31, 2022, resulting in a net expense reversal of $37,900 for the nine months ended December 31, 2022. We recorded expense of $33,600 and $100,600 for the three and nine months ended December 31, 2021, respectively. There has been no impairment loss in relation to the costs capitalized.

The following table summarizes our contract acquisition costs for the nine months ended December 31, 2022 after giving effect to the cumulative catch-up adjustment.

	Balance at March 31, 2022	Additions	Deductions	Balance at December 31, 2022
Deferred Contract Acquisition Costs - current portion	$ 116,900	$ -	$ (49,900)	$ 67,000
Deferred Contract Acquisition Costs - non-current portion	146,400	87,800	-	234,200
Total	$ 263,300	$ 87,800	$ (49,900)	$ 301,200

Research and Development Expense

Research and development expense is composed of both internal and external costs. Internal costs include salaries and employment-related expense, including stock-based compensation expense, of scientific personnel and direct project costs. External research and development expense consists primarily of costs associated with clinical and nonclinical development of PH94B, PH10, AV-101. All such costs are charged to expense as incurred.

We also record accruals for estimated ongoing clinical trial costs. Clinical trial costs represent costs incurred by contract research organizations (*CRO*s) and clinical trial sites. Progress payments are generally made to CROs, clinical sites, investigators and other professional service providers. We analyze the progress of clinical trials, including levels of subject enrollment, invoices received and contracted costs, when evaluating the adequacy of accrued liabilities. Significant judgments and estimates must be made and used in determining the clinical trial accrual in any reporting period. Actual results could differ from those estimates under different assumptions. Revisions are charged to research and development expense in the period in which the facts that give rise to the revision become known.

Costs incurred in obtaining product or technology licenses are charged immediately to research and development expense if the product or technology licensed has not achieved regulatory approval or reached technical feasibility and has no alternative future uses, as was the case with our acquisition of the exclusive worldwide licenses for PH94B and PH10 from Pherin during our fiscal year ended March 31, 2019.

Stock-Based Compensation

We recognize compensation cost for all stock-based awards to employees, independent directors and non-employee consultants based on the grant date fair value of the award. We record stock-based compensation expense over the period during which the employee or other grantee is required to perform services in exchange for the award, which generally represents the scheduled vesting period. We have not granted restricted stock awards to employees or others nor do we have any awards with market or performance conditions. Non-cash expense attributable to compensatory grants of shares of our common stock to non-employees is determined by the quoted market price of the stock on the date of grant and is either recognized as fully-earned at the time of the grant or amortized ratably over the term of the related service agreement, depending on the terms of the specific agreement.

The table below summarizes stock-based compensation expense included in the accompanying Condensed Consolidated Statements of Operations and Comprehensive Loss:

	Three Months Ended December 31,		Nine Months Ended December 31,	
	2022	2021	2022	2021
Research and development expense	$ 296,200	$ 281,800	$ 1,091,900	$ 836,200
General and administrative expense	450,100	442,000	1,643,000	1,242,500
Total stock-based compensation expense	$ 746,300	$ 723,800	$ 2,734,900	$ 2,078,700

Expense amounts reported above include $9,500 and $34,900 in research and development expense for the three and nine months ended December 31, 2022, respectively, and $4,100 and $13,100 in general and administrative expense for the three and nine months ended December 31, 2022, respectively, attributable to employee participation in our 2019 ESPP. Expense amounts reported above include $14,400 and $31,100 in research and development expense for the three and nine months ended December 31, 2021, respectively, and $6,000 and $14,600 in general and administrative expense for the three and nine months ended December 31, 2021, respectively, attributable to employee participation in our 2019 ESPP.

During the nine months ended December 31, 2022, we granted from our 2019 Omnibus Equity Incentive Plan (the *2019 Plan*) options to purchase an aggregate of 4,162,000 shares of our common stock, including options to purchase 2,900,000 shares granted to all of our employees except executive officers and members of our Board of Directors (*Board*) in November 2022, at exercise prices equal to the closing market price of our common stock on the date of grant. Options to newly hired employees vest 25% on the first anniversary of the grant date with the remaining shares vesting ratably monthly over the next three years. Options granted to consultants generally vest 25% on the grant date and ratably monthly over the next twelve months. The options granted in November 2022 vest on the same terms as for options to newly hired employees. We valued the options granted during the nine months ended December 31, 2022 using the Black-Scholes Option Pricing Model and the following assumptions:

Assumption:	Weighted Average	Range
Market price per share at grant date	$ 0.34	$ 0.12 to 1.51
Exercise price per share	$ 0.34	$ 0.12 to 1.51
Risk-free interest rate	3.55%	2.63%to 3.78%
Expected term in years	6.03	5.20 to 6.54
Volatility	158.35%	79.14%to191.71%
Dividend rate	0.0%	0.0%
Shares	4,162,000	
Fair Value per share	**$ 0.27**	

On September 12, 2022, the Compensation Committee (the *Committee*) of our Board modified outstanding options to purchase an aggregate of 1,322,118 shares of our common stock exercisable at prices between $0.398 per share and $1.77 per share previously granted to a terminated employee and otherwise set to expire on September 13, 2022 to extend the exercisability of such options for a period of 90 days. No other term of the options, including exercise price, was modified. We calculated the fair value of the modified options immediately before and after the modification using the Black Scholes Option Pricing Model and the weighted average assumptions indicated in the table below. We recognized the incremental fair value, $108,600, as an additional component of research and development stock compensation expense in our Condensed Consolidated Statements of Operations and Comprehensive Loss for the three and six months ended September 30, 2022.

Assumption:	**Pre-modification**	**Post-modification**
Market price per share	$ 0.2052	$ 0.2052
Exercise price per share	$ 1.27	$ 1.27
Risk-free interest rate	2.62%	3.17%
Remaining contractual term in years	0.003	0.249
Volatility	138.31%	412.67%
Dividend rate	0.0%	0.0%
Number of option shares	1,322,118	1,322,118
Weighted average fair value per share	**$ 0.00**	**$ 0.08**

On December 12, 2022, the Committee again modified the options to extend the exercisability of such options through March 31, 2023. No other term of the options was modified. We calculated the fair value of the modified options immediately before and after the modification using the Black Scholes Option Pricing Model and the weighted average assumptions indicated in the table below. We recognized the incremental fair value, $100, as an additional component of research and development stock compensation expense in our Condensed Consolidated Statement of Operations and Comprehensive Loss for the three months ended December 31, 2022, bringing the aggregate modification expense for these options to $108,700 for the nine months ended December 31, 2022.

Assumption:	**Pre-modification**	**Post-modification**
Market price per share	$ 0.1190	$ 0.1190
Exercise price per share	$ 1.27	$ 1.27
Risk-free interest rate	3.86%	4.38%
Remaining contractual term in years	0.0	0.299
Volatility	92.75%	99.54%
Dividend rate	0.0%	0.0%
Number of option shares	1,322,118	1,322,118
Weighted average fair value per share	**$ 0.00**	**$ 0.0001**

During the nine months ended December 31, 2022, unvested options to purchase an aggregate of 655,437 shares of our common stock were cancelled due to employee terminations and options to purchase 39,038 shares of our common stock expired unexercised; such options were returned to the 2019 Plan to be available for future issuance. At December 31, 2022, there were stock options outstanding under our 2016 Equity Incentive Plan (the *2016 Plan*) and our 2019 Plan to purchase 22,567,914 shares of our common stock at a weighted average exercise price of $1.26 per share. At that date, there were 3,886,242 shares of our common stock available for future issuance under the 2019 Plan. There are no additional shares available for issuance under our 2016 Plan.

Leases, Right-of-use Assets and Operating Lease Obligations

We account for our leases following the guidance of Accounting Standards Update (*ASU*) No. 2016-02, *Leases (Topic 842)* (*ASU 2016-02*). ASU 2016-02 requires that we determine, at the inception of an arrangement, whether the arrangement is or contains a lease, based on the unique facts and circumstances present. Operating lease assets represent our right to use an underlying asset for the lease term (*Right-of-use assets*) and operating lease liabilities represent our obligation to make lease payments arising from the lease. Right-of-use assets and operating lease liabilities are recognized at the commencement date of the lease based upon the present value of lease payments over the lease term. When determining the lease term, we include options to extend or terminate the lease when it is reasonably certain, at inception, that we will exercise that option. The interest rate implicit in lease contracts is typically not readily determinable; accordingly, we use our incremental borrowing rate, which is the rate that would be incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment, based upon the information available at the commencement date. The lease payments used to determine our operating lease assets may include lease incentives, stated rent increases and escalation clauses linked to rates of inflation, when determinable, and are recognized in determining our Right-of-use assets. Our operating lease is reflected in the Right-of-use asset – operating lease; Operating lease obligation – current portion; and Operating lease obligation – non-current portion in our Condensed Consolidated Balance Sheets.

Lease expense for minimum lease payments is recognized on a straight-line basis over the lease term. Short-term leases, defined as leases that have a lease term of 12 months or less at the commencement date, are excluded from this treatment and are recognized on a straight-line basis over the term of the lease. Variable lease payments are amounts owed by us to a lessor that are not fixed, such as reimbursement for common area maintenance costs for our facility lease, and are expensed when incurred.

Financing leases, formerly referred to as capitalized leases, are treated similarly to operating leases except that the asset subject to the lease is included in the appropriate fixed asset category, rather than recorded as a Right-of-use asset, and depreciated over its estimated useful life, or lease term, if shorter. Refer to Note 10, *Commitments and Contingencies*, for additional information regarding ASC 842 and its impact on our Condensed Consolidated Financial Statements.

Concentrations of Credit Risk

Financial instruments, which potentially subject us to concentrations of credit risk, consist of cash and cash equivalents. Our investment policies limit any such investments to short-term, low-risk instruments. We deposit cash and cash equivalents with quality financial institutions which are insured to the maximum of federal limitations. Balances in these accounts may exceed federally insured limits at times.

Comprehensive Loss

We have no components of other comprehensive loss other than net loss, and accordingly, our comprehensive loss is equivalent to our net loss for the periods presented.

Loss per Common Share

Basic net loss attributable to common stockholders per share of common stock excludes the effect of dilution and has historically been computed by dividing net loss increased by the accrual of dividends on outstanding shares of our Series B 10% Convertible Preferred Stock (*Series B Preferred*) prior to its conversion during the third quarter of Fiscal 2022, by the weighted-average number of shares of common stock outstanding for the period. Diluted net loss attributable to common stockholders per share of common stock reflects the potential dilution that could occur if securities or other contracts to issue shares of common stock were exercised or converted into shares of common stock.

As a result of our net loss for all periods presented and the conversion of all series of our preferred stock prior to December 31, 2021, potentially dilutive securities were excluded from the computation of diluted net loss per share, as their effect would be antidilutive. Potentially dilutive securities excluded in determining diluted net loss attributable to common stockholders per common share at December 31, 2022 and 2021 are as follows:

	At December 31, 2022	At December 31, 2021
Outstanding options under the Company's Amended and Restated 2016 (formerly 2008) Stock Incentive Plan and 2019 Omnibus Equity Incentive Plan	22,567,914	15,903,139
Outstanding warrants to purchase common stock	2,397,594	9,307,858
Total	24,965,508	25,210,997

Fair Value Measurements

We do not use derivative instruments for hedging of market risks or for trading or speculative purposes. Our only financial assets that are measured on a recurring basis at fair value were $23,128,500 and $65,094,900 held in money market funds and classified as cash equivalents at December 31, 2022 and March 31, 2022, respectively. Our money market funds are classified within Level 1 of the fair value hierarchy and are valued based on quoted prices in active markets for identical securities. We had no financial liabilities that are measured on a recurring basis at fair value at December 31, 2022 or March 31, 2022.

Warrants Issued in Connection with Equity Financing

We evaluate the appropriate balance sheet classification of warrants we issue as either equity or as a derivative liability. In accordance with ASC 815-40, *Derivatives and Hedging-Contracts in the Entity's Own Equity* (*ASC 815-40*), we classify a warrant as equity if it is "indexed to the Company's equity" and meets several specific conditions for equity classification. A warrant is not considered "indexed to the Company's equity," in general, when it contains certain types of exercise contingencies or potential adjustments to its exercise price. If a warrant is not indexed to the Company's equity or it has net cash settlement that results in the warrants to be accounted for under ASC 480, *Distinguishing Liabilities from Equity,* or ASC 815-40, it is classified as a derivative liability which is carried on the Consolidated Balance Sheets at fair value with any changes in its fair value recognized immediately in the Statements of Operations and Comprehensive Loss. At December 31, 2022 and March 31, 2022, we had both investor warrants and stock-based compensation warrants outstanding that were classified as equity

Recent Accounting Pronouncements

We believe the following recent accounting pronouncement is of significance or potential significance to the Company.

In August 2020, the Financial Accounting Standards Board (*FASB*) issued ASU 2020-06, *Debt – Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging – Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity* (*ASU 2020-06*), to reduce complexity in applying U.S. GAAP to certain financial instruments with characteristics of liabilities and equity.

The guidance in ASU 2020-06 simplifies the accounting for convertible debt instruments and convertible preferred stock by removing the existing guidance in ASC 470-20, *Debt: Debt with Conversion and Other Options*, that requires entities to account for beneficial conversion features and cash conversion features in equity, separately from the host convertible debt or preferred stock. The guidance in ASC 470-20 applies to convertible instruments for which the embedded conversion features are not required to be bifurcated from the host contract and accounted for as derivatives.

In addition, the amendments revise the scope exception from derivative accounting in ASC 815-40 for freestanding financial instruments and embedded features that are both indexed to the issuer's own stock and classified in stockholders' equity, by removing certain criteria required for equity classification. These amendments are expected to result in more freestanding financial instruments qualifying for equity classification (and, therefore, not accounted for as derivatives), as well as fewer embedded features requiring separate accounting from the host contract.

The amendments in ASU 2020-06 further revise the guidance in ASC 260, *Earnings Per Share*, to require entities to calculate diluted earnings per share (*EPS*) for convertible instruments by using the if-converted method. In addition, entities must presume share settlement for purposes of calculating diluted EPS when an instrument may be settled in cash or shares.

The amendments in ASU 2020-06 are effective for our fiscal year beginning April 1, 2024. We are evaluating the impact of this new guidance, but do not believe that our adoption of ASU 2020-06 will have a material impact on our Condensed Consolidated Financial Statements.

Other accounting standards that have been issued or proposed by the FASB or other standard-setting bodies that do not require adoption until a future date are not expected to have a material impact on our Condensed Consolidated Financial Statements upon adoption.

Note 4. Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets are composed of the following:

	December 31, 2022	March 31, 2022
Clinical and nonclinical materials and contract services	$ 159,100	$ 2,139,600
Insurance	456,000	196,500
Receivable from CRO for cancelled project	-	337,900
Receivable from collaboration partner	154,100	-
All other	184,000	71,800
	$ 953,200	$ 2,745,800

The amount reported as receivable from CRO for cancelled project at March 31, 2022 represents the amount of prepayments on a cancelled project net of expense incurred by the CRO prior to project cancellation and was refunded to us in July 2022. The amount reported as receivable from collaboration partner at December 31, 2022 represents payments we made to a CRO and another service provider for project and clinical trial services on behalf of our collaboration partner. Our collaboration partner has not reimbursed us for these amounts as of the date of this Report.

Note 5. Property and Equipment, Net

Property and equipment, net is composed of the following:

	December 31, 2022	March 31, 2022
Laboratory equipment	$ 1,393,300	$ 1,181,300
Tenant improvements	214,400	214,400
Office furniture and equipment	72,100	76,200
Manufacturing equipment	211,200	211,200
	1,891,000	1,683,100
Accumulated depreciation and amortization	(1,350,300)	(1,268,800)
Property and equipment, net	$ 540,700	$ 414,300

We recorded depreciation and amortization expense of $30,600 and $96,200 for the three and nine months ended December 31, 2022, respectively, compared to $43,700 and $114,900 for the three and nine months ended December 31, 2021, respectively. Included in amounts reported above for office furniture and equipment is the right-of-use asset related to a financing lease of certain office equipment. Amounts associated with assets subject to the financing lease are as follows:

	December 31, 2022	March 31, 2022
Office equipment subject to financing lease	$ 10,600	$ 14,700
Accumulated depreciation	(1,500)	(14,700)
Net book value of office equipment subject to financing lease	$ 9,100	$ -

The fully depreciated office equipment reported at March 31, 2022 was subject to a lease that expired in January 2022. That equipment was replaced subject to a new lease in April 2022. The new lease requires a monthly payment of approximately $200 through June 2027.

Note 6. Accrued Expenses

Accrued expenses are composed of the following:

	December 31, 2022	March 31, 2022
Accrued expenses for clinical and nonclinical materials, development and contract services	$ 776,400	$ 1,070,800
Accrued compensation	308,800	66,200
Accrued professional services	-	159,500
All other	-	32,700
	$ 1,085,200	$ 1,329,200

In both periods, accrued expenses for clinical and nonclinical services includes accrued clinical trial expenses and other amounts accrued for contract manufacturing and product development services. Accrued compensation at December 31, 2022 includes an accrual of $300,000 representing an estimated liability associated with matters related to a terminated former employee.

Note 7. Note Payable

The following table summarizes our outstanding note payable at December 31, 2022 and March 31, 2022:

	December 31, 2022			March 31, 2022		
	Principal Balance	Accrued Interest	Total	Principal Balance	Accrued Interest	Total
3.88% Note payable to insurance premium financing company (current)	$ 419,100	$ -	$ 419,100	$ -	$ -	$ -

In May 2022, we executed a 3.88% promissory note in the principal amount of $1,139,700 in connection with certain insurance policy premiums. The note is payable in monthly installments of $105,600, including principal and interest, through April 2023.

Note 8. Capital Stock

ATM Agreement

In May 2021, we entered into an Open Market Sale Agreement℠ (the *Sales Agreement*) with Jefferies LLC, as sales agent (*Jefferies*), with respect to an at-the-market offering program (the *ATM*) under which we may, in our sole discretion, offer and sell, from time to time, shares of our common stock having an aggregate offering price of up to $75.0 million (the *Shares*) through Jefferies. In transactions occurring during September and October 2021, we sold an aggregate of 1,517,798 shares of our common stock and received net cash proceeds of approximately $4.3 million under the ATM. We have not sold any additional shares of our common stock under the ATM from October 2, 2021 through the date of this Report.

We record transactions under the Sales Agreement on a settlement date basis. All legal fees and accounting expenses incurred in connection with the Sales Agreement are recorded as deferred offering costs and are amortized to additional paid-in capital as costs of the offering as sales of Shares are made under the Sales Agreement. Between execution of the Sales Agreement in May 2021 and March 31, 2022, we incurred legal fees and accounting expenses aggregating approximately $276,500 in connection with the Sales Agreement. During the nine months ended December 31, 2022, we incurred additional legal fees and accounting expenses aggregating $89,600 related to the Sales Agreement. The Sales Agreement will terminate upon the earlier of (i) the sale of all Shares subject to the Sales Agreement or (ii) the termination of the Sales Agreement by Jefferies or by us, as permitted.

Stock Option Exercises and Employee Stock Purchase Plan Purchases

During the nine months ended December 31, 2022, the holders of outstanding stock options exercised such options to purchase an aggregate of 286,000 shares of our common stock and we received cash proceeds of $104,400. Certain of the options were exercised on a net exercise basis and we issued an aggregate of 220,390 shares of our common stock pursuant to the exercises. During the nine months ended December 31, 2021, holders of an aggregate of 324,449 shares of our common stock exercised such options and we received cash proceeds of $116,000. Certain of the options were exercised on a net exercise basis and we issued an aggregate of 274,950 shares of our common stock pursuant to the exercises. On June 30, 2022 and December 30, 2022, participants in our 2019 ESPP completed purchase periods pursuant to which we issued 75,000 shares and 80,000 shares of our registered common stock and received proceeds of $56,100 and $7,000, respectively. On June 30, 2021 and December 31, 2021, participants in our 2019 ESPP completed purchase periods pursuant to which we issued 16,251 shares and 40,960 shares of our common stock and received proceeds of $31,600 and $67,800, respectively.

Warrant Exercises, Expirations and Modifications

There have been no warrant exercises during the nine months ended December 31, 2022. During that same period, warrants to purchase 6,878,264 shares of our common stock at a weighted average exercise price of $1.49 per share expired unexercised. During the nine months ended December 31, 2021, holders of outstanding warrants exercised such warrants to purchase an aggregate of 7,298,791 shares of our common stock and we received cash proceeds of approximately $6,207,400.

On December 5, 2022, our Board modified outstanding warrants to purchase an aggregate of 1,000,000 registered shares of our common stock exercisable at $0.50 per share that were due to expire on December 9, 2022 to extend the exercisability of such warrants for a period of two years. No other term of the warrants, including exercise price, was modified. We calculated the fair value of the modified warrants immediately before and after the modification using the Black Scholes Option Pricing Model and the assumptions indicated in the table below. We recognized the incremental fair value, $77,400, as a component of general and administrative expense in our Condensed Consolidated Statements of Operations and Comprehensive Loss for the three and nine months ended December 31, 2022 and as an increase in additional paid-in capital in our Condensed Consolidated Statements of Changes in Stockholders' Equity for the same periods.

Assumption:	**Pre-modification**	**Post-modification**
Market price per share	$ 0.1245	$ 0.1245
Exercise price per share	$ 0.50	$ 0.50
Risk-free interest rate	3.93%	4.41%
Remaining contractual term in years	0.011	2.012
Volatility	65.60%	175.27%
Dividend rate	0.0%	0.0%
Number of warrant shares	1,000,000	1,000,000
Weighted average fair value per share	**$ 0.00**	**$ 0.08**

Warrants Outstanding

The following table summarizes warrants outstanding and exercisable as of December 31, 2022. All outstanding warrants are currently exercisable and the weighted average exercise price of such warrants at December 31, 2022 is $1.42 per share.

Exercise Price per Share	Expiration Date	Warrants Outstanding and Exercisable at December 31, 2022
$0.50	12/9/2024	1,000,000
$0.73	7/25/2025	370,544
$1.82	3/7/2023	880,050
$7.00	3/3/2023	147,000
		2,397,594

In May 2020, we filed a Registration Statement on Form S-3 covering the resale of the shares underlying substantially all of the currently outstanding warrants (the *Warrant Registration Statement*), except those having an exercise price of $7.00 per share. The SEC declared the Warrant Registration Statement effective on May 13, 2020. No outstanding warrant is subject to any down round anti-dilution protection feature. All of the outstanding warrants are exercisable by the holders only by payment in cash of the stated exercise price per share. Unless exercised prior to the expiration dates indicated above, outstanding warrants to purchase an aggregate of 1,027,050 shares of our common stock at a weighted average exercise price of $2.56 per share will expire prior to March 31, 2023.

Note 9. Related Party Transactions

During the fourth quarter of Fiscal 2022, we entered into a consulting agreement with Margaret FitzPatrick, an independent member of our Board, to provide corporate development and public relations advisory services. We recorded expense of $45,000 during the quarter ended March 31, 2022 related to this agreement, all of which was included in accounts payable at that date. The agreement has continued throughout our current fiscal year, during which we recorded expense of $45,000 and $135,000 for the three and nine months ended December 31, 2022, respectively, all of which had been paid at December 31, 2022.

On November 11, 2022, Ann Cunningham resigned as our Chief Commercial Officer, but remains a member of our Board. Following Ms. Cunningham's resignation as Chief Commercial Officer, i3 Strategy Partners, a consulting firm for which Ms. Cunningham is the Managing Partner, began providing certain advisory services to us pursuant to a consulting agreement. The initial term of the consulting agreement will end on March 31, 2024, and, pursuant to the agreement, i3 Strategy Partners received a fee of $120,000 for the period from the effective date of the agreement through March 31, 2023 and will receive $10,000 per month thereafter through the end of the consulting agreement's initial term. The payment of $120,000 had been completed at December 31, 2022, at which time we had recorded $48,000 as general and administrative expense for the quarter then ended and $72,000 as a prepaid expense in our Consolidated Balance Sheet.

On December 1, 2022, Mark Smith resigned as our Chief Medical Officer. Following his departure, Dr. Smith will serve as a member of our Clinical and Regulatory Advisory Board and provide consulting services to us regarding the development of our product candidates pursuant to a consulting agreement. Under the terms of the consulting agreement, Dr. Smith was paid $50,000 prior to December 31, 2022, and will receive $10,000 per month through the contract term ending December 31, 2023.

During the quarter ended December 31, 2021, we entered into a consulting agreement with Joanne Curley, an independent member of our Board, to assist us in developing a phase-appropriate research and development human resources staffing plan to support our development of PH94B, PH10 and AV-101. We recorded expense of $6,800 during the quarter ended December 31, 2021 related to this agreement and an accounts payable balance of $1,800 at December 31, 2021.

Note 10. Commitments and Contingencies

We lease our headquarters office and laboratory space in South San Francisco, California, under the terms of a lease that was set to expire on July 31, 2022, but which provided an option to renew for an additional five years at then-current market rates. For the purpose of determining the right-of-use asset and associated lease liability, we determined that the renewal of this lease for the period from August 2022 through July 2027 was reasonably probable at the time we adopted ASC 842. On October 14, 2021, we entered into an amendment to the lease (the *Lease Amendment*), pursuant to which the term of the lease was extended from August 1, 2022 to July 31, 2027 and the base rent under the lease for the five-year extension period was specified. Under the terms of the Lease Amendment, we have the option to renew the lease for an additional five-year term commencing on August 1, 2027. Consistent with our adoption of *ASC 842*, beginning April 1, 2019, we recorded this lease in our Consolidated Balance Sheets as an operating lease. The lease of our South San Francisco facilities does not include any restrictions or covenants requiring special treatment under ASC 842.

The following table summarizes the presentation of the operating lease in our Condensed Consolidated Balance Sheets:

	As of December 31, 2022	As of March 31, 2022
Assets		
Right of use asset – operating lease	$ 2,364,100	$ 2,662,000
Liabilities		
Current operating lease obligation	$ 470,400	$ 433,300
Non-current operating lease obligation	2,246,800	2,605,400
Total operating lease liability	$ 2,717,200	$ 3,038,700

The following table summarizes the effect of operating lease costs our Condensed Consolidated Statements of Operations:

	For the Three Months Ended December 31,		For the Nine Months Ended December 31,	
	2022	2021	2022	2021
Operating lease cost	$ 221,000	$ 79,800	$ 631,600	$ 526,200

The minimum (base rental) lease payments related to our South San Francisco operating lease are expected to be as follows:

Fiscal Years Ending March 31,	
2023 (remaining three months)	$ 169,000
2024	689,500
2025	710,200
2026	731,500
2027	753,500
Thereafter	253,600
Total lease expense	3,307,300
Less imputed interest	(590,100)
Present value of operating lease liabilities	$ 2,717,200

The remaining lease term, which does not include the optional five-year extension at the expiration of the lease period ending July 31, 2027, and the discount rate assumption for our South San Francisco operating lease are as follows:

	As of December 31, 2022
Assumed remaining lease term in years	4.58
Assumed discount rate	8.54%

The interest rate implicit in lease contracts is typically not readily determinable and, as such, we used our estimated incremental borrowing rate based on information available at the adoption of ASC 842, which represents an internally developed rate that would be incurred to borrow, on a collateralized basis, over a similar term, an amount equal to the lease payments in a similar economic environment.

Supplemental disclosure of cash flow information related to our operating lease included in cash flows used by operating activities in the Condensed Consolidated Statements of Cash Flows is as follows:

	For the Nine Months Ended December 31, 2022	For the Nine Months Ended December 31, 2021
Cash paid for amounts included in the measurement of lease liabilities	$ 655,200	$ 637,800

During the nine months ended December 31, 2022, we did not record any new right-of-use assets arising from new operating lease liabilities.

We also lease a small office in the San Francisco Bay Area under a month-to-month arrangement at insignificant cost and have made an accounting policy election not to apply the ASC 842 operating lease recognition requirements to such short-term lease. We recognize the lease payments for this lease in general and administrative expense over the lease term. We recorded rent expense of $3,500 in each of the three-month periods ended December 31, 2022 and 2021 and $10,600 in each of the nine-month periods ended December 31, 2022 and 2021, attributable to this lease.

Note 11. Sublicensing and Collaborative Agreements

On June 24, 2020, we entered into a license and collaboration agreement with EverInsight Therapeutics Inc. (*EverInsight*) Subsequent to entering into this agreement, in October 2020, EverInsight merged with AffaMed Therapeutics, Inc. (*AffaMed*), which as a combined entity is focusing on developing and commercializing therapeutics to address ophthalmologic and CNS disorders in Greater China (which includes Mainland China, Hong Kong, Macau and Taiwan) and beyond. Accordingly, we are now referring to EverInsight as AffaMed and our June 2020 license and collaboration agreement as the AffaMed Agreement. Under the AffaMed Agreement, we granted AffaMed an exclusive license to develop and commercialize PH94B for SAD and other anxiety-related disorders in Greater China, South Korea and Southeast Asia (which includes Indonesia, Malaysia, Philippines, Thailand and Vietnam) (collectively, the *Territory*). We retain exclusive development and commercialization rights for PH94B in the U.S. and throughout the rest of the world.

Under the terms of the AffaMed Agreement, AffaMed is responsible for all costs related to developing, obtaining regulatory approval of, and commercializing PH94B for treatment of SAD, and potentially other anxiety-related indications, in the Territory. A joint development committee has been established between us and AffaMed to coordinate and review the development and commercialization plans with respect to PH94B in the Territory.

We are responsible for pursuing clinical development and regulatory submissions of PH94B for an as needed treatment of anxiety in adults with SAD, and potentially other anxiety-related indications, in the United States on a “best efforts” basis, with no guarantee of success. AffaMed has the option to participate in a Phase 3 clinical trial of PH94B involving all or a portion of the Territory and will be responsible for a portion of the costs of such a trial, if conducted. We will transfer all development data (nonclinical and clinical data) and our regulatory documentation related to PH94B throughout the term as it is developed or generated or otherwise comes into our control. We will grant to AffaMed a Right of Reference to all of our regulatory documentation and our development data.

Under the terms of the AffaMed Agreement, AffaMed agreed to pay us a non-refundable upfront license payment of $5.0 million within 30 business days of the effective date of the AffaMed Agreement, and AffaMed paid the $5.0 million in August 2020. Additionally, upon successful development and commercialization of PH94B in the Territory, we are eligible to receive milestone payments of up to $172.0 million. Further, we are eligible to receive royalty payments on a country-by-country basis on net sales for the later of ten years or the expiration of market or regulatory exclusivity in the jurisdiction, except that payments will be reduced on a country-by-country basis in the event that there is no market exclusivity in the period. Royalty payments may also be reduced if there is generic competitive product in the period.

We have determined that we have one combined performance obligation for the license to develop and commercialize PH94B in the Territory and related development and regulatory services. In addition, AffaMed has an option that will create manufacturing obligations for us during development upon exercise by AffaMed. This option for manufacturing services was evaluated and determined not to include a material right.

Development and commercialization milestones were not considered probable at inception and therefore were excluded from the initial transaction price. The royalties were excluded from the initial transaction price because they relate to a license of intellectual property and are subject to the royalty constraint.

We recognize revenue as the combined performance obligation is satisfied over time using an output method. The measure of progress is stand-ready straight-line over the period in which we expect to perform the services related to the license of PH94B. Accordingly, we recognize revenue on a straight-line basis over the period in which we expect to perform the services.

Significant management judgment is required to determine the level of effort attributable to the performance obligation included in the AffaMed Agreement and the period over which we expect to complete our performance obligation under the arrangement. The performance period or measure of progress is estimated at the inception of the arrangement and re-evaluated in subsequent reporting periods. This re-evaluation may shorten or lengthen the period over which we recognize revenue. Due to the failure of PALISADE-1 to meet its primary efficacy endpoint and the resulting anticipated delay in subsequent clinical and regulatory processes for PH94B, at September 30, 2022, we estimated that our performance obligation under the AffaMed Agreement will be completed in mid-calendar 2027 rather than mid-calendar 2024. We have not revised our estimate since September 30, 2022, however, we will further adjust our estimates, as necessary, in subsequent periods as we obtain additional information on which to base our projections. As described in Note 3, *Summary of Significant Accounting Policies*, as a result of the change in our estimate of the time required to complete our performance obligation, we recorded a cumulative catch-up adjustment at September 30, 2022 pursuant to which we derecognized $892,500 and $582,500 of previously recognized revenue in the three and six months ended September 30, 2022, respectively, including $310,000 of revenue was recognized in the quarter ended June 30, 2022. We recognized $179,600 as revenue in the quarter ended December 31, 2022. Following the cumulative catch-up adjustment, through December 31, 2022, we have recognized an aggregate of $1,795,500 in revenue under the AffaMed Agreement. We recognized $357,900 and $1,070,000 as revenue during the three and nine months ended December 31, 2021, respectively. At December 31, 2022, the aggregate amount of the transaction price allocated to the remaining performance obligation (deferred revenue) is $3,204,500 which will be recognized as revenue as our performance obligation is completed.

Unless earlier terminated due to certain material breaches of the contract, or otherwise, the AffaMed Agreement will expire on a jurisdiction-by-jurisdiction basis until the latest to occur of expiration of the last valid claim under a licensed patent of PH94B in such jurisdiction, the expiration of regulatory exclusivity in such jurisdiction or ten years after the first commercial sale of PH94B in such jurisdiction.

Note 12. Subsequent Events

We have evaluated events subsequent to December 31, 2022 and through the date of this Report and have identified the following matter requiring disclosure:

Acquisition of Pherin Pharmaceuticals, Inc.

On December 20, 2022, we entered into an Agreement and Plan of Merger (the *Merger Agreement*) along with VTGN Merger Sub, Inc., our wholly owned subsidiary (*Merger Sub*), Pherin Pharmaceuticals, Inc. (*Pherin*), and Kevin McCarthy in his capacity of Stockholder Representative, to acquire Pherin (the *Pherin Acquisition*). On February 2, 2023 (the *Closing Date*), we completed the Pherin Acquisition and Pherin is now our wholly owned subsidiary. Immediately prior to the consummation of the Pherin Acquisition, each of Pherin's directors and officers resigned, and no employees or other affiliates of Pherin on the Closing Date are serving or will serve in their previous roles or in any other capacity with Pherin or with the Company.

As consideration for the Pherin Acquisition, we (i) issued an aggregate of 12,410,181 unregistered shares of our common stock to the exchange agent for the Pherin Acquisition, which shares will be issued to approximately 96.07% of Pherin stockholders eligible to receive common stock in exchange for their outstanding shares of Pherin common stock (the *Stock Consideration*), and (ii) paid to the exchange agent for the Pherin Acquisition, an aggregate of approximately $125,800 to be paid to the approximately 3.93% remaining Pherin stockholders who were not eligible to receive Stock Consideration in exchange for their outstanding shares of Pherin common stock.

Following the completion of the Pherin Acquisition, we now have full ownership of intellectual property rights to PH94B and PH10. In addition, we now have three new early clinical-stage pherine product candidates: PH15 for cognition improvement; PH80 for migraine and hot flashes; and PH284 for appetite-related disorders. We did not assume any financial liabilities or other obligations pursuant to the Pherin Acquisition. We expect to account for the Pherin Acquisition as an asset acquisition.

Item 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Cautionary Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q (Report) includes forward-looking statements. All statements contained in this Report other than statements of historical fact, including statements regarding our future outcomes and results of operations and financial position, our business strategy and plans, and our objectives for future operations, are forward-looking statements. The words "believe," "may," "estimate," "continue," "anticipate," "intend," "expect" and similar expressions are intended to identify forward-looking statements. We have based these forward-looking statements largely on our current expectations and projections about future events and trends that we believe may affect our financial condition, results of operations, business strategy, short-term and long-term business operations and objectives and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions. Our business is subject to significant risks including, but not limited to, our ability to obtain substantial additional financing, the results of our research and development efforts, the results of nonclinical and clinical testing, the effect of regulation by the U.S. Food and Drug Administration (FDA) and other domestic and foreign regulatory agencies, our ability to obtain, maintain and enforce patents on our products once approved for marketing, the impact of competitive products, product development, commercialization and technological difficulties, the effect of our accounting policies, and other risks as detailed in the section entitled "Risk Factors" in this Report. Further, even if our product candidates appear promising at various stages of development, our share price may decrease such that we are unable to raise additional capital without significant dilution or other terms that may be unacceptable to our management, and Board of Directors (Board) or disadvantageous to our stockholders.

Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management or Board to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the future events and trends discussed in this Report may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

Accordingly, you should not rely upon forward-looking statements as predictions of future events. The events and circumstances reflected in the forward-looking statements may not be achieved or occur. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements. We are under no duty to update any of these forward-looking statements after the date of this Report or to conform these statements to actual results or revised expectations. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements.

Business Overview

We are advancing the development of therapeutics for certain disorders of the central nervous system (*CNS*) with the potential to be faster-acting, and with fewer side effects and safety concerns, than treatments that are currently available for those conditions. Our most advanced clinical-stage candidates, PH94B and PH10, may provide relief from multiple forms of anxiety and depression. They belong to a new class of drugs known as pherines. These investigational neuroactive steroids are formulated as nasal sprays at very low concentrations and are designed to achieve rapid-onset anti-anxiety (PH94B) or antidepressant (PH10*)* effects. We believe these drug candidates directly activate chemosensory neurons located in the nasal passages, which neurons then impact olfactory amygdala “fear off” (anti-anxiety) and “fear on” (antidepressant) neural circuits in the brain, without requiring systemic uptake or direct activity on CNS neurons in the brain. Our goal is to become a biopharmaceutical company that develops and commercializes innovative therapies for anxiety, depression, and other CNS indications where current treatment options are inadequate to meet the needs of millions of patients in the U.S. and worldwide. First and foremost, we are passionate about transforming mental health care and redefining what is possible in the treatment of anxiety and depression – One Mind at a Time™.

Our Product Candidates

PH94B Nasal Spray

PH94B is a synthetic investigational neuroactive steroid from the androstane family of pherines. When administered intranasally in microgram doses, PH94B activates receptors in the membrane of peripheral nasal chemosensory neurons connected to subsets of neurons in the olfactory bulbs that in turn connect to neurons in the limbic amygdala involved in the pathophysiology of social anxiety disorder (*SAD*) and potentially other anxiety and mood disorders. PH94B does not exert effects on receptor targets with known abuse potential (e.g., dopamine, nicotinic, and opiate receptors) and has neither agonistic nor antagonistic effects on $GABA_A$ α1/β2/γ2 ion channels. PH94B is pharmacologically active without requiring apparent systemic uptake and distribution to achieve its rapid-onset and short duration of anxiolytic effects. The FDA has designated PH94B as a Fast Track product candidate, and we are currently developing PH94B for the treatment of anxiety symptoms in adult subjects with SAD and for anxiety symptoms in adult subjects with adjustment disorder (*AjDA*).

The proposed mechanism of action (*MOA*) of PH94B is fundamentally differentiated from all currently approved anti-anxiety medications, including three antidepressants approved by the FDA for the treatment of SAD, as well as all benzodiazepines and beta blockers, which, although not FDA-approved for treatment of SAD, are prescribed for treatment of SAD on an off-label basis. Pre- clinical and Phase 2 clinical data to date suggest that PH94B has the potential to achieve rapid-onset anti-anxiety effects without systemic uptake or transport into the brain, significantly reducing the risk of side effects and other safety concerns such as potential abuse, misuse and addiction associated with certain other pharmaceuticals that act directly on the CNS and are sometimes prescribed for anxiety disorders.

Social Anxiety Disorder (SAD)

SAD can be viewed as a series of acute, socially stressful events in which patients exhibit excessive fear of embarrassment, humiliation, scrutiny, evaluation, or rejection by others (Liebowitz, Gorman, Fyer, & Klein, 1985). The avoidance, fear, or anxious anticipation of these situations interferes significantly with the person’s daily routine, having a marked impact on occupational functioning and social life. The disorder has a lifetime prevalence estimated at up to 13%, with onset typically in the mid-teens or earlier, and is diagnosed slightly more frequently in females than males. In the absence of anxiety-provoking social or performance events, patients with SAD are asymptomatic. Patients with SAD are not anxious, except when facing feared social and performance situations.

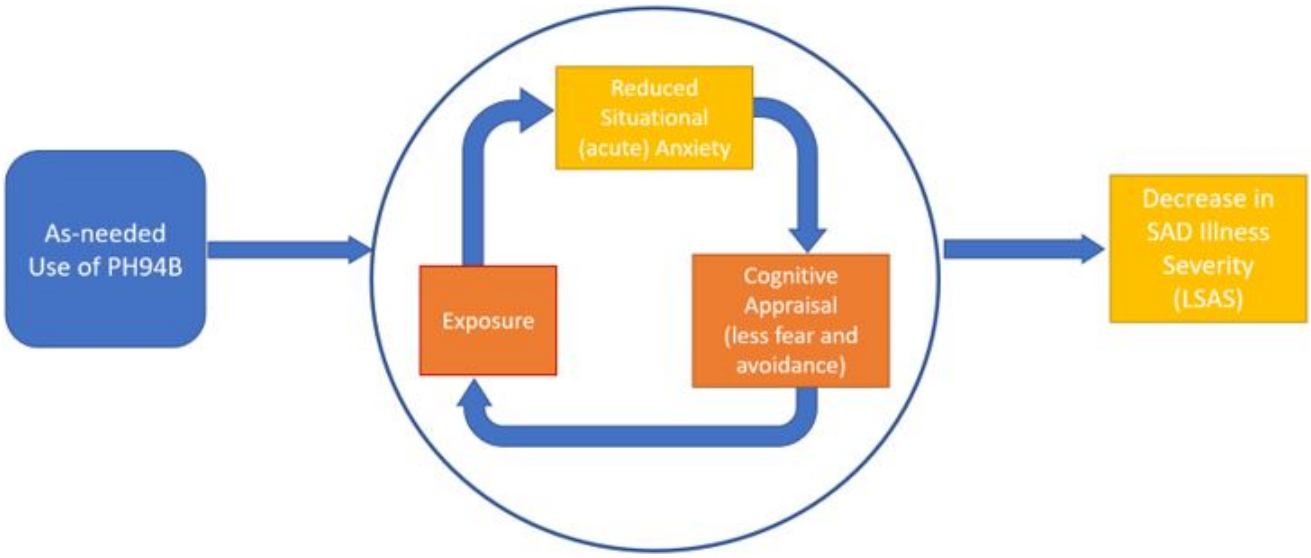
Social anxiety disorder typically does not resolve naturally, oftentimes leading to alcohol use disorder and major depressive disorder (*MDD*) as sequalae. A key psychotherapy mechanism by which individuals with SAD overcome this condition, or lessen their symptoms, is believed to be by exposing themselves to feared or avoided situations. This is the basis of cognitive-behavioral treatment (*CBT*) for SAD. However, it is difficult for most individuals with SAD to even consider entering stressful, anxiety-provoking social or performance situations, preventing initiation and gradual increase in exposure to stress, which is necessary for successful CBT.

The three antidepressants currently FDA-approved for treatment of SAD exert their therapeutic effect by gradually and over time reducing the anxiety and physical symptoms that SAD patients experience when they find themselves in feared or avoided situations. Once these products begin to produce a clinical therapeutic benefit, usually at least three to six weeks following the start of daily systemic dosing, the approved treatments for SAD work by controlling anxiety when SAD patients enter stressful, anxiety-provoking situations. However, these products require long-term daily maintenance dosing, regardless of whether the patient actually experiences social anxiety on a given day, and chronic treatment is typically associated with a range of bothersome side effects, such as gastrointestinal symptoms, agitation, sleep disturbances, weight changes, and sexual dysfunction.

We believe PH94B allows individuals affected by SAD to enter stressful or previously avoided social or performance situations with fewer symptoms when they have pre-treated with PH94B. However, a key and substantial difference between PH94B and each of the three antidepressants approved by the FDA for treatment of SAD is that PH94B is used only on an as-needed basis prior to or during a socially stressful situation, because of its rapid-onset pharmacological effect. In addition to PH94B's favorable side effect, safety and tolerability profile in all studies completed to date, other notable differences between PH94B and the FDA-approved antidepressants for treatment of SAD are that PH94B does not require systemic uptake and chronic daily maintenance dosing. Hence, PH94B has the potential to reduce the wave of anxiety usually experienced by SAD patients when in a feared situation and can be used on an as-needed basis prior to or during these stressful or often-avoided social or performance situations.

Through more frequent exposure to socially stressful events, SAD subjects gain new information about their social and performance situations and begin to cognitively separate the negative physiological symptoms of anxiety from specific anxiety-provoking events. By engaging in new situations previously avoided as a result of less severe and frequent waves of anxiety following treatment, subjects experience increased confidence, leading to an overall reduction in SAD illness severity, decreased burden of disease, improved workplace productivity, educational attainment, and satisfaction with social life.

PH94B SAD Treatment Model



SAD Phase 1 Studies

PH94B is unique by its proposed mechanism of action, intranasal route of administration, rapid onset, short duration of action, lack of detectible systemic exposure, and favorable safety profile.

PH94B's rapid-onset and short-acting properties are supported by Phase 1 clinical trials conducted in healthy male and female subjects. In these trials, PH94B was intranasally administered to subjects via a noninvasive device, and changes in bioelectric transmucosal potentials of the nasal septum chemosensory epithelium were measured. These trials demonstrated that: (i) the nasal chemosensory epithelium has receptor sites selective for PH94B, and (ii) PH94B produces an immediate local electrogram response (i.e., EVG or EGNR), as illustrated by electrograms recorded from the surface of the sensory neuroepithelial lining of the vomeronasal organ. Additional studies evaluated the effect of PH94B on the EVG amplitude and duration. Collectively, these studies show that PH94B produces a short duration electrogram response at the level of the peripheral receptor sites. Systemic exposure to PH94B was evaluated following escalating doses of PH94B in healthy female subjects. No measurable plasma concentrations of PH94B were observed in the blood samples taken following the two highest single intranasal doses of 4.8 and 19.2 µg. In all samples (taken at 15 minutes, 30 minutes, and one hour after dosing), the levels were below the level of detection of 0.1 ng/mL. For exploration, a more sensitive research bioanalytical method (non-validated) was used on a selection of samples. Using this method, with a limit of quantitation (LOQ) of 0.025 ng/mL, no PH94B could be detected. A study was conducted in human subjects to establish the bioavailability of PH94B administered intranasally and repeatedly with the maximal therapeutic dose. However, it was not possible to characterize the bioavailability of PH94B due to the absence of quantifiable concentrations of PH94B in plasma. With respect to PH94B's safety profile, the totality of nonclinical data and clinical data in over 800 human subjects exposed to PH94B to date continue to demonstrate that PH94B is safe and well-tolerated, as well as the lack of abuse potential of PH94B.

SAD Phase 2 Studies

Positive Results in Public Speaking and Social Interaction-Induced Stressors in a Clinical Setting

Phase 2 development of PH94B began with a two-part public speaking and social interaction challenge study. In this randomized, double-blind, placebo-controlled Phase 2 clinical trial (n=91) conducted at three clinical sites, 91 adult female subjects diagnosed with SAD underwent a placebo baseline period followed a week later by a randomized treatment period and intranasal administration of PH94B. PH94B (1.6 µg) was administered intranasally 15 minutes prior to both a performance challenge (public speaking) and a social interaction challenge simulation, which took place at the clinical sites. The two challenges were separated by a 30-minute rest period. The primary outcome measure was the Subjective Units of Distress Scale (*SUDS*). Peer-reviewed results published in the *American Journal of Psychiatry* (Monti, et al., Am. J. Psychiatry (2014) 171:675-682) showed statistically significant results for reducing anxiety during a public speaking performance and during social interactions in a clinical setting. During the public speaking challenge, subjects randomized to treatment with PH94B (n = 45) showed a 26.7-point improvement in mean SUDS scores following the treatment visit with PH94B as compared to the SUDS scores during the baseline visit (placebo treatment). In comparison, subjects randomized to treatment with placebo (n = 46) showed an improvement of only 14.0 points in mean SUDS scores compared to baseline. The PH94B treatment group's improvement in the public speaking challenge significantly exceeded that of the placebo group's improvement ($t = 3.16$, $p = 0.002$).

Mild or moderate adverse events were infrequent and did not differ significantly between the PH94B and placebo groups. No severe or serious adverse events were reported.

Positive Results in SAD Outpatients

PH94B is believed to have the potential to lower anxiety on an as-needed basis over time, and to achieve cumulative functional improvement with continued use, such as less frequent avoidance of stressful or anxiety-provoking situations and reduced fear and anxiety about such situations. A second peer-reviewed Phase 2 study of PH94B in SAD was published in the *Journal of Depression and Anxiety* (Monti, et al., Depress Anxiety (2016); 33: 1081–1089). In the randomized, double-blind, placebo-controlled crossover study the included both adult males and females 18 to 65 years of age, subjects to self-administered PH94B or placebo nasal spray on an as-needed basis, just prior to stressful, anxiety-provoking encounters in their daily lives, up to four times a day. Following two weeks of treatment, the subjects were crossed over to the other nasal spray for another two weeks. The primary efficacy measure in the study was the SUDS and the secondary efficacy measure was the Liebowitz Social Anxiety Scale (*LSAS*). The LSAS was created by Dr. Michael Liebowitz and was the primary efficacy endpoint in all Phase 3 registration trials for the three antidepressants approved by the FDA for treatment of SAD. Dr. Liebowitz was the Principal Investigator of this Phase 2 study of PH94B.

The change from baseline SUDS scores was significantly greater for all subjects while taking PH94B compared with the placebo group. The average change from baseline SUDS score was 15.6 points for all subjects while on PH94B and was 8.3 points while on placebo (paired t-test = 3.09; $p = 0.006$; effect size 0.658). The LSAS was recorded at weekly visits. Looking between groups at just the group treated first with PH94B for two weeks, PH94B showed a positive trend in the LSAS scores ($p = 0.07$, Cohen's $d = 0.812$, change from baseline 23.3 vs 8.2 points PH94B vs placebo, respectively). Interestingly, subjects receiving PH94B first also had a significantly greater decrease in their avoidance score on the LSAS as compared to those who received placebo first ($p = 0.02$, Cohen's $d = 1.078$). After the crossover, PH94B showed less of an effect as compared to placebo, likely due to a confidence carryover effect from treatment with PH94B during the previous two weeks. Importantly, self-administration of PH94B on an as-needed basis prior to anxiety-provoking encounters was accompanied by a persistent change in overall SAD symptoms, reduction in fear and anxiety, and less frequent avoidance, as measured by the LSAS over the course of PH94B usage in a real-world setting. Notably, the amount of separation between PH94B and placebo at the end of the first two weeks on the LSAS in this study was comparable to what was observed in the registration trials for the current FDA-approved antidepressants after 12 weeks. A large effect size (0.78) and trend to significance ($p = 0.083$) in favor of PH94B also was observed when comparing overall the Clinical Global Impression (*CGI*) score means for PH94B and placebo during the first two weeks of treatment. Patient Global Impression of Change (*PGI-C*) ratings also showed improvement for PH94B after two weeks of treatment ($p = 0.024$).

No drug-related serious adverse events (*SAEs*) were reported during the study. All adverse events (*AEs*) were mild or moderate and the frequencies of their occurrence did not differ meaningfully between active and placebo treatments.

We believe this multiple-administration, placebo-controlled assessment Phase 2 study conducted in a real-world setting outside a clinical environment indicates the potential for cumulative functional improvement with longer use of PH94B, while still being used on an as-needed basis, as subjects are increasingly able to engage in previously difficult social and performance situations in their daily lives more frequently and with less fear and anxiety.

SAD PALISADE Phase 3 Program

PALISADE-1

In May 2021, we initiated our PALISADE Phase 3 Program for PH94B in SAD with PALISADE-1, a single-administration assessment Phase 3 public speaking challenge clinical study of PH94B for the acute treatment of anxiety in adults with SAD. Following discussions with the FDA in mid-2020 during the early phase of the COVID-19 pandemic, we agreed to design PALISADE-1 in a manner substantially similar to the single-administration assessment Phase 2 public speaking challenge study of PH94B in SAD, which involved self-administration of a only a single dose of PH94B by subjects randomized to the treatment arm. All subjects were given an anxiety-provoking public speaking challenge, conducted only in a clinical setting, and their change in SUDS score was determined.

In July 2022, we announced top line results from PALISADE-1. Although the safety and tolerability of PH94B in PALISADE-1 were favorable and consistent with previously reported results from previous clinical trials, PALISADE-1 did not achieve its primary efficacy endpoint, as measured by change from baseline using the SUDS as compared to placebo. We believe the following hypotheses are potential explanations for the unexpected outcome in PALISADE-1: (i) the study was conducted through surges of the COVID-19 pandemic, introducing significant additional variability in terms of changing social dynamics, subject stress, study site and CRO personnel turnover, mask wearing, and scheduling and monitoring complexities; (ii) the public speaking challenge study design may not have been scalable to a large Phase 3 study, especially during the pandemic, given the complexities of consistently administering the highly provocative challenge and rigorously adhering to the study protocol across numerous study sites and over an extended time period; and (iii) some subjects in the study may have had reduced potential to respond to PH94B due to impaired olfactory cell function potentially caused by the COVID-19 virus, nasal swab testing for COVID-19 or influenza, and/or heavy cannabis use, smoking or vaping.

PALISADE-2

In October 2021, we initiated PALISADE-2, which involves the same clinic-based public speaking challenge study design and use of the SUDS as the primary efficacy endpoint as PALISADE-1. In July 2022, after receiving top line results from PALISADE-1, we paused recruitment and enrollment in PALISADE-2 to allow independent third-party biostatisticians to conduct an interim analysis of available data from subjects randomized in PALISADE-2 up to the date we paused the study. In September 2022, based on their review of unblinded data from the 140 subjects who had completed PALISADE-2, the independent third-party biostatisticians recommended that we continue PALISADE-2 as planned, without revealing the underlying data to us. In addition, we recently submitted to the FDA various adjustments to the PALISADE-2 study protocol. Should we opt to resume PALISADE-2, the proposed amendments address certain methodological issues we believe may have contributed to the unexpected outcome of PALISADE-1.

In December 2022, two of our peer biopharmaceutical companies announced that the top line results of their recently completed SAD studies using the single assessment public speaking challenge study design, with SUDS as the primary efficacy endpoint, also did not achieve their primary efficacy endpoint in their respective study. Upon reviewing the information and data available to us at this time, we believe it is not yet advisable to make a decision about resuming PALISADE-2 before discussing our broader Phase 3 development plan for PH94B with the FDA and further assessing potential impact of the proposed adjustments to the PALISADE-2 protocol in light of the recent results of SAD studies by our peers involving the public speaking challenge methodology. We are currently preparing to meet with the FDA to discuss that plan, which includes, among other things, a multiple-assessment, randomized, double-blind, placebo-controlled Phase 3 study of PH94B in adults, using the LSAS as the primary efficacy outcome measure to evaluate the efficacy of PH94B over time in patients with SAD to support a potential New Drug Application (*NDA*). We expect to announce our plans for PALISADE-2 concurrently with other updates to our PH94B Phase 3 development plan for SAD.

PALISADE Open Label Study

The long-term administration of 3.2 µg of PH94B up to four times a day as needed in the PALISADE Open Label Study (*PALISADE OLS*) was safe, well tolerated, and led to improvement in LSAS scores. The PALISADE OLS was a Phase 3, open-label safety trial designed to evaluate the safety and tolerability of multiple, as-needed administrations (up to four times a day) of PH94B in adults with SAD. This study also evaluated the change from baseline in monthly standard clinical measurements and behavioral assessment scales (LSAS, CGI-S, CGI-I, and PGI-C) in response to anxiety-provoking social situations in daily-life after the administration of PH94B. Safety and tolerability of PH94B were assessed and summarized during monthly visits from baseline to end of treatment in AEs, laboratory values, 12-lead electrocardiograms (*ECGs*), physical examinations, and vital sign assessments following exposure to PH94B. Following the completion of PALISADE-1, PALISADE OLS was terminated early, solely for strategic business reasons, and not due to any safety concerns with PH94B. We believe unpublished preliminary data from the final dataset from PALISADE OLS provide evidence to further support the safety and efficacy of PH94B for treating SAD, as measured by AE frequency and improvement in SAD severity as measured by the LSAS, CGI-I, and PGI-C, respectively. Overall, we believe the long-term administration of 3.2 µg of PH94B, up to four times a day as needed, appears to be safe and well tolerated in adult subjects with SAD.

Potential Next Steps in SAD Phase 3 Development Plan

We believe data from approximately 400 subjects in the PALISADE OLS over a period of one month and beyond, combined with the data from the previous Phase 2 randomized, double-blind, placebo-controlled, crossover study of PH94B after two weeks of use, as discussed above, demonstrate the potential for PH94B to achieve robust overall reduction in symptoms of SAD and improvement in severity of the disorder over time, as measured by the LSAS. These data also appear to suggest that studies involving multiple administrations of PH94B over time on an as-needed basis, up to four times per day, when subjects experience daily, real-life, socially stressful situations may most accurately reflect the true efficacy of PH94B in patients with SAD and represent the actual way in which they would use PH94B. Utilizing the LSAS as the primary efficacy outcome measure in our next Phase 3 study is consistent with the pivotal registration trials for all three currently approved treatments for SAD. As those studies indicate, the LSAS is capable of measuring a drug's efficacy in patients with SAD due to its ability to capture patient feedback on fear and anxiety regarding various social situations, as well avoidance of such situations. Hence, we believe using the LSAS as the primary efficacy endpoint for our further Phase 3 development of PH94B has the potential to demonstrate its efficacy and true impact on patients' lives.

Accordingly, we are preparing to meet with the FDA to discuss our broader Phase 3 development plan for PH94B in SAD, which plan includes, among other things, the possibility of conducting a multiple-assessment, randomized, double-blind, placebo-controlled Phase 3 study of PH94B in adults, using the LSAS as the primary efficacy outcome measure to evaluate the efficacy of PH94B over time in patients with SAD to support a potential PH94B New Drug Application (*NDA*). Unlike the PALISADE Phase 3 studies, which involved assessment of only a single self-administration of PH94B in a clinic-based public speaking challenge with the SUDS as the primary outcome measure, the Phase 3 study contemplated as part of our broader plan would involve multiple self-administrations of PH94B, on an as-needed basis, up to four times per day, in a real-world setting over a multiple week period, with the LSAS as the primary efficacy endpoint, consistent with the FDA's precedent-setting approvals of the three antidepressants for treatment of SAD. Given that LSAS measures overall improvement in disease severity by measuring the reduction in fear and anxiety over time, as well as the avoidance of anxiety-provoking social and performance situations, as noted, we believe the LSAS will be appropriate to measure and reflect the true impact of PH94B on patients' lives.

Exploratory Phase 2A Development for AjDA and Future Development Opportunities

In January 2023, we completed our small exploratory Phase 2A clinical study of PH94B designed to assess its therapeutic potential in adults experiencing adjustment disorder with anxiety (*AjDA*). Adjustment disorder (*AjD*) occurs within three months of exposure to the stressor as evidenced by marked distress that is out of proportion to the socially or culturally expected reactions to the stressor, or that represents significant impairment in social, occupational or other important areas of daily functioning. Current pharmacological treatments for AjDA vary widely and include antidepressants (SSRIs and SNRIs), benzodiazepines, buspirone and natural products such as cannabidiol. Our randomized, double-blind, placebo-controlled exploratory Phase 2A study in AjDA involved daily use of PH94B administered four times per day in a real-world outpatient setting for 28 days. We anticipate top line results by the end of the first calendar quarter of 2023. We may also have potential opportunities to develop PH94B for other anxiety-related disorders.

PH10 Nasal Spray

PH10 is an investigational pherine nasal spray for the treatment of major depressive disorder (*MDD*) with a potential rapid-onset MOA that is fundamentally differentiated from the MOA of all currently approved treatments for MDD and other depression disorders. PH10, which is administered at microgram-level doses, engages and activates chemosensory neurons in the nasal passages, connected to neural circuits in the brain that produce antidepressant effects. Specifically, PH10's proposed MOA involves binding to receptors for chemosensory neurons in the nasal passages to regulate the olfactory amygdala "fear on" neural circuits believed to increase activity of the limbic-hypothalamic sympathetic nervous system and increase the release of catecholamines. Importantly, unlike all currently approved oral antidepressants and rapid-onset ketamine-based therapy (*KBT*), including both intravenous ketamine and intranasal ketamine (esketamine), we believe PH10 does not require systemic uptake to produce rapid-onset of antidepressant effects and does not cause the side effects and safety concerns potentially associated with KBT.

In December 2022, we announced that the FDA granted Fast Track designation for PH10 as a potential treatment for MDD.

In a small (n=30) exploratory randomized, double-blind, placebo-controlled parallel design Phase 2A study MDD conducted in Mexico, at a 6.4 μg dose administered intranasally twice daily for 8 weeks, PH10 significantly reduced depressive symptoms as early as one week based on the 17-item Hamilton Depression Scale (*HAM-D-17*) scores compared to placebo ($p = 0.022$). Peer-reviewed results of the study published in the British Journal of Pharmaceutical and Medical Research (Monti, et al., *Br J Phar Med Res* (2019) 4(06):2157 – 2168) also showed that PH10 was well-tolerated and did not cause psychological side effects (such as dissociation and hallucinations) or other safety concerns that may be associated with KBT.

Following the submission of a U.S. Investigational New Drug (*IND*) application for a Phase 1 study of PH10 in the U.S. in healthy volunteers, in December 2022, we were advised by the FDA that we may proceed with the study. The primary objective of this U.S. single center, Phase 1, randomized, double-blinded, placebo-controlled study is to investigate the safety and tolerability of PH10 in healthy adult subjects (n=12). The study is intended to both confirm the favorable safety profile of PH10 established in three previous clinical studies conducted in Mexico, including a published Phase 2A study for the treatment of MDD, as well as facilitate our plans for Phase 2B development of PH10 as a stand-alone treatment for MDD. We anticipate completion of the U.S. Phase 1 study by the end of the first calendar quarter of 2023 with top line results available before the end of the first half of 2023. We may also have potential opportunities to develop PH10 for other depression-related disorders.

AV-101

AV-101 (4-chlorokynurenine) is an oral prodrug of 7-chloro-kynurenic acid (7-Cl-KYNA), which is a potent and selective antagonist of the glycine co-agonist site of the NMDA receptor (*NMDAR*). Unlike ketamine and many other NMDAR antagonists, 7-Cl-KYNA is not an ion channel blocker. At doses administered in the Company's studies completed to date, AV-101 has been observed to be well tolerated and has not exhibited dissociative or hallucinogenic psychological side effects or safety concerns, unlike several other modulators of the NMDAR. Based on observations and findings from preclinical studies, we believe that AV-101, in combination with FDA-approved oral probenecid, has the potential to become a new oral treatment alternative for certain CNS indications involving the NMDAR. We are presently conducting an exploratory Phase 1B drug-drug interaction clinical study of AV-101 in combination with probenecid and expect to complete dosing of the final cohort in the study in the first half of 2023.

The FDA has granted Fast Track designation for development of AV-101 as a potential adjunctive treatment for MDD and as a non-opioid treatment for neuropathic pain.

Acquisition of Pherin Pharmaceuticals, Inc.

On December 20, 2022, we entered into an Agreement and Plan of Merger (the *Merger Agreement*) along with VTGN Merger Sub, Inc., our wholly-owned subsidiary (*Merger Sub*), Pherin Pharmaceuticals, Inc. (*Pherin*), and Kevin McCarthy in his capacity of Stockholder Representative, in order to acquire Pherin (the *Pherin Acquisition*). On February 2, 2023 (the *Closing Date*), we completed the Pherin Acquisition and Pherin is now a wholly-owned subsidiary of the Company. Immediately prior to the consummation of the Pherin Acquisition, each of Pherin's directors and officers resigned, and no employees or other affiliates of Pherin on the Closing Date are serving or will serve in their previous roles or in any other capacity with Pherin or with the Company.

As consideration for the Pherin Acquisition, we (i) issued an aggregate of 12,410,181 unregistered shares of our common stock to the exchange agent for the Pherin Acquisition, which shares will be issued to approximately 96.07% of Pherin stockholders eligible to receive common stock in exchange for their outstanding shares of Pherin common stock (the *Stock Consideration*), and (ii) paid to the exchange agent for the Pherin Acquisition, an aggregate of approximately $125,800 to be paid to the approximately 3.93% remaining Pherin stockholders who were not eligible to receive Stock Consideration in exchange for their outstanding shares of Pherin common stock (the *Cash Consideration* and, together with the Stock Consideration, the *Merger Consideration*). We expect to account for the Pherin Acquisition as an asset acquisition.

Following the completion of the Pherin Acquisition, we now have full ownership of intellectual property rights to PH94B and PH10. In addition, we now have three new early clinical-stage pherine product candidates: PH15, a potential treatment for cognition improvement; PH80, a potential treatment for migraine and hot flashes; and PH284, a potential treatment for appetite-related disorders, each of which is further summarized below.

PH15

Cognition Improvement

Cognitive deficits are characterized by progressive loss of memory, cognition, reasoning and emotional stability that can gradually lead to an impact in the quality of life. Alzheimer's Disease is the most common cause of progressive mental failure (dementia) in the aging population. In the U.S., approximately 5.5 million people are affected, and the prevalence worldwide is estimated to be as high as 24 million (Alzheimer's and Dementia, Elsevier, 2017).

PH15 is an early-stage investigational neuroactive steroid pherine with potential for the acute treatment of cognitive impairment. Early functional MRI studies in human volunteers at Stanford University revealed that intranasal administration of PH15 induced rapid activation of brain areas related to cognition (Sobel et al, Brain, 1999). In a double blind, placebo-controlled study in human subjects, intranasal PH15 showed rapid and significant improvement in cognitive and psychomotor performance and improvement of reaction time that was better than the effect of a placebo and 2 mg of oral caffeine.

PH80

PH80 is an early-stage investigational synthetic neuroactive steroid with potential to engage nasal chemosensory receptor cells which in turn modulate neural circuits in the basal forebrain associated with the control of body temperature, as well as premonitory and aura symptoms of migraines.

Acute Management of Menopausal Hot Flashes

Approximately 80% of women entering menopause suffer from hot flashes and associated symptoms lasting up to ten years according to the Massachusetts General Hospital Center for Women's Mental Health. Menopausal symptoms are triggered by hormonal fluctuations that develop at the onset of menopause and affect areas of the brain involved in the control of core body temperature. Sudden changes in core body temperature result in hot flashes, sweating, reddening of the face and upper thorax, rapid heartbeat and general feelings of discomfort that can have an impact on the quality of life.

In a small exploratory double blind, placebo-controlled exploratory Phase 2A study in women diagnosed with menopausal hot flashes, PH80 showed clinically significant improvement in the number and severity of hot flashes and other symptoms of menopause in the subjects treated with PH80.

Acute Treatment of Migraine Headaches

Migraine headaches are a common and debilitating neurological disorder experienced by approximately 4% to 9% of men and 11% to 25% of women according to American Headache Society. A migraine is characterized by unilateral, pulsating headaches of moderate to severe intensity lasting four to 72 hours. Symptoms are aggravated by routine physical activity and are associated with nausea, photophobia and phonophobia. Usually, migraine headaches are preceded by premonitory symptoms (fatigue neck discomfort, gastrointestinal symptoms and mood changes, and these are followed by an aura of sensory and language disturbance (Headache, 58: 4-16, 2018. American Headache Society).

In a small exploratory Phase 2A clinical study, PH80 showed a profile compatible with the relief of the premonitory and aura symptoms of migraines.

PH284

Acute Management of Appetite-related Disorders

Appetite-related disorders are characterized by persistent disturbance of eating behavior that results in the altered consumption and absorption of food that significantly impairs physical health or psychosocial functioning. The loss of appetite may have a psychiatric basis (anorexia nervosa in adolescents and Avoidance Restrictive Food Intake Disorder in children and aging subjects) or it may develop as a consequence of terminal disease (cancer, AIDS, other chronic medical conditions), leading to cachexia (DSM-5, 2013; Heathling and Aker, J. Cachexia, Sarcopenia and Muscle, 2014).

Cachexia is a serious but under recognized consequence of many chronic diseases with body mass loss of >10% and a prevalence of 5 to 15 %. In the U.S., approximately 0.4% of women suffer from anorexia nervosa (women to men relationship 10:1), a psychiatric condition characterized by the relentless drive for thinness and/or a morbid fear of fatness. The medical consequences of starvation include endocrine dysfunction manifested as amenorrhea in women and loss of sexual potency in men, hypothermia, slower heart rate, hypotension and severely reduced body fat stores. (Wood D and C Knight. Pediatrics and child health 25(9) 428-432, 2015; Attia et al. New England J. of Medicine 360, 500-5006, 2009; Bulik et al. Eating disorders 40(4) 310-320, 2007).

Anorexia nervosa and other psychiatric conditions leading to loss of appetite and body mass are commonly treated with serotonin or with SSRIs or SNRIs. Cachexia is usually treated in the course of medicating the patient for the underlying disorder.

Synthetic pherine PH284 was tested in a small exploratory Phase 2A double blind, placebo controlled clinical study lasting 12 days, in patients diagnosed with cachexia due to terminal cancer lasted 12 days. Upon completion of a 7-day treatment period with intranasal PH284 or placebo, all patients started treatment for their underlying condition. At the end of the 7-day treatment period, PH284-treated patients showed a significant increase in the subjective feeling of hunger (appetite), increased body weight and an improved quality of life, as compared with the placebo-treated group.

With the recent completion of the Pherin Acquisition, we are currently assessing available data on each of PH15, PH80 and PH284, the newly acquired pherine product candidates, to develop our plans for potential future development of these drug candidates, either on our own with potential grant funding, or with one or more collaborators.

Subsidiaries

VistaGen Therapeutics, Inc., a California corporation d/b/a VistaStem (*VistaStem*), is our wholly owned subsidiary. For the relevant periods, our Consolidated Financial Statements in this Quarterly Report on Form 10-Q (*Report*) also include the accounts of VistaStem's two wholly owned inactive subsidiaries, Artemis Neuroscience, Inc., a Maryland corporation which was dissolved in April 2022, and VistaStem Canada, Inc., a corporation organized under the laws of Ontario, Canada which was dissolved in June 2022.

Financial Operations Overview and Results of Operations

Our critical accounting policies and estimates and recent accounting pronouncements are disclosed in our Annual Report on Form 10-K for the fiscal year ended March 31, 2022 (*Form 10-K*), as filed with the SEC on June 23, 2022, and in Note 3 to the accompanying unaudited Condensed Consolidated Financial included in Part 1, Item 1 of this Report Statements (*Financial Statements*). Except as disclosed in Note 3 and Note 11 in the Financial Statements with respect to recognition of revenue under the AffaMed Agreement, there have been no changes in significant accounting estimates during the nine months ended December 31, 2022 since those disclosed in our Form 10-K.

Summary

Net Loss

We have not yet achieved recurring revenue-generating status from any of our product candidates or technologies in amounts sufficient to sustain our operations and enable our strategic business plans. Since acquiring our exclusive worldwide licenses to PH94B and PH10 in 2018, we have devoted substantial resources to advance initiatives related to research, development, and contract manufacturing of our intranasal investigational product candidates, PH94B and PH10, including initiatives related to manufacturing processes, analytical methods and production programs for drug substance and finished drug product, as well as for preclinical studies and clinical studies focused on potential commercialization of these product candidates for neuropsychiatry indications. During calendar 2021 and to date in calendar 2022, we allocated significant resources to our PALISADE Phase 3 Program evaluating PH94B for the acute treatment of anxiety in adults with SAD. We conducted, and are continuing to conduct, various preclinical studies and manufacturing activities that enabled submission of our U.S. IND for PH10 in MDD in late September 2022 and our initiation of a small Phase 1 clinical study of PH10 in December 2022 to facilitate potential Phase 2B clinical development of PH10 in the U.S. as a stand-alone treatment for MDD. With respect to AV-101, our current focus is evaluating AV-101 in combination with probenecid which may provide opportunities to explore the therapeutic potential of the combination for certain CNS indications involving the NMDAR. We have on-going initiatives for creating, protecting and patenting intellectual property (*IP*) related to our product candidates and technologies and raising sufficient working capital to fund these studies, initiatives and other activities. At December 31, 2022, we had an accumulated deficit of approximately $314.6 million. Our net loss for the nine months ended December 31, 2022 and 2021 was approximately $47.0 million and $31.1 million, respectively, and was approximately $47.8 million and $17.9 million for the fiscal years ended March 31, 2022 (*Fiscal 2022*) and 2021 (*Fiscal 2021*), respectively. We expect losses to continue for the foreseeable future as we engage in further research, development and regulatory activities related to PH94B, PH10 and AV-101.

Summary of the Nine Months Ended December 31, 2022

Throughout Fiscal 2022 and Fiscal 2023 through the date of this Report, we have continued to advance our nonclinical and clinical development, manufacturing, and regulatory activities necessary for (i) Phase 3 clinical development of PH94B as a potential treatment of anxiety in adults with SAD, (ii) advancing our Phase 2A clinical study of PH94B in adults experiencing AjDA, (iii) submitting our PH10 IND and initiating a small Phase 1 study of PH10 in the U.S. to facilitate potential Phase 2B development as a stand-alone treatment of MDD and (iv) exploratory Phase 1B development of AV-101 in combination with probenecid to assess potential opportunities to develop the combination for treatment of certain CNS indications.

We initiated our PALISADE Phase 3 Program for PH94B in SAD with PALISADE-1 in May 2021 and PALISADE-2 in August 2021. During Fiscal 2022, we also initiated the PALISADE OLS and advanced our Phase 2A clinical study of PH94B in adults experiencing AjDA. We achieved last patient out of PALISADE-1 in June 2022 and commenced analysis of the data generated throughout the study. As noted above, in July 2022 we determined that PALISADE-1 did not achieve its primary efficacy endpoint. Accordingly, we have actively investigated, on multiple fronts, potential contributors to that outcome and will apply our learnings to all future clinical studies of PH94B in SAD and/or other anxiety indications. In July 2022, after receiving the results from PALISADE-1, we paused recruitment and enrollment in PALISADE-2 to allow independent biostatisticians to conduct an interim analysis of available data from subjects randomized in PALISADE-2 up to the date we paused the study. In addition to pausing enrollment in PALISADE-2, we ended recruitment and enrollment in our PALISADE OLS in August 2022 and are assessing preliminary data from the study that we believe supports continued late-stage clinical development of PH94B as a potential treatment for SAD in a manner consistent with both data observed in Phase 2 development of PH94B in SAD, i.e., with multiple assessments of PH94B's potential efficacy, as compared to placebo, when used as-needed, over an extended period of time in an outpatient setting, rather than a single administration assessment in an anxiety-provoking public speaking challenge conducted in a clinical setting.

Since the fourth quarter of Fiscal 2021, we have expanded our employee infrastructure with experienced personnel additions across multiple functional areas, including clinical operations, clinical research, data management, chemistry, manufacturing and controls (*CMC*) and quality assurance, biostatistics and clinical analytics, regulatory affairs, medical affairs, translational medicine, commercial operations, legal, contracts and corporate affairs, development operations, and investor and public relations. We have paused further additions to our employee base until we are able to finalize, among other things, our broader Phase 3 development plan for PH94B in SAD.

Throughout Fiscal 2021 and Fiscal 2022 and through the date of this Report, strains of SARS-CoV-2, commonly referred to as COVID-19 and multiple variants of the virus, have spread globally and the outbreak has been declared a pandemic by the World Health Organization and a public health emergency in the U.S. by the U.S. Secretary of Health and Human Services. Operations at our headquarters in South San Francisco were significantly curtailed during Fiscal 2021 and the first half of Fiscal 2022, and, to some extent, periodically thereafter, while state and local restrictions required remote working conditions. Most of our employee additions since Fiscal 2021 are geographically located away from our headquarters facility in South San Francisco and routinely work remotely. Our employees have worked efficiently and productively while remotely-located and working from home whether as a result of the COVID-19 pandemic or otherwise. From time to time during the COVID-19 pandemic, however, the efficiency and productivity of certain preclinical and clinical development programs and our third-party collaborators, including, among others, contract research and development organizations (*CROs*), contract manufacturing organizations (*CMOs*) and other third-party service providers have been, and may be in the future, impacted by prevailing surges in the spread of variants of COVID-19, such as spreads induced by the Delta and Omicron variants and their sub-variants during Fiscal 2021, Fiscal 2022 and thereafter, shelter-in-place orders, social distancing measures, travel bans and restrictions, and certain business and government closures or reductions in service. From time to time since the beginning of the COVID-19 pandemic, we have experienced delays in the delivery of supplies of active pharmaceutical product (*API*) or other key materials required to continue development of PH94B and PH10, as well as temporary disruptions in the availability of third-party personnel and others involved in the conduct of our preclinical and clinical programs. Future unexpected delays may result in a significant, material delay or disruption to our current clinical and nonclinical development plans, programs, and operations.

We have not completed any capital-raising or other significant financing activities during the nine months ended December 31, 2022. In May 2021, we entered into an Open Market Sale Agreement SM (the *Sales Agreement*) with Jefferies LLC (*Jefferies*) as sales agent, with respect to an at-the-market offering program (the *ATM*) under which we may, at our option, offer and sell, from time to time, shares of our common stock having an aggregate offering price of up to $75.0 million through Jefferies as our sales agent. During September and early October 2021, we sold an aggregate of 1,517,798 shares of our common stock and received gross cash proceeds of approximately $4.45 million under the ATM. We have not sold any shares under the ATM from October 2, 2021 through the date of this Report.

Given the results of PALISADE-1, we are carefully monitoring our cash resources and critically evaluating our internal and external research and development and general and administrative expenditures, which includes (i) updating our Phase 3 clinical development plan for PH94B in SAD, (ii) terminating the PALISADE OLS study of PH94B, (iii) continuing to completion our Phase 2A clinical study of PH94B in adults experiencing AjDA and (iv) commencing, in the fourth quarter of Fiscal 2023, a Phase 1 clinical study of PH10 as a treatment for adults suffering from MDD.

Results of Operations

Comparison of Three Months Ended December 31, 2022 and 2021

The following table summarizes the results of our operations for the three months ended December 31, 2022 and 2021 (amounts in thousands).

	Three Months Ended December 31,	
	2022	2021
Sublicense revenue	$ 180	$ 358
Operating expenses:		
Research and development	6,854	7,780
General and administrative	3,092	3,118
Total operating expenses	9,946	10,898
Loss from operations	(9,766)	(10,540)
Interest income, net	5	5
Loss before income taxes	(9,761)	(10,535)
Income taxes	-	-
Net loss	(9,761)	(10,535)
Accrued dividends on Series B Preferred Stock	-	(208)
Net loss attributable to common stockholders	$ (9,761)	$ (10,743)

Revenue

We recognized $179,600 in sublicense revenue pursuant to the AffaMed Agreement during the quarter ended December 31, 2022, compared to $357,900 during the quarter ended December 31, 2021. As described more completely in Note 3, *Summary of Significant Accounting Policies* (*Note 3*) and Note 11, *Sublicensing and Collaboration Agreements (Note 11)*, to our Condensed Consolidated Financial Statements in Part I of this Report (*Financial Statements*), on June 24, 2020, we entered into the AffaMed Agreement, pursuant to which we received a non-refundable upfront license fee payment of $5.0 million on August 3, 2020. This payment permitted the commencement of our revenue recognition under the AffaMed Agreement. We recognize revenue on a straight-line basis over the period during which we expect to perform our obligation under the AffaMed Agreement. Revenue related to our performance obligation, which is satisfied over time, could be materially impacted as a result of changes in our estimates of the time or effort necessary to satisfy the performance obligation. Due to the failure of PALISADE-1 to meet its primary efficacy endpoints and the resulting anticipated delays in subsequent clinical and regulatory processes for PH94B in SAD, at September 30, 2022, we estimated that completion of our performance obligation under the AffaMed Agreement would be delayed until mid-calendar 2027. As described in Note 3, as a result of the change in our estimate of the time required to complete our performance obligation under the AffaMed Agreement, we recorded a cumulative catch-up adjustment at September 30, 2022 pursuant to which we derecognized previously recorded revenue, and extended the future period over which we would recognize the remaining deferred revenue. Following the cumulative catch-up adjustment, through December 31, 2022, we have recognized an aggregate of $1,795,500 as revenue under the AffaMed Agreement and expect to recognize the remaining $3,204,500 as revenue over the estimated remaining performance period as our obligation is completed. We have not modified our September 30, 2022 estimate of the timing to complete our performance obligation, however, we will adjust our estimates, as necessary, in subsequent periods should more definitive information on which to base our projections become available. While we may potentially receive additional cash payments and royalties in the future under the AffaMed Agreement in the event certain performance-based milestones and commercial sales are achieved, there can be no assurance that the AffaMed Agreement will provide any additional revenue beyond that noted or cash payments to us in the near term, or at all.

Research and Development Expense

Research and development (*R&D*) expense decreased by approximately $0.9 million, from $7.8 million for the quarter ended December 31, 2021 to $6.9 million for the quarter ended December 31, 2022. Expenses related to our PALISADE Phase 3 Program for PH94B, including PALISADE-1, PALISADE-2 and the PALISADE OLS study, and the PH94B Phase 2 Study in AjDA, as well as nonclinical development, regulatory and outsourced manufacturing activities for both PH94B and PH10, decreased by approximately $0.7 million during the quarter ended December 31, 2022 compared to those for the quarter ended December 31, 2021. We expect R&D expense in the final quarter of Fiscal 2023 to decrease for PH94B as a result of concluding PALISADE-1 and the PALISADE OLS study and deferring certain other PH94B NDA-enabling nonclinical and clinical development activities, at least in the near term, to be somewhat offset by costs for commencing the Phase 1 clinical trial of PH10 in MDD. Noncash research and development expense, primarily stock-based compensation and depreciation in both periods, accounted for approximately $329,000 and $228,000 for the quarters ended December 31, 2022 and 2021, respectively. The following table indicates the primary components of research and development expense for each of the periods (amounts in thousands):

	Three Months Ended December 31,	
	2022	2021
Salaries and benefits	$ 1,498	$ 1,414
Stock-based compensation	296	281
Consulting and other professional services	218	278
Clinical and nonclinical studies and development expenses:		
PH94B and PH10	4,487	5,174
AV-101	158	474
All other	16	47
	4,661	5,695
Rent	144	55
Depreciation	28	30
All other	9	27
Total Research and Development Expense	$ 6,854	$ 7,780

Salaries and benefits expense for the quarter ended December 31, 2022 primarily reflects the addition of eight management and staff positions across multiple functional disciplines, including biostatistics and clinical analytics, clinical operations, chemistry, manufacturing and controls, and regulatory affairs subsequent to December 31, 2021, as well as the impact of salary increases effective in January 2022 granted to our R&D management and staff. These increases are offset by the impact of five terminations during the quarter ended December 31, 2022 as well as the absence in that quarter of an accrual for estimated additional compensation expense for R&D officers and employees as a result of the outcome of the PALISADE-1 study and delay or termination of other clinical trials and nonclinical activities related to calendar year 2022 corporate operational objectives.

Stock-based compensation expense for the quarter ended December 31, 2022 reflects the amortization of option grants made to our R&D staff and certain clinical and scientific consultants since August 2020, in addition to grants to new employees as indicated above. All outstanding options granted to R&D employees and consultants prior to August 2020 have become fully vested and amortized prior to the quarter ended December 31, 2022. Grants awarded after December 31, 2021, including those granted to new employees, account for approximately $115,000 of expense in the quarter ended December 31, 2022, offset by an expense reduction of approximately $59,000 attributable to options that became fully vested and amortized prior to or during the quarter ended December 31, 2022. The impact of option forfeitures related to Fiscal 2023 terminations reduced expense by approximately $46,000 compared to expense for the quarter ended December 31, 2021. 2019 ESPP expense for the quarter ended December 31, 2022 was $9,500 compared to $14,400 in the quarter ended December 31, 2021.

Consulting and other professional services in both periods reflects fees incurred, generally on an as-needed basis, for project-based scientific, nonclinical and clinical development and regulatory advisory and analytical services rendered to us by third parties primarily in support of our PH94B and PH10 development initiatives. Services related to nonclinical activities were generally curtailed during the quarter ended December 31, 2022, based on the results of PALISADE-1.

PH94B expense for the quarter ended December 31, 2022 reflects (i) the costs associated with completing PALISADE-1, including data analysis, site closures and root cause investigations, (ii) costs associated with the PALISADE-2 study during its pause, (iii) costs associated with the PALISADE OLS study following its termination, including site closure costs, and (iv) on-going costs for the Phase 2A study of PH94B in AjDA which was completed late in the quarter, as well as various other clinical, nonclinical, regulatory and manufacturing activities. The PALISADE OLS study commenced in July 2021, PALISADE-2 commenced in August 2021 and the PH94B AjDA study commenced in mid-June 2021 and each of those studies was actively enrolling during the quarter ended December 31, 2021. During the quarters ended December 31, 2022 and 2021, manufacturing, formulation, process validation and analysis of sufficient quantities of drug substance and drug product for clinical trials and other developmental requirements were significant initiatives for advancing both PH94B and PH10. Due to its later stage of development, costs for PH94B initiatives have significantly exceeded those for PH10 during both Fiscal 2023 and Fiscal 2022. We anticipate increased clinical development expense associated with PH10 in the near term as we have commenced a U.S. Phase 1 clinical trial of PH10 to facilitate potential U.S. Phase 2B development of PH10 for treatment of MDD. In both periods, AV-101 project expense includes costs for certain preclinical studies related to the use of AV-101 with adjunctive probenecid and certain AV-101 manufacturing stability studies. Expense for the quarter ended December 31, 2022 also includes the impact of our ongoing exploratory Phase 1B AV-101 and probenecid clinical trial.

Rent expense for both periods reflects our implementation of ASC 842 and the requirement to recognize, as an operating lease related to our South San Francisco office and laboratory facility, a right-of-use asset and a lease liability, both of which must be amortized over the expected lease term. The underlying lease reflects commercial property rents prevalent in the South San Francisco real estate market at the time of our November 2016 lease amendment extending the lease of our headquarters facilities in South San Francisco by five years from July 31, 2017 to July 31, 2022. As disclosed in Note 10, *Commitments and Contingencies*, in the Condensed Consolidated Financial Statements in Part I of this Report, in October 2021, we entered into an amendment to this lease, pursuant to which the term of the lease was extended from August 1, 2022 to July 31, 2027 and the base rent under the lease for the five-year extension period was specified. We allocate total rent expense for our South San Francisco facility between R&D expense and G&A expense based generally on square footage dedicated to each function. In both periods reported, rent expense includes charges for such items as common area maintenance fees, taxes and insurance which are generally assessed to us by our landlord.

General and Administrative Expense

General and administrative (*G&A*) expense was flat at approximately $3.1 million for each of the quarters ended December 31, 2022 and 2021. Primary components of the change in G&A expense for the quarter ended December 31, 2022 compared to prior year include:

(i) Decrease in pre-launch marketing studies and analyses as a result of the failure of the PALISADE-1 study to achieve its primary efficacy endpoint;

(ii) The impact of four new G&A management and staff employees hired since December 31, 2021, offset by voluntary employee resignations, including by our Chief Commercial Officer, and the absence during the quarter ended December 31, 2022 of the accrual for estimated additional compensation expense for G&A officers and employees due to the results of PALISADE-1 and delay or termination of other clinical trials and nonclinical activities related to calendar year 2022 corporate operational objectives compared to the accrual at December 31, 2021 for estimated achievement of calendar 2021 objectives;

(iii) Increased insurance coverage limits and new coverages added to our insurance portfolio; and

(iv) Expanded investor and public relations and corporate awareness initiatives.

Noncash general and administrative expense, approximately $549,000 and $445,000 in the quarters ended December 31, 2022 and 2021, respectively, primarily reflects stock-based compensation and depreciation in both periods as well as expense attributable to the modification of an outstanding warrant to purchase our common stock in the quarter ended December 31, 2022. The following table indicates the primary components of general and administrative expense for each of the periods (amounts in thousands):

	Three Months Ended December 31,	
	2022	**2021**
Salaries and benefits	$ 1,093	$ 842
Stock-based compensation	450	442
Board fees and other consulting services	126	95
Legal, accounting and other professional fees	421	362
Investor and public relations	255	179
Pre-launch marketing studies and analyses	93	846
Insurance	348	150
Travel expenses	18	18
Sublicense contract amortized acquisition expense	17	34
Warrant modification expense	77	-
Rent and utilities	107	63
All other expenses	87	87
	$ 3,092	$ 3,118

The increase in salaries and benefits expense for the quarter ended December 31, 2022 primarily reflects the addition of four additional management and staff positions since December 31, 2022, including our Vice President, Human Resources in January 2022, our Chief Legal Officer in May 2022, our Vice President, Associate General Counsel in August 2022 and one additional administrative employee in June 2022, as well as the impact of salary increases effective in January 2022 granted to our G&A management and staff. These increases are offset by the elimination for the quarter ended December 31, 2022 of the accrual for estimated additional compensation expense for G&A officers and employees as a result of the outcome of PALISADE-1 and delay or termination of other clinical trials and nonclinical activities related to calendar year 2022 corporate operational objectives.

Stock-based compensation expense for the quarter ended December 31, 2022 reflects the amortization of option grants made to our G&A officers and staff and certain consultants since December 2020, in addition to grants to new employees as indicated above. All outstanding options granted to G&A employees and consultants prior to December 2020 have become fully vested and amortized during or prior to the quarter ended December 31, 2022. Grants awarded after December 31, 2021, including those granted to new employees, account for approximately $255,000 of expense in the quarter ended December 31, 2022, offset by an expense reduction of approximately $254,000 attributable to certain options granted between May 2019 and July 2021 that became fully vested and amortized prior to or during the quarter ended December 31, 2022. Grants made during the quarter ended December 31, 2021 reflected a full quarter of expense during the quarter ended December 31, 2022, increasing expense by approximately $7,000 compared to the prior year. 2019 ESPP expense for the quarter ended December 31, 2022 was approximately $4,100 compared to $6,000 for the quarter ended December 31, 2021.

Board fees and other consulting services represents, in both periods, fees paid as consideration for Board and Board Committee services to the independent members of our Board of Directors. We modified our cash compensation policy for our independent Board members at the beginning of Fiscal 2022, increasing payments to reflect current market conditions and we added one new independent Board member in April 2021 and two additional independent members during July 2021. Expenses for the quarter ended December 31, 2022 also include fees paid to our former Chief Commercial Officer pursuant to a consulting agreement following her voluntary resignation.

Legal, accounting and other professional fees for both periods include expenses (i) related to routine and project-based legal services as well as accounting services related to the review of of our quarterly financial statements; (ii) the cost of certain outsourced financial and accounting services and our information technology service provider; and (iii) legal counsel and other costs related to patent prosecution and protection pursuant to our stem cell technology license agreements, our AV-101 patents, or patents that we have elected to pursue for commercial purposes, recurring annual license fees, and costs we have incurred to advance various patent applications in the U.S. and numerous foreign countries, primarily with respect to AV-101 and our stem cell technology platform, but also nominally with respect to our PH94B and PH10 intellectual property portfolios.

Investor and public relations expense in both periods includes the fees of our various external service providers for a broad spectrum of investor relations, public relations and social media services, and, in the quarter ended December 31, 2022, additional market awareness and strategic advisory and support functions and initiatives. During both years, we conducted numerous virtual meetings and other communication activities focused on expanding global market awareness of the Company, our CNS product candidate pipeline and technologies and our research and development programs, including among registered investment professionals and investment advisors, individual and institutional investors, and prospective strategic collaborators for development and commercialization of our product candidates in major pharmaceutical markets worldwide.

During the quarter ended December 31, 2021, we incurred expenses for a number of pre-commercialization studies, analyses, projections, strategic modeling and awareness services, primarily attributable to PH94B as a potential acute treatment of anxiety in adults with SAD. Given the results of PALISADE-1 and the resulting delay to our anticipated commercialization timeline for PH94B, these activities were significantly reduced in the quarter ended December 31, 2022. We have evaluated the extent and timing of such future activities, and anticipate that such expenditures will, for the short term, remain at the modest level similar to that expended during the quarter ended December 31, 2022.

The increase in insurance expense is primarily attributable to the increased coverage obtained under our directors' and officers' liability insurance upon renewal of our policy in May 2022 and additional coverages, including cybersecurity and employment practices liability, added to our insurance program during Fiscal 2022.

As a result of periodic shelter-in-place restrictions and travel and workplace precautions and restrictions associated with the COVID-19 pandemic during 2020 and 2021 and in the current year, management presentations and historically in-person meetings held in multiple U.S. markets and certain international markets with existing and potential individual and institutional investors, investment professionals and advisors, media, and securities analysts, as well as various investor relations, market awareness and corporate development and partnering initiatives, generally occurred remotely without requiring in-person business travel by our executives. We incurred modest travel expense in the quarter ended December 31, 2022 for attendance at seminars, clinical trial site visits and certain investor-focused events, as conditions have permitted.

Rent expense for both periods reflects our implementation of ASC 842 and the requirement to recognize, as an operating lease related to our South San Francisco office and laboratory facility, a right-of-use asset and a lease liability, both of which must be amortized over the expected lease term. The underlying lease reflects commercial property rents prevalent in the South San Francisco real estate market at the time of our November 2016 lease amendment extending the lease of our headquarters facilities in South San Francisco by five years from July 31, 2017 to July 31, 2022. As disclosed in Note 10, *Commitments and Contingencies*, in the Financial Statements in Part I of this Report, in October 2021, we entered into an amendment to this lease, pursuant to which the term of the lease was extended from August 1, 2022 to July 31, 2027 and the base rent under the lease for the five-year extension period was specified. We allocate total rent expense for our South San Francisco facility between R&D expense and G&A expense based generally on square footage dedicated to each function. In both periods reported, rent expense includes charges for such items as common area maintenance fees, taxes and insurance which are generally assessed to us by our landlord.

Beginning in the quarter ended September 30, 2020, we began to amortize the deferred contract acquisition costs related to our acquisition of the AffaMed Agreement, composed of the cash payment of $220,000 for sublicense fees which we were obligated to make pursuant to our PH94B license from Pherin, and the $125,000 cash payment and $125,000 fair value of common stock issued for consulting services, in each case exclusively related to our acquisition of the AffaMed Agreement. The contract acquisition costs are amortized over the expected term of our performance obligation to be provided under the AffaMed Agreement. As described above in the section entitled *Revenue*, the outcome of the PALISADE-1 study resulted in an estimated extension of the period over which we will recognize both revenue under the AffaMed Agreement and the period over which we will amortize the deferred contract acquisition costs. Our extended estimate of the time required to satisfy our performance obligation required a cumulative catch-up adjustment to amortization of the contract acquisition costs. During the quarter ended September 30, 2022, we reversed previously recorded expense of $83,900, including $29,100 which had been expensed in the quarter ended June 30, 2022. During the quarters ended December 31, 2022 and 2021, we amortized approximately $16,900 and $33,600 of contract acquisition costs, respectively.

In December 2022, we modified outstanding warrants to purchase an aggregate of 1,000,000 registered shares of our common stock exercisable at $0.50 per share that were due to expire during December 2022 to extend the exercisability of such warrants for a period of two years. No other term of the warrants, including exercise price, was modified. We recognized the incremental fair value of $77,400 resulting from the modification as a component of general and administrative expense in the quarter ended December 31, 2022.

Interest and Other Expense

Interest income, net totaled $5,300 for the quarter ended December 31, 2022, compared to $5,100 for the quarter ended December 31, 2021. The following table indicates the primary components of interest income and expense for each of the periods (amounts in thousands):

	Three Months Ended December 31,	
	2022	2021
Interest income	$ 11	$ 5
Interest expense on financing lease and insurance premium financing note	(6)	-
Interest income, net	$ 5	$ 5

For the quarters ended December 31, 2022 and 2021, interest income relates to cash deposits in interest-bearing cash equivalent accounts. Interest expense for the quarter ended December 31, 2022 relates to interest paid on the insurance premium financing note executed in May 2022 and in both periods on our financing lease of office equipment subject to ASC 842. We did not finance insurance premiums for policies that renewed in February 2021, February 2022 or May 2021.

We recognized approximately $208,100 during the quarter ended December 31, 2021 attributable to the 10% cumulative dividend accrued on then-outstanding shares of our Series B 10% Convertible Preferred Stock (*Series B Preferred*) as an additional deduction in arriving at net loss attributable to common stockholders in the Financial Statements. In November 2021, the custodial holder of 1,131,669 outstanding shares of our Series B Preferred exercised its rights for conversion into common stock under the terms of the Certificate of Designation of the Relative Rights and Preferences of the Series B 10% Convertible Preferred Stock *(Series B Certificate of Designation)* and we issued 1,131,669 shares of our common stock upon conversion. From initial issuance in May 2015 through the time of conversion in November 2021, the Series B Preferred had accrued 10% dividends aggregating $7,217,800 and, in accordance with the terms of the Series B Certificate of Designation, we issued 3,295,778 shares of our unregistered common stock in payment of the accrued dividends. Following this conversion there were no additional shares of Series B Preferred outstanding and no further accrual of dividends on the Series B Preferred has been required since November 2021.

Comparison of Nine Months Ended December 31, 2022 and 2021

The following table summarizes the results of our operations for the nine months ended December 31, 2022 and 2021 (amounts in thousands).

	Nine Months Ended December 31,	
	2022	2021
Sublicense revenue	$ (403)	$ 1,070
Operating expenses:		
Research and development	35,040	23,174
General and administrative	11,586	8,982
Total operating expenses	46,626	32,156
Loss from operations	(47,029)	(31,086)
Interest income, net	14	15
Loss before income taxes	(47,015)	(31,071)
Income taxes	(6)	(3)
Net loss	(47,021)	(31,074)
Accrued dividend on Series B Preferred Stock	-	(945)
Net loss attributable to common stockholders	$ (47,021)	$ (32,019)

Revenue

We have derecognized $402,900 in sublicense revenue pursuant to the AffaMed Agreement during the nine months ended December 31, 2022, compared to recognizing revenue of $1,070,000 during the nine months ended December 31, 2021. As described more completely in Note 3 and Note 11 to our Financial Statements in Part I of this Report, on June 24, 2020, we entered into the AffaMed Agreement, pursuant to which we received a non-refundable upfront license fee payment of $5.0 million on August 3, 2020, which payment permitted the commencement of our revenue recognition under the AffaMed Agreement. We recognize revenue on a straight-line basis over the period during which we expect to perform our obligation under the AffaMed Agreement. Revenue related to our performance obligation, which is satisfied over time, could be materially impacted as a result of changes in our estimates of the time or effort necessary to satisfy the performance obligation. Due to the failure of PALISADE-1 to meet its primary efficacy endpoint and the resulting anticipated delay in subsequent clinical and regulatory processes for PH94B in SAD, at September 30, 2022, we estimated that completion of our performance obligation under the AffaMed Agreement would be delayed until mid-calendar 2027. As described in Note 3, as a result of the change in our estimate of the time required to complete our performance obligation under the AffaMed Agreement, we recorded a cumulative catch-up adjustment at September 30, 2022 pursuant to which we derecognized previously recorded revenue, resulting in negative revenue of $582,500 for the six months ended September 30, 2022, including $310,000 of revenue that had been recognized in the quarter ended June 30, 2022. Following the cumulative catch-up adjustment, through December 31, 2022, we have recognized an aggregate of $1,795,500 as revenue under the AffaMed Agreement, including $179,600 during the quarter ended December 31, 2022, and expect to recognize the remaining $3,204,500 as revenue over the estimated performance period as our obligation is completed. We have not modified our September 30, 2022 estimate of the timing to complete our performance obligation, however, we will adjust our estimates, as necessary, in subsequent periods should more definitive information on which to base our projections become available. While we may potentially receive additional cash payments and royalties in the future under the AffaMed Agreement in the event certain performance-based milestones and commercial sales are achieved, there can be no assurance that the AffaMed Agreement will provide any additional revenue beyond that noted or cash payments to us in the near term, or at all.

Research and Development Expense

Research and development (*R&D*) expense increased by approximately $11.8 million, from $23.2 million for the nine months ended December 31, 2021 to $35.0 million for the nine months ended December 31, 2022. Activities related to our PALISADE Phase 3 Program for PH94B, including PALISADE-1, PALISADE-2 and the PALISADE OLS study, and the PH94B Phase 2 Study in AjDA, as well as nonclinical development, outsourced manufacturing and regulatory activities for both PH94B and PH10, accounted for increased expenses of approximately $11.1 million during the nine months ended December 31, 2022 in comparison to the activities conducted during the nine months ended December 31, 2021. We expect R&D expense in the final quarter of Fiscal 2023 to decrease for PH94B as a result of concluding PALISADE-1, the AjDA study, terminating the PALISADE OLS study and deferring certain other PH94B NDA-enabling nonclinical and clinical development activities, at least in the near term, to be somewhat offset by costs for commencing the Phase 1 clinical trial of PH10 in MDD. Salaries and benefits expense for the nine months ended December 31, 2022 increased compared to those of the nine months ended December 31, 2021 due to the hiring of additional regulatory, clinical, CMC and data management personnel during calendar 2021 and calendar 2022, partially offset by a reduction in the accrual for estimated additional compensation expense attributable to calendar 2022 corporate objectives compared to the estimated achievement of certain corporate objectives during the 2021 calendar year and the voluntary resignations of certain R&D personnel in late 2022. Noncash research and development expense, primarily stock-based compensation and depreciation in both periods, accounted for approximately $1,180,000 and $836,000 for the nine months ended December 31, 2022 and 2021, respectively. The following table indicates the primary components of research and development expense for each of the periods (amounts in thousands):

	Nine Months Ended December 31,	
	2022	2021
Salaries and benefits	$ 4,894	$ 4,618
Stock-based compensation	1,092	836
Consulting and other professional services	663	578
Clinical and nonclinical studies and development expenses:		
PH94B and PH10	26,886	15,804
AV-101	890	725
All other	50	57
	27,826	16,586
Rent	413	351
Depreciation	73	72
All other	79	133

Total Research and Development Expense	$ 35,040	$ 23,174

The increase in salaries and benefits expense for the nine months ended December 31, 2022 primarily reflects the addition of eight new management and staff positions across multiple functional disciplines, including biostatistics and clinical analytics, clinical operations, chemistry, manufacturing and controls, and regulatory affairs since December 31, 2021, as well as the impact of salary increases effective in January 2022 granted to our R&D management and staff. These increases are partially offset by the impact of five terminations during the quarter ended December 31, 2022, as well as by the absence during the nine months ended December 31, 2022 of an accrual for estimated additional compensation expense for R&D officers and employees as a result of the outcome of the PALISADE-1 study and delay or termination of other clinical trials and nonclinical activities related to calendar year 2022 corporate operational objectives.

Stock-based compensation expense for the nine months ended December 31, 2022 reflects the amortization of option grants made to our R&D staff and certain clinical and scientific consultants since May 2019, in addition to grants to new employees as indicated above. All outstanding options granted to R&D employees and consultants prior to May 2019 have become fully vested and amortized prior to the nine months ended December 31, 2022 and the May 2019 grants became fully vested during the nine months then ended. Grants awarded after December 31, 2021, including those granted to new employees, account for approximately $400,000 of expense for the nine months ended December 31, 2022, offset by an expense reduction of approximately $225,000 attributable to certain options granted between May 2019 and May December 2020 that became fully vested and amortized prior to or during the nine months ended December 31, 2022. Grants made during the nine months ended December 31, 2021 reflected a full nine months of vesting and amortization during the nine months ended December 31, 2022, or became fully vested and amortized, decreasing expense for such options by $71,000. Expense for the nine months ended December 31, 2022 was reduced by approximately $42,000 as a result of employee terminations noted earlier. The extension of option exercisability by approximately six months for a terminated employee accounted for approximately $109,000 of additional expense during the nine months ended December 31, 2022. 2019 ESPP expense for the nine months ended December 31, 2022 was $34,900 compared to $31,100 during the nine months ended December 31, 2021.

Consulting and other professional services in both periods reflects fees incurred, generally on an as-needed basis, for project-based scientific, nonclinical and clinical development and regulatory advisory and analytical services rendered to us by third parties primarily in support of our PH94B and PH10 development initiatives. Expense for the nine months ended December 31, 2022 also includes nominal contract recruiting services for certain specialized R&D employee and consultant positions.

PH94B and PH10 project expense increased by approximately $11.1 million in the nine months ended December 31, 2022 compared to the nine months ended December 31, 2021. PH94B expense for the nine months ended December 31, 2022 reflects (i) the costs associated with conducting and completing the PALISADE-1 study, including data analysis, site closures and root cause investigations, (ii) costs associated with the PALISADE-2 study both during its conduct, for the interim analysis of PALISADE-2 data and during its pause, (iii) costs associated with the PALISADE OLS study during its conduct and following its termination, including site closure costs, and (iv) costs for conducting the Phase 2A study of PH94B in AjDA which was completed late in the quarter ended December 31, 2022, as well as various other clinical, nonclinical, regulatory and manufacturing activities. The PALISADE OLS study commenced in July 2021, PALISADE-2 commenced in August 2021 and the PH94B AjDA study commenced in mid-June 2021 and each of those studies was actively enrolling during a portion of the prior year period. Throughout the nine months ended December 31, 2022 and 2021, respectively, manufacturing, formulation, process validation and analysis of sufficient quantities of drug substance and drug product for clinical trials and other developmental requirements were significant initiatives for advancing both PH94B and PH10. Additionally, there was significant regulatory activity during the quarter ended September 30, 2022 leading to the late-September 2022 submission to the FDA of the IND for PH10 in MDD. Due to its later stage of development, costs for PH94B initiatives have significantly exceeded those for PH10 during both Fiscal 2023 and Fiscal 2022. However, as a result of pausing PALISADE-2 in July and terminating the PALISADE OLS study in August 2022, we expect costs associated with our continued PH94B-related initiatives, including our Phase 2 AjDA study and other nonclinical studies of PH94B, to decrease in the near-term as we continue to evaluate our next steps for PH94B development. We anticipate increased clinical development expense associated with PH10 in the near term as we have commenced a U.S. Phase 1 clinical trial of PH10 to facilitate potential U.S. Phase 2B development of PH10 for treatment of MDD. In both nine-month periods, AV-101 project expense includes costs for certain preclinical studies related to the use of AV-101 with adjunctive probenecid and certain AV-101 manufacturing stability studies. Expense in the nine months ended December 31, 2022 also includes the impact of our ongoing exploratory Phase 1B AV-101 and probenecid clinical trial.

Rent expense for both periods reflects our implementation of ASC 842 and the requirement to recognize, as an operating lease related to our South San Francisco office and laboratory facility, a right-of-use asset and a lease liability, both of which must be amortized over the expected lease term. The underlying lease reflects commercial property rents prevalent in the South San Francisco real estate market at the time of our November 2016 lease amendment extending the lease of our headquarters facilities in South San Francisco by five years from July 31, 2017 to July 31, 2022. As disclosed in Note 10, *Commitments and Contingencies*, in the Condensed Consolidated Financial Statements in Part I of this Report, in October 2021, we entered into an amendment to this lease, pursuant to which the term of the lease was extended from August 1, 2022 to July 31, 2027 and the base rent under the lease for the five-year extension period was specified. We allocate total rent expense for our South San Francisco facility between R&D expense and G&A expense based generally on square footage dedicated to each function. In both periods reported, rent expense includes charges for such items as common area maintenance fees, taxes and insurance which are generally assessed to us by our landlord.

General and Administrative Expense

General and administrative (*G&A*) expense increased by approximately $2.6 million to approximately $11.6 million for the nine months ended December 31, 2022, compared to approximately $9.0 million for the nine months ended December 31, 2021. Primary components of the increase include:

(i) Expensing professional services incurred in anticipation of a potential credit facility offering that we opted to forego as a result of the PALISADE-1 outcome
(ii) Customary pre-commercialization studies, analyses, projections, strategic modeling and awareness services, primarily for PH94B in SAD, initiated in expectation of positive clinical trial results from the PALISADE Phase 3 program and now curtailed as a result of the PALISADE-1 outcome;
(iii) Increased insurance coverage limits and new coverages added to our insurance portfolio;
(iv) An increase in stock-based compensation expense related to recent option grants;
(v) Expanded investor and public relations and corporate awareness initiatives; and
(vi) The impact of new G&A employees hired since December 31, 2021, offset by the absence of an accrual for estimated additional compensation expense for G&A officers and employees as a result of the outcome of PALISADE-1 and delay or conclusion of other clinical trials and nonclinical activities related to calendar year 2022 corporate operational objectives.

Noncash general and administrative expense, approximately $1,712,000 and $1,579,000 for the nine months ended December 31, 2022 and 2021, respectively, primarily reflects stock-based compensation and depreciation in both periods, expense attributable to the modification of an outstanding warrant to purchase our common stock in the nine months ended December 31, 2022 and the write-off of deferred offering costs in the nine months ended December 31, 2021. The following table indicates the primary components of general and administrative expense for each of the periods (amounts in thousands):

	Nine Months Ended December 31,	
	2022	**2021**
Salaries and benefits	$ 3,195	$ 3,028
Stock-based compensation	1,643	1,243
Board fees and other consulting services	443	311
Legal, accounting and other professional fees	1,891	1,266
Investor and public relations	951	467
Pre-launch marketing studies and analyses	1,820	1,423
Insurance	1,030	416
Travel expenses	78	21
Rent and utilities	301	282
Sublicense contract amortized acquisition expense	(38)	101
Warrant modification expense	77	-
Write off of deferred offering costs	-	232
All other expenses	195	192
	$ 11,586	$ 8,982

Salaries and benefits expense for the nine months ended December 31, 2022 primarily reflects the addition of four additional management and staff positions including our Vice President, Human Resources in January 2022, our Chief Legal Officer in May 2022, our Vice President, Associate General Counsel in August 2022 and an additional administrative employee, as well as the impact of salary increases effective in January 2022 granted to our G&A management and staff. These increases are offset by the absence during the nine months ended December 31, 2022 of an accrual for estimated additional compensation expense for G&A officers and employees as a result of the outcome of the PALISADE-1 study and delay or conclusion of other clinical trials and nonclinical activities related to calendar year 2022 corporate operational objectives and the impact of the voluntary resignation of our Chief Commercial Officer, who remains a member of our Board.

Stock-based compensation expense for the nine months quarter ended December 31, 2022 reflects the amortization of option grants made to our G&A officers and staff and certain consultants since May 2019, in addition to grants to new employees as indicated above. With the exception of options granted in May 2019, September 2019 and April 2020, which became fully vested and amortized in May 2022, September 2022 and April 2022, respectively, all outstanding options granted to G&A employees and consultants prior to October 2020 have become fully vested and amortized prior to December 31, 2022. Grants awarded after December 31, 2021, including those granted to new employees, account for approximately $786,000 of expense during the nine months ended December 31, 2022, offset by an expense reduction of approximately $479,000 attributable to certain options granted between May 2019 and June 2020 that became fully vested and amortized prior to or during the nine months ended December 31, 2022. Grants made during the nine months ended December 31, 2021 reflected a full nine months of expense during the nine months ended December 31, 2022, increasing expense by approximately $35,000 compared to the prior year. 2019 ESPP expense for the nine months ended December 31, 2022 was approximately $13,100 compared to $14,600 for the nine months ended December 31, 2021.

Board fees and other consulting services represents, in both periods, fees paid as consideration for Board and Board Committee services to the independent members of our Board of Directors. We modified our cash compensation policy for our independent Board members at the beginning of Fiscal 2022, increasing payments to reflect current market conditions and we added one new independent Board member in April 2021 and two additional independent members during July 2021. Expenses for the nine months ended December 31, 2022 also include recruiting fees for certain administrative positions and fees paid to our former Chief Commercial Officer pursuant to a consulting agreement following her voluntary resignation.

Legal, accounting and other professional fees for both periods include expenses related to routine and project-based legal services as well as accounting services related to the annual audit and quarterly review of our financial statements. Expense for both periods includes the cost of certain outsourced financial and accounting services and our information technology service provider. Expense in the nine months ended December 31, 2021 also included costs related to our implementation of new accounting software. Expense in both periods also includes legal counsel and other costs related to patent prosecution and protection pursuant to our stem cell technology license agreements, our AV-101 patents, or patents that we have elected to pursue for commercial purposes, recurring annual license fees, and costs we have incurred to advance various patent applications in the U.S. and numerous foreign countries, primarily with respect to AV-101 and our stem cell technology platform, but also nominally with respect to our PH94B and PH10 intellectual property portfolios. During the nine months ended December 31, 2022, we expensed approximately $301,000 of professional services fees incurred in anticipation of a potential credit facility offering that we opted to forego following the outcome of PALISADE-1.

Investor and public relations expense in both periods includes the fees of our various external service providers for a broad spectrum of investor relations, public relations and social media services, and, during the nine months ended December 31, 2022, additional market awareness and strategic advisory and support functions and initiatives. During both periods, we conducted numerous virtual meetings and other communication activities focused on expanding global market awareness of the Company, our CNS product candidate pipeline and technologies and our research and development programs, including among registered investment professionals and investment advisors, individual and institutional investors, and prospective strategic collaborators for development and commercialization of our product candidates in major pharmaceutical markets worldwide.

During the nine months ended December 31, 2021 and through the six months ended September 30, 2022, we incurred expenses for a number of pre-commercialization studies, analyses, projections, strategic modeling and awareness services, primarily attributable to PH94B as a potential acute treatment of anxiety in adults with SAD. Given the outcome of PALISADE-1 and the resulting delay to our anticipated commercialization timeline for PH94B, these activities were significantly reduced in the quarter ended December 31, 2022. We have evaluated the extent and timing of such future activities, and anticipate that such expenditures will, for the short term, remain at the modest level similar to that expended during the quarter ended December 31, 2022.

The increase in insurance expense is primarily attributable to the increased coverage obtained under our directors' and officers' liability insurance upon renewal of our policy in May 2022 and additional coverages, including cybersecurity and employment practices liability, added to our insurance program during Fiscal 2022.

As a result of periodic shelter-in-place restrictions and travel and workplace precautions and restrictions associated with the COVID-19 pandemic during 2020 and 2021, management presentations and historically in-person meetings held in multiple U.S. markets and certain international markets with existing and potential individual and institutional investors, investment professionals and advisors, media, and securities analysts, as well as various investor relations, market awareness and corporate development and partnering initiatives, generally occurred remotely without requiring in-person business travel by our executives. During 2022, we have incurred modest travel expense during the nine months ended December 31, 2022 for attendance at seminars, and for vendor audits, clinical trial site visits and certain investor-focused events, as conditions have permitted.

Rent expense for both periods reflects our implementation of ASC 842 and the requirement to recognize, as an operating lease related to our South San Francisco office and laboratory facility, a right-of-use asset and a lease liability, both of which must be amortized over the expected lease term. The underlying lease reflects commercial property rents prevalent in the South San Francisco real estate market at the time of our November 2016 lease amendment extending the lease of our headquarters facilities in South San Francisco by five years from July 31, 2017 to July 31, 2022. As disclosed in Note 10, *Commitments and Contingencies,* in the Condensed Consolidated Financial Statements in Part I of this Report, in October 2021, we entered into an amendment to this lease, pursuant to which the term of the lease was extended from August 1, 2022 to July 31, 2027 and the base rent under the lease for the five-year extension period was specified. We allocate total rent expense for our South San Francisco facility between R&D expense and G&A expense based generally on square footage dedicated to each function. In both periods reported, rent expense includes charges for such items as common area maintenance fees, taxes and insurance which are generally assessed to us by our landlord.

Beginning in the quarter ended September 30, 2020, we began to amortize the deferred contract acquisition costs related to our acquisition of the AffaMed Agreement, composed of the cash payment of $220,000 for sublicense fees which we were obligated to make pursuant to our PH94B license from Pherin, and the $125,000 cash payment and $125,000 fair value of common stock issued for consulting services, in each case exclusively related to our acquisition of the AffaMed Agreement. The contract acquisition costs are amortized over the expected term of the services to be provided under the AffaMed Agreement. As described above in the section entitled *Revenue*, the outcome of the PALISADE-1 study resulted in an estimated extension of the period over which we will recognize both revenue under the AffaMed Agreement and the period over which we will amortize the deferred contract acquisition costs. Our extended estimate of the time required to satisfy our performance obligation required a cumulative catch-up adjustment to amortization of the contract acquisition costs. During the six months ended September 30, 2022, we reversed previously recorded expense of $54,800, including $29,100 which had been expensed in the quarter ended June 30, 2022. During the nine months ended December 31, 2022 and 2021, we derecognized approximately $37,900 and amortized approximately $100,600 of contract acquisition costs, respectively.

In December 2022, we modified outstanding warrants to purchase an aggregate of 1,000,000 registered shares of our common stock exercisable at $0.50 per share that were due to expire during December 2022 to extend the exercisability of such warrants for a period of two years. No other term of the warrants, including exercise price, was modified. We recognized the incremental fair value of $77,400 resulting from the modification as a noncash warrant modification expense in the quarter ended December 31, 2022.

In June 2021, we terminated our previous equity line agreement with Lincoln Park Capital. Upon termination of the agreement, we expensed the remaining $232,100 of deferred offering costs related to the agreement as a noncash charge to G&A expense in the quarter ended June 30, 2022.

Interest and Other Expense

Interest income, net totaled $13,700 for the nine months ended December 31, 2022, compared to $15,300 for the nine months ended December 31, 2021. The following table indicates the primary components of interest income and expense for each of the periods (amounts in thousands):

	Nine Months Ended December 31,	
	2022	2021
Interest income	$ 34	$ 15
Interest expense on financing lease and insurance premium financing note	(20)	-
Interest income, net	$ 14	$ 15

For the nine months ended December 31, 2022 and 2021, interest income relates to cash deposits in interest-bearing cash equivalent accounts. Although interest rates have increased during the nine months ended December 31, 2022, our cash deposit balances have declined as we used such amounts to fund our operations. Interest expense for the nine months ended December 31, 2022 relates to interest paid on the insurance premium financing note executed in May 2022 and, in both periods, on our financing lease of office equipment subject to ASC 842. We did not finance insurance premiums for policies that renewed in February 2021, February 2022 or May 2021.

We recognized approximately $945,100 during the nine months ended December 31, 2021 attributable to the 10% cumulative dividend accrued on then-outstanding shares of our Series B 10% Convertible Preferred Stock (*Series B Preferred*) as an additional deduction in arriving at net loss attributable to common stockholders in the Financial Statements. In November 2021, the custodial holder of 1,131,669 outstanding shares of our Series B Preferred exercised its rights for conversion into common stock under the terms of the Certificate of Designation of the Relative Rights and Preferences of the Series B 10% Convertible Preferred Stock *(Series B Certificate of Designation)* and we issued 1,131,669 shares of our common stock upon conversion. From initial issuance in May 2015 through the time of conversion in November 2021, the Series B Preferred had accrued 10% dividends aggregating $7,217,800 and, in accordance with the terms of the Series B Certificate of Designation, we issued 3,295,778 shares of our unregistered common stock in payment of the accrued dividends. Following this conversion there were no additional shares of Series B Preferred outstanding and no further accrual of dividends on the Series B Preferred has been required since November 2021.

Liquidity and Capital Resources

Since our inception in May 1998 through December 31, 2022, we have financed our operations and technology acquisitions primarily through the issuance and sale of our equity and debt securities for cash proceeds of approximately $208.7 million, as well as from an aggregate of approximately $22.7 million of government research grant awards (excluding the fair market value of government sponsored and funded clinical trials), strategic collaboration payments and intellectual property licensing, and other revenues. Additionally, we have issued equity securities with an approximate value at issuance of $38.2 million in noncash acquisitions of product licenses and in settlements of certain liabilities, including liabilities for professional services rendered to us or as compensation for such services.

During Fiscal 2022, holders of outstanding warrants to purchase an aggregate of approximately 7.3 million shares of our common stock exercised such warrants, and we received cash proceeds of approximately $6.2 million. In May 2021, we entered into an Open Market Sale Agreement SM (the *Sales Agreement*) with respect to an at-the-market offering program (the *ATM*) under which we may offer and sell, from time to time, shares of our common stock having an aggregate offering price of up to $75.0 million through our sales agent. During Fiscal 2022, we sold an aggregate of 1,517,798 shares of our common stock and received net cash proceeds of approximately $4.3 million under the ATM. We have not sold any additional shares of our common stock under the Sales Agreement from October 2, 2021 through the date of this Report. During our fiscal year ended March 31, 2021 (*Fiscal 2021*), we received approximately $119 million in net cash proceeds, primarily from public offerings conducted in August 2020 and December 2020, the exercise of approximately 6.6 million outstanding warrants and the upfront license payment pursuant to our sublicense and collaboration agreement for PH94B (the *AffaMed Agreement*), which is described more completely in Note 11, *Sublicensing and Collaboration Agreements*. The financings and other transactions consummated during Fiscal 2022 and Fiscal 2021 have provided our liquidity during Fiscal 2022 and through the date of this Report. During the nine months ended December 31, 2022, we have received approximately $167,500 in proceeds from the exercise of outstanding stock options and sales under our 2019 Employee Stock Ownership Program (the *ESPP*).

We had cash and cash equivalents of approximately $25.0 million at December 31, 2022, which we believe will not be sufficient to fund our planned operations for the twelve months following the issuance of these consolidated financial statements, which raises substantial doubt that we can continue as a going concern. We are continuing to evaluate our cash resources as we prepare for further discussions with the FDA regarding the next steps in our late-stage development of PH94B for the treatment of SAD, collect and analyze topline results from our exploratory Phase 2A clinical study of PH94B in adults experiencing AjDA, conduct the small Phase 1 clinical safety study of PH10 to facilitate potential Phase 2B development, on our own or with a collaborator, as a potential stand-alone rapid-onset treatment for MDD and conduct our Phase 1 safety study of AV-101 in combination with probenecid to facilitate potential exploratory Phase 2A development of AV-101. We are continuing to evaluate the potential implications for the conduct and timing of other clinical trials and strategies for the development and commercialization, on our own or with collaborators, of all of our product candidates. However, as we have not yet developed products that generate recurring revenue and, in the event we successfully complete future clinical and/or nonclinical programs, we will need to invest substantial additional capital resources to develop and commercialize our drug candidates.

When necessary and advantageous, we will seek additional financial resources to fund our planned operations through (i) sales of our equity and/or debt securities in one or more public offerings and/or private placements, (ii) non-dilutive government grants and research awards and (iii) non-dilutive strategic partnering collaborations to advance development and commercialization of our product candidates. For example, we may seek to enter research, development and/or commercialization collaborations similar to the AffaMed Agreement, which applies only to development and commercialization of PH94B in Greater China, South Korea and Southeast Asia, to provide non-dilutive funding for our operations, while also reducing a portion of our future cash outlays and working capital requirements. Although we may seek additional collaborations that could generate revenue and/or provide non-dilutive funding for development and commercialization of our product candidates, no assurance can be provided that any such collaborations, awards or agreements will occur in the future.

Subject to certain restrictions, our Registration Statement on Form S-3 (the *S-3 Shelf Registration Statement*) remains available for future sales of our equity securities in one or more public offerings from time to time. While we may make additional sales of our equity securities under the S-3 Shelf Registration Statement, we do not have an obligation to do so.

Our future working capital requirements will depend on many factors, including, without limitation, potential impacts related to adjustments in the size of our staff, the scope and nature of opportunities related to our success and the success of certain other companies in nonclinical and clinical trials, including our development and commercialization of our current product candidates, the availability of, and our ability to enter into financing transactions and research, development and commercialization collaborations on terms acceptable to us. In the future, to further advance the clinical development of our product candidates, as well as support our operating activities, we plan to seek additional financing, including both equity-based capital from non-dilutive sources, and continue to carefully manage our routine operating costs, including, but not limited to, our clinical and nonclinical programs.

Notwithstanding the foregoing, there can be no assurance that future financings will be available to us in sufficient amounts, in a timely manner, or on terms acceptable to us, if at all, or that our current development and commercialization collaboration under the AffaMed Agreement or other strategic partnering collaborations will generate revenue from future potential milestone payments or otherwise. Further, on September 6, 2022, we received a letter from the Listing Qualifications Staff of The Nasdaq Stock Market, LLC (*Nasdaq*) indicating that, based upon the closing bid price of our common stock for the previous 30 consecutive business days, we are not currently in compliance with the requirement to maintain a minimum bid price of $1.00 per share for continued listing on the Nasdaq Capital Market. While the letter has no immediate effect on the listing of our common stock on the Nasdaq Capital Market, failure to meet applicable Nasdaq continued listing standards by March 6, 2023, the expiration of the 180-day period in which to regain compliance, unless extended, could potentially result in a delisting of our common stock, which could materially reduce the liquidity of our common stock, result in a further reduction in the price of our common stock, require us to implement our stockholder-authorized reverse stock split to maintain our listing, and/or impair our ability to raise capital through alternative financing sources on terms acceptable to us, or at all. If we do not regain compliance by March 6, 2023, an additional 180 days may be granted to regain compliance, so long as we meet the Nasdaq Capital Market continued listing requirements (except for the bid price requirement) and notify Nasdaq in writing of our intention to cure the deficiency during the second compliance period by implementing a reverse stock split, if necessary. If we do not qualify for the second compliance period or fail to regain compliance during the second 180-day period, then Nasdaq will notify us of its determination to delist our common stock, at which point we will have an opportunity to appeal the delisting determination to a hearings panel. If we are unable to regain timely compliance with the Nasdaq continued listing standards and/or obtain additional financing on a timely basis when needed, our business, financial condition, and results of operations may be harmed, the price of our stock may decline, we may be required to reduce, defer, or discontinue certain of our research and development activities and we may not be able to continue as a going concern. The Condensed Consolidated Financial Statements included in Part I of this Report do not include any adjustments that might result from the negative outcome of this uncertainty.

Cash and Cash Equivalents

The following table summarizes changes in cash and cash equivalents for the periods stated (in thousands):

	Nine Months Ended December 31,	
	2022	2021
Net cash used in operating activities	$ (42,242)	$ (29,668)
Net cash used in investing activities	(212)	(200)
Net cash provided by (used in) financing activities	(644)	10,460
Net decrease in cash and cash equivalents	(43,098)	(19,408)
Cash and cash equivalents at beginning of period	68,135	103,108
Cash and cash equivalents at end of period	$ 25,037	$ 83,700

As described above, the combination of the net proceeds we received from public offerings in Fiscal 2021, from transactions under our ATM in Fiscal 2022 and from warrant exercises in both Fiscal 2021 and Fiscal 2022, have been the primary sources of our available cash during Fiscal 2022 and during the nine months ended December 31, 2022. The increase in cash used in operations during the nine months ended December 31, 2022 reflects our continued conduct, completion, pause or termination of PH94B clinical trials including PALISADE-1, PALISADE-2, the PALISADE OLS, and the Phase 2 AjDA study, as previously described, as well as ongoing manufacturing and regulatory initiatives and other nonclinical studies of our product candidates. Additionally, during Fiscal 2022, we expanded our internal capabilities with the addition of numerous senior personnel with significant expertise in disciplines critical to the advancement of our product pipeline. In both periods, but to a much greater extent during the earlier months of Fiscal 2023, in parallel with our clinical and regulatory initiatives, and in expectation of positive results from the PALISADE Phase 3 Program, we engaged in customary pre-commercialization analyses, modeling, planning and awareness initiatives. Given the outcome of the PALISADE-1 study, we have terminated most of such activities and are evaluating the extent and timing of such future activities. Cash used in investing activities during the nine months ended December 31, 2022 reflects laboratory analytical equipment acquired for our internal studies and experiments on both PH94B and PH10. Cash used in investing activities during the nine months ended December 31, 2021 primarily reflects the cost of laboratory analytical equipment acquired for use by our CMO in connection with the development and production of PH94B drug product. Cash used by financing activities during the nine months ended December 31, 2022 is primarily the result of the proceeds of option exercises and the purchase of common stock under our ESPP, net of principal payments on our insurance premium financing note and expenditures related to the ATM transaction with Jefferies which are recorded as deferred offering costs. Cash provided by financing activities during the nine months ended December 31, 2021 is primarily the result of warrant exercises, net of expenditures related to the ATM transaction with Jefferies and recorded as deferred offering costs.

Off-Balance Sheet Arrangements

We have no off-balance sheet arrangements.

Recent Accounting Pronouncements

For information relating to recent accounting pronouncements and the expected impact of such pronouncements on our condensed consolidated financial statements, see Note 3 of the Notes to Condensed Consolidated Financial Statements included In Part I of this Report.

Item 4. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) of the Exchange Act) as of the end of the period covered by this Report. Based on that evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that our disclosure controls and procedures as of the end of the period covered by this Report were effective.

Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rule 13a-15(f) of the Exchange Act) from that described in our Quarterly Report on Form 10-Q for our quarter ended September 30, 2022, filed with the Securities and Exchange Commission *(SEC)* on November 10, 2022, that occurred during the quarter ended December 31, 2022, to which this Report relates, that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II: OTHER INFORMATION

Item 1. Legal Proceedings

None.

Item 1A. Risk Factors

Risk Factor Summary

Our business is subject to substantial risk and an investment in our securities involves various risks. Some of the material risks include those set forth below. You should consider carefully these risks, and those discussed under "Risk Factors" below, before investing in our securities. These risks include, among others:

- Failures of our current and/or future clinical studies of our product candidates, or delays in the commencement of completion of our clinical trials, could result in increased costs to us and could delay, prevent or limit our ability to generate revenue and continue our business;
- we are a development stage biopharmaceutical company with no recurring revenues from product sales or approved products, and limited experience developing or commercializing new drug candidates, which makes it difficult to assess our future viability;
- we depend heavily on the success of our current CNS product candidates, PH94B, PH10 and AV-101, and we cannot be certain that we will be able to obtain regulatory approval for, or successfully commercialize, any of our current or future product candidates;
- if we are unable to retain or attract key management and scientific personnel, we may be unable to successfully produce, develop and commercialize our product candidates;
- the successful completion of clinical or nonclinical studies in any of our development programs may not be sufficient to cause the FDA to approve of any NDA that we may submit or cause any other agency to provide regulatory approval of any of our product candidates and, even if approved, does not ensure acceptance of such product candidates by clinicians leading to a revenue stream to support our operations;
- the COVID-19 pandemic has had, and may continue to have, an impact on our business, including delays and potential delays in manufacturing and testing of certain drug substance and drug products, potential delays in recruitment and enrollment in our planned clinical and nonclinical studies of our product candidates and potential impact of the results of our clinical and nonclinical studies of our product candidates;
- we face significant competition, and if we are unable to compete effectively, we may not be able to achieve or maintain significant market penetration or improve our results of operations;
- if we are unable to adequately protect our proprietary technology, or obtain and maintain issued patents that are sufficient to protect our product candidates, others could compete against us more directly, which would have a material adverse impact on our business, results of operations, financial condition and prospects;
- we have incurred significant net losses since inception and we will continue to incur substantial operating losses for the foreseeable future;
- we require substantial additional financing to execute our long-term business plan, including further development and commercialization of our CNS product candidates;
- raising additional capital in equity-based financing transactions is likely to cause substantial dilution to our existing stockholders, may restrict our operations or require us to relinquish rights, and may require us to seek stockholder approval to authorize additional shares of our common stock;
- if we fail to comply with the continued listing requirements of the Nasdaq Capital Market, our common stock may be delisted and the price of our common stock and our ability to access the capital markets could be negatively impacted; and
- other risks and uncertainties, including those described under *Risk Factors* below.

If we are unable to effectively manage the impact of these and other risks, our ability to operate and execute our business plan would be substantially impaired. In turn, the value of our securities would be materially reduced.

Risk Factors

You should consider carefully the risks and uncertainties described below, together with all of the other information in this Report before investing in our securities. The risks described below are not the only risks facing our Company. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also materially adversely affect our business, financial condition and/or operating results. If any of the following risks are realized, our business, financial condition and results of operations could be materially and adversely affected.

Risks Related to Product Development, Regulatory Approval and Commercialization

Failures of our current and/or future clinical studies of our product candidates could result in increased costs to us and could delay, prevent or limit our ability to generate revenue and continue our business.

Our PALISADE-1 Phase 3 clinical study of PH94B for the acute treatment of anxiety in adults with SAD did not achieve its primary endpoint, as measured by change from baseline using the SUDS as compared to placebo. Successful completion of our nonclinical and clinical trials is a prerequisite to submitting an NDA and, consequently, the ultimate approval required before commercial marketing of any product candidate we may develop. Failure of any of our current and/or future clinical and nonclinical trials to achieve the planned endpoints, such our PALISADE-1 Phase 3 clinical trial of PH94B, could result in increased costs to us and could delay, prevent or limit our ability to generate revenue and continue our business.

We depend heavily on the success of one or more of our current CNS drug candidates and we cannot be certain that we will be able to obtain regulatory approval for, or successfully commercialize any of our product candidates.

We currently have no drug products for sale and may never be able to develop and commercialize marketable drug products. Our business currently depends heavily on the successful development, manufacturing, regulatory approval and commercialization of one or more of our current CNS drug candidates, as well as, but to a more limited extent, our ability to acquire, license or produce, develop and commercialize additional product candidates. Each of our current investigational CNS drug candidates will require substantial additional nonclinical and clinical development, manufacturing and regulatory approval before any of them may be commercialized, and there can be no assurance that any of them will ever achieve regulatory approval. The nonclinical and clinical development of our product candidates are, and the manufacturing and marketing of our product candidates will be, subject to extensive and rigorous review and regulation by numerous government authorities in the U.S. and in other countries where we or our collaborators intend to test and, if approved, market any product candidate. Before obtaining regulatory approvals for the commercial sale of any product candidate, we must demonstrate through numerous nonclinical and clinical studies that the product candidate is safe and effective for use in each target indication. Research and development of product candidates in the pharmaceutical industry is a long, expensive and uncertain process, and delay or failure can occur at any stage of any of nonclinical or clinical studies. This process takes many years and may also include post-marketing studies, surveillance obligations and drug safety programs, which would require the expenditure of substantial resources beyond the proceeds we have raised to date. Of the large number of drug candidates in development in the U.S., only a small percentage will successfully complete the required FDA regulatory approval process and will be commercialized. Accordingly, we cannot assure you that any of our current drug candidates or any future product candidates will be successfully developed or commercialized in the U.S. or any market outside the U.S.

We are not permitted to market our product candidates in the U.S. until we receive approval of a New Drug Application (*NDA*) from the FDA, or in any foreign countries until we receive the requisite approval from such countries. Obtaining FDA approval of a NDA is a complex, lengthy, expensive and uncertain process. The FDA may refuse to permit the filing of our NDA, delay, limit or deny approval of a NDA for many reasons, including, among others:

- if we submit an NDA and it is reviewed by a FDA advisory committee, the FDA may have difficulties scheduling an advisory committee meeting in a timely manner or the advisory committee may recommend against approval of our application or may recommend that the FDA require, as a condition of approval, additional nonclinical or clinical studies, limitations on approved labeling or distribution and use restrictions;

- a FDA advisory committee may recommend, or the FDA may require, a Risk Evaluation and Mitigation Strategies (*REMS*) safety program as a condition of approval or post-approval;

- a FDA advisory committee or the FDA or applicable regulatory agency may determine that there is insufficient evidence of overall effectiveness or safety in a NDA and require additional clinical studies;

- the FDA or the applicable foreign regulatory agency may determine that the manufacturing processes or facilities of third-party contract manufacturers with which we contract do not conform to applicable requirements, including current Good Manufacturing Practices (*cGMPs*); or

- the FDA or applicable foreign regulatory agency may change its approval policies or adopt new regulations.

Any of these factors, many of which are beyond our control, could jeopardize our ability to obtain regulatory approval for and successfully commercialize any current or future drug product candidate we may develop. Any such setback in our pursuit of regulatory approval for any product candidate would have a material adverse effect on our business and prospects.

In addition, certain of our product candidates, including PH94B and PH10, will be subject to regulation as combination products, which means that they are composed of both a drug product and device product. Although we do not contemplate doing so, if marketed individually, each component would be subject to different regulatory pathways and reviewed by different centers within the FDA. Our product candidates that are considered to be drug-device combination products will require review and coordination by FDA's drug and device centers prior to approval, which may delay approval. In the U.S., a combination product with a drug primary mode of action generally would be reviewed and approved pursuant to the drug approval processes under the Federal Food, Drug and Cosmetic Act of 1938. In reviewing the NDA application for such a product, however, FDA reviewers in the drug center could consult with their counterparts in the device center to ensure that the device component of the combination product met applicable requirements regarding safety, effectiveness, durability and performance. Under FDA regulations, combination products are subject to cGMP requirements applicable to both drugs and devices, including the Quality System (*QS*) regulations applicable to medical devices. Problems associated with the device component of the combination product candidate may delay or prevent approval.

The COVID-19 pandemic has adversely impacted and may continue to adversely impact our business.

Beginning in late-2019, a new strain of coronavirus (*COVID-19*) spread across the world, and the outbreak has since been declared a pandemic by the World Health Organization. The U.S. Secretary of Health and Human Services has also declared a public health emergency in the U.S. in response to the outbreak. Considerable uncertainty still surrounds COVID-19 and variant strains of the COVID-19 virus and their potential effects, and the extent of and effectiveness of responses taken on international, national and local levels. Measures taken to limit the impact of the pandemic, including shelter-in-place orders, social distancing measures, travel bans and restrictions, and business and government shutdowns, resulted in significant negative economic impacts on a global basis.

Due to the emergence of variant strains of the COVID-19 virus, such as the Delta and Omicron variants, and the emergence of subvariants of the virus, such as the subvariants of Omicron, we cannot at this time accurately predict the potential future effects of the pandemic on our operations. Uncertainties remain as to the duration of the pandemic, the success of treatments and vaccines designed to combat the pandemic, and the length, scope and episodic nature of the travel restrictions and business disruptions, including business closures imposed by the governments of impacted countries and localities. The continued COVID-19 pandemic, the spread of variant and subvariant strains of the COVID-19 virus or another highly transmissible and pathogenic infectious disease may lead to the implementation of further responses, including additional travel restrictions, government-imposed quarantines or stay-at-home orders, and other public health safety measures, which may result in further disruptions to our business and operations or those of our collaborators. The COVID-19 pandemic has impacted our business and may continue to do so as the pandemic persists. Additionally, future outbreaks may have several adverse effects on our business, results of operations and financial condition.

- ***Adverse impact on product development****:* We have faced, and may continue to face, delays and other disruptions to our ongoing development programs for PH94B, PH10 and AV-101 due to the ongoing COVID-19 pandemic, which may, in turn, have an adverse impact on the outcome of our clinical and nonclinical trials. Regulatory oversight and actions regarding our products may be disrupted or delayed in regions impacted by COVID-19, including the United States and elsewhere, which may impact review and approval timelines for products in development. Although we remain invested in continuing our development programs for our current product candidates, unforeseen circumstances related to the COVID-19 pandemic may impair our ability to conduct nonclinical and clinical studies in a timely and/or effective manner.
  In addition, recent medical literature has reported that the SARS-COV-2 virus, which causes COVID-19, may cause long-term and reversible olfactory dysfunction (*OD*) in approximately 30% of affected individuals. OD may occur in cases where the SARS-COV-2 virus damages the nasal chemosensory epithelium, a structure in the nose where the types of cells are found that respond to pherines such as PH94B and PH10. Accordingly, there is a risk that the prevalence of OD caused by COVID-19 infections may interfere with the ability of PH94B and/or PH10 to provide a therapeutic benefit, which, may, in turn, have a materially adverse impact on results of our clinical trials designed to assess the efficacy of these product candidates or a negative impact on potential future sales should either PH94B or PH10 be approved for commercialization.

- ***Negative impacts on our employees, collaborators and suppliers***: COVID-19 has impacted, and variant and subvariant strains of COVID-19 or another highly transmissible and pathogenic infectious disease may impact or continue to impact, the health of our employees, collaborators, contractors or suppliers, reduce the availability of our workforce or those of companies with which we do business, divert our attention toward succession planning, or create disruptions in our supply or distribution networks. Since the beginning of the COVID-19 pandemic, we have experienced delays of the delivery of supplies of active pharmaceutical product (*API*) required to continue development of PH94B and PH10. Although our supply of raw materials and API remains sufficiently operational, we may experience adverse effects of such events, which may result in a significant, material disruption to clinical development programs and our operations. Additionally, having substantially shifted to remote working arrangements, we also face a heightened risk of cybersecurity attacks or data security incidents and are more dependent on internet and telecommunications access and capabilities.

COVID-19 has also created significant disruption and volatility in national, regional and local economies and markets. Uncertainties related to, and perceived or experienced negative effects from COVID-19, may cause significant volatility or decline in the trading price of our securities, capital markets conditions and general economic conditions. Our future results of operations and liquidity could be adversely impacted by supply chain disruptions and operational challenges faced by our CROs, CMOs, clinical sites involved in our clinical studies and other contractors. The ongoing COVID-19 pandemic, or another highly transmissible and pathogenic infectious disease, could result in a widespread health crisis that could adversely affect the economies and financial markets of many countries, resulting in a further economic downturn or a global recession. Such events may limit or restrict our ability to access capital on favorable terms, or at all, lead to consolidation that negatively impacts our business, weaken demand, increase competition, cause us to reduce our capital spend further, or otherwise disrupt our business or make it more difficult to implement our strategic plans.

We have been granted Fast Track designation from the FDA for development of PH94B for the treatment of social anxiety disorder (SAD) and AV-101 for the adjunctive treatment of major depressive disorder (MDD) and for the treatment of neuropathic pain (NP). However, these designations may not actually lead to faster development or regulatory review or approval processes for PH94B or AV-101. Further, there is no guarantee the FDA will grant Fast Track designation for PH94B or AV-101 as a treatment option for other CNS indications or for any of our other product candidates in the future.

The Fast Track designation is a program offered by the FDA, pursuant to certain mandates under the FDA Modernization Act of 1997, designed to facilitate drug development and to expedite the review of new drugs that are intended to treat serious or life-threatening conditions. Compounds selected must demonstrate the potential to address unmet medical needs. The FDA's Fast Track designation allows for close and frequent interaction with the FDA. A designated Fast Track drug may also be considered for priority review with a shortened review time, rolling submission, and accelerated approval if applicable. The designation does not, however, guarantee FDA approval or expedited approval of any application for the product candidate.

In December 2017, the FDA granted Fast Track designation for development of AV-101 for the adjunctive (add-on) treatment of MDD in patients with an inadequate response to current antidepressants. In September 2018, the FDA granted Fast Track designation for development of AV-101 for the treatment of NP. In December 2019, the FDA granted Fast Track designation for development of PH94B for the treatment of SAD. However, these FDA Fast Track designations may not lead to a faster development or regulatory review or approval process for PH94B or AV-101 and the FDA may withdraw Fast Track designation of PH94B or AV-101 if it believes that the respective designation is no longer supported by data from our clinical development programs.

In addition, we may apply for Fast Track designation for PH94B, PH10 and AV-101 as a treatment option for other CNS indications. The FDA has broad discretion whether or not to grant a Fast Track designation, and even if we believe PH94B, PH10, AV-101 or other product candidates may be eligible for this designation, we cannot be sure that the FDA will grant it.

Results of earlier clinical trials may not be predictive of the results of later-stage clinical trials.

The results of preclinical studies and early clinical trials of PH94B, PH10, AV-101 and/or our other future product candidates, if any, including positive results, may not be predictive of the results of later-stage clinical trials. PH94B, PH10, AV-101 or any other future product candidates in later stages of clinical development may fail to show the desired safety and efficacy results despite having progressed through nonclinical studies and initial clinical trials, as is the case for results from our PALISADE-1 clinical trial. Many companies in the biopharmaceutical industry have suffered significant setbacks in later-stage clinical trials due to adverse safety profiles or lack of efficacy, notwithstanding promising results in earlier studies. Similarly, our future clinical trial results may not be successful for these or other reasons.

Moreover, nonclinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that believed their product candidates performed satisfactorily in nonclinical studies and clinical trials nonetheless failed to obtain FDA approval or approval from a similar regulatory authority in another country. With respect to our current product candidates, if our future nonclinical or clinical study of PH94B, PH10 or AV-101 fail(s) to produce positive results, the development timeline and regulatory approval and commercialization prospects for PH94B, PH10 or AV-101 and, correspondingly, our business and financial prospects, could be materially adversely affected.

Any changes in planned timing or nature of clinical trials compared to completed clinical trials could impede our ability to meet our clinical development objectives for our product candidates.

As product candidates are developed through preclinical to early- and late-stage clinical trials towards regulatory approval and commercialization, it is customary that various aspects of the development program, such as manufacturing and methods of administration, are altered along the way in an effort to optimize processes and results. While these types of changes are common and are intended to optimize the product candidates for later stage clinical trials, approval and commercialization, such changes do carry the risk that they will not achieve these intended objectives.

For example, the timing of planned clinical trials may be affected by delays caused by the ongoing COVID-19 pandemic, including potential delays in recruitment and enrollment in our planned clinical and nonclinical studies or supply chain disruptions experienced by certain of our CMOs and/or CROs. In addition, clinical development of our products may be further affected if we or any of our collaborators seek to optimize and scale-up production of a product candidate. In such case, we will need to demonstrate comparability between the newly manufactured drug substance and/or drug product relative to the previously manufactured drug substance and/or drug product. Demonstrating comparability may cause us to incur additional costs or delay initiation or completion of our clinical trials, including the need to initiate a dose escalation study and, if unsuccessful, could require us to complete additional nonclinical or clinical studies of our product candidates. In addition, health and safety precautions at clinical sites related to the COVID-19 pandemic could cause us to incur additional costs or delay initiation or completion of planned clinical and/or nonclinical trials.

If serious adverse events or other undesirable side effects or safety concerns attributable to our product candidates occur, they may adversely affect or delay our clinical development and commercialization of PH94B, PH10 or AV-101.

Undesirable side effects or safety concerns caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt our clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval. Although no treatment-related serious adverse events (*SAEs*) were reported in any clinical trials of any of our product candidates completed to date, if treatment-related SAEs or other undesirable side effects or safety concerns, or unexpected characteristics attributable to PH94B, PH10 and/or AV-101, are reported in any future clinical trials involving our drug candidates, they may adversely affect or delay our clinical development and commercialization of the effected product candidate, and the occurrence of these events could have a material adverse effect on our business and financial prospects. Results of our future clinical trials could reveal a high and unacceptable severity and prevalence of adverse side effects. In such an event, our trials could be suspended or terminated, and the FDA or other regulatory agency could order us to cease further development of or deny approval of our product candidates for any or all targeted indications. The drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims.

Additionally, if any of our product candidates receives marketing approval and we or others later identify undesirable or unacceptable side effects or safety concerns caused by these product candidates, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw, suspend, or limit approvals of such product and require us to take them off the market;
- regulatory authorities may require the addition of labeling statements, specific warnings, a contraindication or field alerts to physicians and pharmacies;
- regulatory authorities may require a medication guide outlining the risks of such side effects for distribution to patients, or that we implement a Risk Evaluation and Mitigation Strategy (*REMS)* drug safety program or REMS-like plan to ensure that the benefits of the product outweigh its risks;
- we may be required to change the way a product is distributed or administered, conduct additional clinical trials or change the labeling of a product;
- we may be required to conduct additional post-marketing studies or surveillance;
- we may be subject to limitations on how we may promote the product;
- sales of the product may decrease significantly;
- we may be subject to regulatory investigations, government enforcement actions, litigation or product liability claims; and
- our products may become less competitive or our reputation may suffer.

Any of these events could prevent us or any collaborators from achieving or maintaining market acceptance of our product candidates or could substantially increase commercialization costs and expense, which in turn could delay or prevent us from generating significant revenue from the sale of our product candidates.

Failures or delays in the commencement or completion of our planned nonclinical and clinical studies of PH94B, PH10, AV-101 or other our product candidates could result in increased costs to us and could delay, prevent or limit our ability to generate revenue and continue our business.

We will need to successfully complete at least one Phase 3 clinical trial and certain other clinical and nonclinical studies prior to our potential submission of an NDA for regulatory approval of PH94B as needed, over time treatment of anxiety in adults with SAD, or for any other anxiety disorder such as AjDA. For PH10, at present, we believe we will need to complete at least one additional Phase 2B clinical study, two adequate and well-controlled Phase 3 clinical trials, as well as standard nonclinical and long-term clinical safety studies, as well as other smaller clinical studies prior to the potential submission of a NDA for regulatory approval of PH10 as a stand-alone rapid-onset treatment for MDD, or any other depression disorder. For AV-101 in combination with probenecid, at present, for treatment of any CNS indication, we believe we will need to complete our ongoing exploratory Phase 1B clinical study, two Phase 2 clinical studies, two adequate and well-controlled Phase 3 clinical trials, additional toxicology and other standard nonclinical and long-term clinical safety studies, as well as certain standard smaller clinical studies prior to the potential submission of an NDA for regulatory approval in any CNS indication. Successful completion of our nonclinical and clinical trials is a prerequisite to submitting an NDA and, consequently, the ultimate approval required before commercial marketing of any product candidate we may develop. We do not know whether any of our future-planned nonclinical and clinical trials of PH94B, PH10, AV-101 or any other product candidate will be completed on schedule, if at all, as the commencement and completion of nonclinical and clinical trials can be delayed or prevented for a number of reasons, including, among others:

- delays due to events resulting from the ongoing COVID-19 pandemic, including potential delays in recruitment and enrollment in clinical and nonclinical studies of our product candidates;
- the regulatory authority may deny permission to proceed with planned clinical trials or any other clinical trials we may initiate, or may place a planned or ongoing clinical trial on hold;
- delays in filing or receiving approvals from regulatory authorities of additional INDs that may be required;
- negative or ambiguous results from nonclinical or clinical studies;
- delays in reaching or failing to reach agreement on acceptable terms with prospective CROs, investigators and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs, investigators and clinical trial sites;
- delays in the manufacturing of, or insufficient supply of product candidates necessary to conduct nonclinical or clinical trials, including delays in the manufacturing of sufficient supply of drug substance or finished drug product;
- inability to manufacture or obtain clinical supplies of a product candidate meeting required quality standards;
- difficulties obtaining Institutional Review Board (*IRB*) approval to conduct a clinical trial at a prospective clinical site or sites;
- challenges in recruiting and enrolling patients to participate in clinical trials, including the proximity of patients to clinical trial sites;
- eligibility criteria for a clinical trial, the nature of a clinical trial protocol, the availability of approved effective treatments for the relevant disease and competition from other clinical trial programs for similar indications;
- severe or unexpected adverse drug-related side effects experienced by patients in a clinical trial;
- delays in validating any endpoints utilized in a clinical trial;
- the regulatory authority may disagree with our clinical trial design and our interpretation of data from prior nonclinical studies or clinical trials, or may change the requirements for approval even after it has reviewed and commented on the design for our clinical trials;
- reports from nonclinical or clinical testing of other CNS indications or therapies that raise safety or efficacy concerns; and
- difficulties retaining patients who have enrolled in a clinical trial but may be prone to withdraw due to rigors of the clinical trial, lack of efficacy, side effects, personal issues or loss of interest.

Clinical trials may also be delayed or terminated prior to completion as a result of ambiguous or negative interim results. In addition, a clinical trial may be suspended or terminated by us, the regulatory authority, the IRBs at the sites where the IRBs are overseeing a clinical trial, a data and safety monitoring board (*DSMB*), overseeing the clinical trial at issue or other regulatory authorities due to a number of factors, including, among others:

- failure to conduct the clinical trial in accordance with regulatory requirements or approved clinical protocols;
- inspection of the clinical trial operations or trial sites by the regulatory authority that reveals deficiencies or violations that require us to undertake corrective action, including the imposition of a clinical hold;
- unforeseen safety issues, including any that could be identified in nonclinical carcinogenicity studies, adverse side effects or lack of effectiveness;
- changes in government regulations or administrative actions;
- problems with clinical supply materials that may lead to regulatory actions; and
- lack of adequate funding to continue nonclinical or clinical studies.

Changes in regulatory requirements, regulatory guidance or unanticipated events during our nonclinical studies and clinical trials of PH94B, PH10, AV-101 or other CNS product candidates may occur, which may result in changes to nonclinical studies and clinical trial protocols or additional nonclinical studies and clinical trial requirements, which could result in increased costs to us and could delay our development timeline.

Changes in regulatory requirements, guidance or unanticipated events during our nonclinical studies and clinical trials of PH94B, PH10, AV-101 or other CNS product candidates may force us to amend nonclinical studies and clinical trial protocols or the regulatory authority may impose additional nonclinical studies and clinical trial requirements. Amendments or changes to our clinical trial protocols would require resubmission to the regulatory authority and IRBs for review and approval, which may adversely impact the cost, timing or successful completion of clinical trials. Similarly, amendments to our nonclinical studies may adversely impact the cost, timing, or successful completion of those nonclinical studies. If we experience delays completing, or if we terminate, any of our nonclinical studies or clinical trials, or if we are required to conduct additional nonclinical studies or clinical trials, the commercial prospects for PH94B, PH10, AV-101 or other CNS product candidates may be harmed and our ability to generate product revenue will be delayed.

We rely, and expect that we will continue to rely, on third parties to conduct our nonclinical and clinical trials of our current CNS product candidates and will continue to do so for any other future CNS product candidates. If these third parties do not successfully carry out their contractual duties and/or meet expected deadlines, completion of our nonclinical or clinical trials and development of PH94B, PH10, AV-101 or other CNS future product candidates may be delayed and we may not be able to obtain regulatory approval for or commercialize PH94B, PH10, AV-101 or other future CNS product candidates and our business could be substantially harmed.

By strategic design, we do not have the extensive internal staff resources to independently conduct nonclinical and clinical trials of our product candidates completely on our own. We rely on our network of strategic relationships with various academic research centers, medical institutions, nonclinical and clinical investigators, contract laboratories, CROs and other third parties to assist us to conduct and complete nonclinical and clinical trials of our product candidates. We enter into agreements with third-party CROs to provide monitors for and to manage data for our clinical trials, as well as provide other services necessary to prepare for, conduct and complete clinical trials. We rely heavily on these and other third parties for efficient execution of nonclinical and clinical trials for our product candidates and we control only certain aspects of their activities. As a result, we have less direct control over the conduct, timing and completion of these nonclinical and clinical trials and the management of data developed through nonclinical and clinical trials than would be the case if we were relying entirely upon our own internal staff resources. Communicating with outside parties can also be challenging, potentially leading to mistakes as well as difficulties and inefficiencies in coordinating activities. CROs and other outside parties may:

- experience disruptions to their operations, such as staff attrition, reduced staffing and supply chain disruptions, as a result of the ongoing COVID-19 pandemic;
- have staffing difficulties and/or undertake obligations beyond their anticipated capabilities and resources;
- fail to comply with contractual obligations;
- experience regulatory compliance issues;
- undergo changes in priorities or become financially distressed; or
- form relationships with other entities, some of which may be our competitors.

These factors may materially adversely affect the willingness or ability of third parties to conduct our nonclinical and clinical trials and may subject us to unexpected cost increases that are beyond our control. Nevertheless, we are responsible for ensuring that each of our nonclinical studies and clinical trials is conducted and completed in accordance with the applicable protocol, legal, regulatory and scientific requirements and standards, and our reliance on CROs, or independent investigators does not relieve us of our regulatory responsibilities. We and our CROs, and any investigator in an investigator-sponsored study are required to comply with regulations and guidelines, including current Good Clinical Practice regulations (*cGCPs*) for conducting, monitoring, recording and reporting the results of clinical trials to ensure that the data and results are scientifically credible and accurate, and that the trial patients are adequately informed of the potential risks of participating in clinical trials. These regulations are enforced by the FDA, the Competent Authorities of the Member States of the European Economic Area and comparable foreign regulatory authorities for any products in clinical development. The FDA enforces cGCP regulations through periodic inspections of clinical trial sponsors, principal investigators and trial sites. If we, any of our CROs or any of our third-party collaborators fail to comply with applicable cGCPs, the clinical data generated in clinical trials involving our product candidates may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that, upon inspection, the FDA will determine that any of our clinical trials comply with cGCPs. In addition, our clinical trials must be conducted with product candidates produced under cGMPs and will require a large number of test patients. Our failure or the failure of our CROs or other third-party collaborators to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process and could also subject us to enforcement action up to and including civil and criminal penalties.

Although we design our clinical trials for our product candidates, our clinical development strategy involves having CROs and other third-party investigators and medical institutions conduct clinical trials of our product candidates. As a result, many important aspects of our drug development programs are outside of our direct control. In addition, although CROs, or independent investigators or medical institutions, as the case may be, may not perform all of their obligations under arrangements with us or in compliance with applicable regulatory requirements, under certain circumstances, we may be responsible and subject to enforcement action that may include civil penalties up to and including criminal prosecution for any violations of FDA laws and regulations during the conduct of clinical trials of our product candidates. If such third parties do not perform clinical trials of our product candidates in a satisfactory manner, breach their obligations to us or fail to comply with applicable regulatory requirements, the development and commercialization of our product candidates may be delayed or our development program materially and irreversibly harmed. In certain cases, including the Baylor Study and other investigator-sponsored clinical studies, we cannot control the amount and timing of resources these third parties devote to clinical trials involving our product candidates. If we are unable to rely on nonclinical and clinical data collected by our third-party collaborators, we could be required to repeat, extend the duration of, or increase the size of our clinical trials and this could significantly delay commercialization and require significantly greater expenditures.

If our relationships with one or more of our third-party collaborators terminates, we may not be able to enter into arrangements with alternative third-party collaborators. If such third-party collaborators, including our CROs, do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to their failure to adhere to applicable clinical protocols, regulatory requirements or for other reasons, any clinical trials that such third-parties are associated with may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for or successfully develop and commercialize our product candidates. As a result, we believe that our financial results and the commercial prospects for our product candidates in the subject indication would be harmed, our costs would increase and our ability to generate revenue would be delayed.

We rely completely on third parties to manufacture, formulate, analyze, hold and distribute supplies of our CNS product candidates for all nonclinical and clinical studies, and we intend to continue to rely on third parties to produce all nonclinical, clinical and commercial supplies of our CNS product candidates in the future.

By strategic design, we do not currently have, nor do we plan to acquire or develop, extensive internal infrastructure or technical capabilities to manufacture, formulate, analyze, hold or distribute supplies of our product candidates, for use in nonclinical and clinical studies or commercial scale. As a result, with respect to all of our product candidates, we rely, and will continue to rely, completely on CMOs to manufacture API and formulate, hold and distribute final drug product. The facilities used by our CMOs to manufacture PH94B, PH10 and AV-101 API and formulate PH94B, PH10 and AV-101 final drug product are subject to a pre-approval inspection by the FDA and other comparable foreign regulatory agencies to assess compliance with applicable regulatory guidelines and requirements, including cGMPs, and may be required to undergo similar inspections by the FDA or other comparable foreign regulatory agencies, after we submit INDs, NDAs or relevant foreign regulatory submission equivalent to the applicable regulatory agency.

We do not directly control the manufacturing process, or the supply or quality of materials used in the manufacturing, analysis and formulation of our product candidates, and, with respect to all of our product candidates, we are completely dependent on our CMOs to comply with all applicable cGMPs for the manufacturing of both API and finished drug product. If our CMOs cannot secure adequate supplies of suitable raw materials due to supply chain disruptions caused by the ongoing COVID-19 pandemic or otherwise, or successfully manufacture our product candidates, including PH94B, PH10 and AV-101 API and finished drug product, that conforms to our specifications and the strict regulatory requirements of the FDA or applicable foreign regulatory agencies, production of sufficient supplies of our product candidates, including PH94B, PH10 and AV-101 API and finished drug product, may be delayed and our CMOs may not be able to secure and/or maintain regulatory approval for their manufacturing facilities, or the FDA may take other actions, including the imposition of a clinical hold. In addition, we have no direct control over our CMOs' ability to maintain adequate quality control, quality assurance and qualified personnel. All of our CMOs are engaged with other companies to supply and/or manufacture materials or products for such other companies, which exposes our CMOs to regulatory risks for the production of such materials and products. As a result, failure to satisfy the regulatory requirements for the production of those materials and products may affect the regulatory clearance of our CMO's facilities generally or affect the timing of manufacture of PH94B, PH10 and AV-101 for required or planned nonclinical and/or clinical studies. If the FDA or an applicable foreign regulatory agency determines now or in the future that our CMOs' facilities are noncompliant, we may need to find alternative manufacturing facilities, which would adversely impact our ability to develop, obtain regulatory approval for or market our product candidates. Our reliance on CMOs also exposes us to the possibility that they, or third parties with access to their facilities, will have access to and may appropriate our trade secrets or other proprietary information.

With respect to PH94B, PH10 and AV-101, we do not yet have long-term supply agreements in place with our CMOs and each batch of PH94B, PH10 and AV-101 is or will be individually contracted under a separate supply agreement. If we engage new CMOs, such contractors must complete an inspection by the FDA and other applicable foreign regulatory agencies. We plan to continue to rely upon CMOs and, potentially, collaboration partners, to manufacture research and development scale, and, if approved, commercial quantities of our product candidates. Although we believe our current scale of API manufacturing for AV-101, and our contemplated scale of API manufacturing for PH94B and PH10, and the current and projected supply of PH94B, PH10 and AV-101 API and finished drug product will be adequate to support our planned nonclinical and clinical studies of PH94B, PH10 and AV-101, no assurance can be given that unanticipated supply shortages or CMO-related delays in the manufacture and formulation of PH94B, PH10 or AV-101 API and/or finished drug product will not occur in the future.

Additionally, PH94B and PH10 will be considered drug-device combination products. Third-party manufacturers may not be able to comply with cGMP requirements applicable to drug/device combination products, including applicable provisions of the FDA's or a comparable foreign regulatory authority's drug cGMP regulations, device cGMP requirements embodied in the Quality System Regulation (*QSR*) or similar regulatory requirements outside the U.S. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations 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, operating restrictions and criminal prosecutions, any of which could significantly affect supplies of our product candidates. The facilities used by our CMOs to manufacture our product candidates must be approved by the FDA and comparable foreign regulatory authorities pursuant to inspections that will or may be conducted after we submit our NDA. We do not control the manufacturing process of, and are completely dependent on, our CMO partners for compliance with cGMPs and QSRs. If our CMOs cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or other comparable foreign regulatory authorities, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. In addition, we have no control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved. CMOs may face manufacturing or quality control problems causing drug substance production and shipment delays or a situation where the contractor may not be able to maintain compliance with the applicable cGMP and QSR requirements. Any failure to comply with cGMP or QSR requirements or other FDA, EMA and comparable foreign regulatory requirements could adversely affect our clinical research activities and our ability to develop our product candidates and market our products following approval.

Even if we receive marketing approval for PH94B, PH10, AV-101 or any other CNS product candidate in the U.S., we may never receive regulatory approval to market PH94B, PH10, AV-101 or any other CNS product candidate outside of the U.S.

In order to market PH94B, PH10, AV-101 or any other CNS product candidate outside of the U.S., we must establish and comply with the numerous and varying safety, efficacy and other regulatory requirements of other countries. Approval procedures vary among countries and can involve additional product candidate testing and additional administrative review periods. The time required to obtain approvals in other countries might differ from that required to obtain FDA approval. The marketing approval processes in other countries may implicate all of the risks detailed above regarding FDA approval in the U.S. as well as other risks. In particular, in many countries outside of the U.S., products must receive pricing and reimbursement approval before the product can be commercialized. Obtaining this approval can result in substantial delays in bringing products to market in such countries. Marketing approval in one country does not ensure marketing approval in another, but a failure or delay in obtaining marketing approval in one country may have a negative effect on the regulatory process in others. Failure to obtain marketing approval in other countries or any delay or other setback in obtaining such approval would impair our ability to market our product candidates in such foreign markets. Any such impairment would reduce the size of our potential market, which could have a material adverse impact on our business, results of operations and prospects.

If any of our CNS product candidates are ultimately regulated as controlled substances, we, our CMOs, as well as future distributors, prescribers, and dispensers will be required to comply with additional regulatory requirements which could delay the marketing of our product candidates, and increase the cost and burden of manufacturing, distributing, dispensing, and prescribing our product candidates.

Before we can commercialize our product candidates in the U.S. or any market outside the U.S., the U.S. Drug Enforcement Administration (*DEA*) or its foreign counterpart may need to determine whether such product candidates will be considered to be a controlled substance, taking into account the recommendation of the FDA or its foreign counterpart, as the case may be. This may be a lengthy process that could delay our marketing of a product candidate and could potentially diminish any regulatory exclusivity periods for which we may be eligible, which would increase the cost associated with commercializing such products and, in turn, may have an adverse impact on our results of operations. Although we currently do not know whether the DEA or any foreign counterpart will consider any of our current or future product candidate to be controlled substances, we cannot yet give any assurance that such product candidates, including PH94B, PH10 and AV-101 will not be regulated as controlled substances.

If any of our product candidates are regulated as controlled substances, depending on the DEA controlled substance schedule in which the product candidates are placed or that of its foreign counterpart, we, our CMOs, and any future distributers, prescribers, and dispensers of the scheduled product candidates may be subject to significant regulatory requirements, such as registration, security, recordkeeping, reporting, storage, distribution, importation, exportation, inventory, quota and other requirements administered by the DEA or a foreign counterpart of the DEA as the case may be. Moreover, if any of our product candidates are regulated as controlled substances, we and our CMOs would be subject to initial and periodic DEA inspection. If we or our CMOs are not able to obtain or maintain any necessary DEA registrations or comparable foreign registrations, we may not be able to commercialize any product candidates that are deemed to be controlled substances or we may need to find alternative CMOs, which would take time and cause us to incur additional costs, delaying or limit our commercialization efforts.

Because of their restrictive nature, these laws and regulations could limit commercialization of our product candidates, should they be deemed to contain controlled substances. Failure to comply with the applicable controlled substance laws and regulations can also result in administrative, civil or criminal enforcement. The DEA or its foreign counterparts may seek civil penalties, refuse to renew necessary registrations, or initiate administrative proceedings to revoke those registrations. In some circumstances, violations could result in criminal proceedings or consent decrees. Individual states also independently regulate controlled substances.

If we are unable to establish broad sales and marketing capabilities on our own or enter into agreements with third parties to market and sell our CNS product candidates, we may not be able to generate any revenue.

We currently have limited internal resources for the sale, marketing and distribution of pharmaceutical products, and we may not be able to create broad internal capabilities in the foreseeable future. Therefore, to market our CNS product candidates, if approved by the FDA or any other regulatory body, we must establish broad internal capabilities related to sales, marketing, managerial and other non-technical capabilities relating to the commercialization of our product candidates or make contractual arrangements with third parties to perform such services, prior to market approval. If we are unable to establish adequate internal sales, marketing and distribution capabilities, or if we are unable to do so contractually on commercially reasonable terms, our business, results of operations, financial condition and prospects will be materially adversely affected.

Even if we receive marketing approval for our CNS product candidates, our product candidates may not achieve broad market acceptance, which would limit the revenue that we generate from their sales.

The commercial success of our CNS product candidates, if approved by the FDA or other regulatory authorities, will depend upon the awareness and acceptance of our product candidates among the medical community, including physicians, patients and healthcare payers. Market acceptance of our product candidates, if approved, will depend on a number of factors, including, among others:

- the efficacy and safety of our product candidates as demonstrated in clinical trials, and, if required by any applicable regulatory authority in connection with the approval for the applicable indications, to provide patients with incremental health benefits, as compared with other available therapies;
- limitations or warnings contained in the labeling approved for our product candidates by the FDA or other applicable regulatory authorities;
- the clinical indications for which our product candidates are approved;
- availability of alternative treatments already approved or expected to be commercially launched in the near future;
- the potential and perceived advantages of our product candidates over current treatment options or alternative treatments, including future alternative treatments;
- 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 and timing of market introduction of competitive products;
- publicity concerning our products or competing products and treatments;
- pricing and cost effectiveness;
- the effectiveness of our sales and marketing strategies;
- our ability to increase awareness of our product candidates through marketing efforts;
- our ability to obtain sufficient third-party coverage or reimbursement; or
- the willingness of patients to pay out-of-pocket in the absence of third-party coverage.

If our CNS product candidates are approved but do not achieve an adequate level of acceptance by patients, physicians and payers, we may not generate sufficient revenue from our product candidates to become or remain profitable. Before granting reimbursement approval, healthcare payers may require us to demonstrate that our product candidates, in addition to treating these target indications, also provide incremental health benefits to patients. Our efforts to educate the medical community and third-party payers about the benefits of our product candidates may require significant resources and may never be successful.

Our CNS product candidates may cause undesirable safety concerns and side effects that could delay or prevent their regulatory approval, limit the commercial profile of an approved label, or result in significant negative consequences following marketing approval, if any.

If our product candidates are determined to cause undesirable side effects and safety concerns, we or regulatory authorities may interrupt, delay or halt nonclinical studies and clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by regulatory authorities.

Further, clinical trials by their nature utilize a sample of potential patient populations. With a limited number of patients and limited duration of exposure, rare and severe side effects of our product candidates may only be uncovered with a significantly larger number of patients exposed to the product candidate. If our product candidates receive marketing approval and we or others identify undesirable safety concerns or side effects caused by such product candidates (or any other similar products) after such approval, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw or limit their approval of such product candidates;
- regulatory authorities may require the addition of labeling statements, such as a "black box" warning or a contraindication;
- we may be required to change the way such product candidates are distributed or administered, conduct additional clinical trials or change the labeling of the product candidates;
- we may be subject to regulatory investigations and government enforcement actions;
- we may decide to remove such product candidates from the marketplace;
- we could be sued and held liable for injury caused to individuals exposed to or taking our product candidates; and
- our reputation may suffer.

We believe that any of these events could prevent us from achieving or maintaining market acceptance of the affected product candidates and would substantially increase the costs of commercializing our product candidates and significantly impact our ability to successfully commercialize our product candidates and generate revenues.

Even if we receive marketing approval for our CNS product candidates, we may still face future development and regulatory difficulties.

Even if we receive marketing approval for our CNS product candidates, regulatory authorities may still impose significant restrictions on our product candidates, indicated uses or marketing or impose ongoing requirements for potentially costly post-approval studies. Our product candidates will also be subject to ongoing regulatory requirements governing the labeling, packaging, storage and promotion of the product and record keeping and submission of safety and other post-market information. The FDA and other regulatory authorities have significant post-marketing authority, including, for example, the authority to require labeling changes based on new safety information and to require post-marketing studies or clinical trials to evaluate serious safety risks related to the use of a drug. The FDA and other regulatory authorities also have the authority to require, as part of an NDA or post-approval, the submission of a REMS or comparable drug safety program. Any REMS or comparable drug safety program required by the FDA or other regulatory authority may lead to increased costs to assure compliance with new post-approval regulatory requirements and potential requirements or restrictions on the sale of approved products, all of which could lead to lower sales volume and revenue.

Manufacturers of drug and device products and their facilities are subject to continual review and periodic inspections by the FDA and other regulatory authorities for compliance with cGMPs and other regulations. If we or a regulatory agency discover problems with our product candidates, such as adverse events of unanticipated severity or frequency, or problems with the facility where our product candidates are manufactured, a regulatory agency may impose restrictions on our product candidates, the manufacturer or us, including requiring withdrawal of our product candidates from the market or suspension of manufacturing. If we, our product candidates, or the manufacturing facilities for our product candidates fail to comply with applicable regulatory requirements, a regulatory agency may, among other things:

- issue warning letters or untitled letters;
- seek an injunction or impose civil or criminal penalties or monetary fines;
- suspend or withdraw marketing approval;
- suspend any ongoing clinical trials;
- refuse to approve pending applications or supplements to applications submitted by us;
- suspend or impose restrictions on operations, including costly new manufacturing requirements; or
- seize or detain products, refuse to permit the import or export of products, or require that we initiate a product recall.

Competing therapies could emerge adversely affecting our opportunity to generate revenue from the sale of our CNS product candidates.

The pharmaceutical industry is highly competitive. There are many public and private pharmaceutical companies, universities, governmental agencies and other research organizations actively engaged in the research and development of product candidates that may be similar to and compete with our product candidates or address similar markets. It is probable that the number of companies seeking to develop product candidates similar to and competitive with our product candidates will increase in the future.

Currently, management is unaware of any FDA-approved rapid-onset treatment of anxiety in adults with SAD having the same mechanism of pharmacological action and safety profile as PH94B. Also, management is currently unaware of any FDA-approved oral treatment for MDD having the same mechanism of pharmacological action and safety profile as our intranasally-administered PH10 or our orally administered AV-101 in combination with probenecid. However, new antidepressant products with other mechanisms of pharmacological action or products approved for other indications, including the FDA-approved anesthetic ketamine hydrochloride administered intravenously, are being or may be used for treatment of MDD, as well as other CNS indications for which PH10 or AV-101 in combination with probenecid may have therapeutic potential. Additionally, other non-pharmaceutical treatment options, such psychotherapy and electroconvulsive therapy (*ECT*) are used before or instead of standard antidepressant medications to treat patients with MDD.

With respect to PH94B and current treatment options for SAD in the U.S., our competition may include, but is not limited to, current generic oral antidepressants approved by the FDA for treatment of SAD, as well as certain classes of drugs prescribed on an off-label basis for treatment of SAD, including benzodiazepines such as alprazolam, and beta blockers such as propranolol, and certain investigational oral drug candidates in Phase 2 development. In the field of new generation, oral treatments for adult patients with MDD, we believe our principal competitors may be Axsome, Alkermes, Relmada and Sage. Additional potential competitors may include, but not be limited to, academic and private commercial clinics providing intravenous ketamine therapy on an off-label basis and Janssen's intranasally-administered esketamine.

Many of our potential competitors, alone or with their collaborators, have substantially greater financial, technical and human resources than we do and significantly greater experience in the discovery and development, obtaining FDA and other regulatory approvals, and the commercialization of investigational product candidates. With respect to PH94B, in addition to potential competition from certain current FDA-approved antidepressants and off-label use of benzodiazepines and beta blockers, we believe additional drug candidates in development for SAD may include, but potentially not be limited to, an oral fatty acid amide hydrolase inhibitor in development by Janssen, and two oral drug candidates in Phase 2 development that act on the alpha-7 nicotinic acetylcholine receptor, one in development by Bionomics and the other in development by Vanda. With respect to PH10 and AV-101 in combination with probenecid for treatment of depression disorders, including MDD, and AV-101 in combination with probenecid for treatment of certain neurological disorders, including levodopa-induced dyskinesia associated with therapy for Parkinson's disease, neuropathic pain, and epilepsy, we believe a range of pharmaceutical and biotechnology companies have programs to develop new drug candidates and/or medical device technologies for such indications, including, but not limited to, Abbott Laboratories, Acadia, Allergan, Alkermes, Aptynix, AstraZeneca, Axsome, Eli Lilly, GlaxoSmithKline, IntraCellular, Janssen, Lundbeck, Merck, Neurocrine, Novartis, Ono, Otsuka, Pfizer, Relmada, Roche, Sage, Sumitomo Dainippon, Takeda and Xenon, as well as any affiliates of the foregoing companies. Mergers and acquisitions in the biotechnology and pharmaceutical industries may result in even more resources being concentrated among a smaller number of our competitors. Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market.

We may seek to establish collaborations, and, if we are not able to establish them on commercially reasonable terms, we may have to alter our development and commercialization plans.

Our drug development programs and the potential commercialization of our investigational product candidates will require substantial additional cash to fund expenses. For some of our product candidates, we may decide to collaborate with pharmaceutical and biotechnology companies for the development and potential commercialization of those product candidates, such as the AffaMed Agreement.

We may derive revenue from research and development fees, license fees, milestone payments and royalties under any collaborative arrangement into which we enter, including the AffaMed Agreement and the Bayer Agreement. However, our ability to generate revenue from such arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements. In addition, our collaborators have the right to abandon research or development projects and terminate applicable agreements, including funding obligations, prior to or upon the expiration of the agreed upon terms. As a result, we can expect to relinquish some or all of the control over the future success of a product candidate that we license to a third party in the territories included in the licenses.

We face significant competition in seeking appropriate collaborators. Whether we reach additional definitive agreements for collaborations will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. Those factors may include the design or results of nonclinical and clinical trials, the likelihood of approval by the FDA or similar regulatory authorities outside the U.S., the potential markets for the subject product candidate, the costs and complexities of manufacturing and delivering such product candidate to patients, the potential of competing products, the existence of uncertainty with respect to our ownership of technology, which can exist if there is a challenge to such ownership without regard to the merits of the challenge and industry and market conditions generally. The collaborator may also consider alternative product candidates or technologies for similar indications that may be available to collaborate on and whether such collaboration could be more attractive than the one with us for our product candidate. The terms of any collaboration or other arrangements that we may establish may not be favorable to us.

We may also be restricted under existing collaboration agreements from entering into future agreements on certain terms with potential collaborators. Collaborations are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators.

We may not be able to negotiate additional collaborations on a timely basis, on acceptable terms, or at all. If we are unable to do so, we may have to curtail the development of the product candidate for which we are seeking to collaborate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we may not be able to further develop our product candidates or bring them to market and generate product revenue.

In addition, any future collaboration that we enter into may not be successful. The success of our collaboration arrangements will depend heavily on the efforts and activities of our collaborators. Collaborators generally have significant discretion in determining the efforts and resources that they will apply to these collaborations. Disagreements between parties to a collaboration arrangement regarding clinical development and commercialization matters can lead to delays in the development process or commercializing the applicable product candidate and, in some cases, termination of the collaboration arrangement. These disagreements can be difficult to resolve if neither of the parties has final decision-making authority. Collaborations with pharmaceutical or biotechnology companies and other third parties often are terminated or allowed to expire by the other party. Any such termination or expiration would adversely affect us financially and could harm our business reputation.

We may not be successful in our efforts to identify or discover additional CNS product candidates, or we may expend our limited resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

The success of our business depends primarily upon our ability to identify, develop and commercialize CNS product candidates with therapeutic and commercial potential. We may fail to pursue additional development opportunities for PH94B, PH10 or AV-101, or identify additional CNS product candidates for development and commercialization for a number of reasons. Our research methodology may be unsuccessful in identifying new product candidates or our product candidates may be shown to have harmful side effects or may have other characteristics that may make the products unmarketable or unlikely to receive marketing approval.

We strategically focus on a limited number of research and development programs and product candidates and are currently focused primarily on development of PH94B, PH10 and AV-101. As a result, we may forego or delay pursuit of opportunities with other product candidates or for other potential CNS-related indications for PH94B, PH10 and/or AV-101 that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial drugs 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 drugs. 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 future 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.

If any of these events occur, we may be forced to abandon our development efforts for a program or programs, which would have a material adverse effect on our business and could potentially cause us to cease operations. Research and development programs to identify and advance new product candidates require substantial technical, financial and human resources. We may focus our efforts and resources on potential programs or product candidates that ultimately prove to be unsuccessful.

We are subject to healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm and diminished profits and future earnings.

Although we do not currently have any products on the market, once we begin commercializing our CNS product candidates, we may be subject to additional healthcare statutory and regulatory requirements and enforcement by the federal government and the states and foreign governments in which we conduct our business. Healthcare providers, physicians and others will play a primary role in the recommendation and prescription of our product candidates, if approved. Our future arrangements with third-party payers will expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute our product candidates, if we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations include the following:

- The federal anti-kickback statute prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under federal healthcare programs such as Medicare and Medicaid.

- The federal False Claims Act imposes criminal and civil penalties, including those from civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent or making a false statement to avoid, decrease, or conceal an obligation to pay money to the federal government.

- The federal Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act, imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program and also imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information.

- The federal false statements statute prohibits 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.

- The federal transparency requirements, sometimes referred to as the “Sunshine Act,” under the Patient Protection and Affordable Care Act, require manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid, or the Children’s Health Insurance Program to report to the Department of Health and Human Services information related to physician payments and other transfers of value and physician ownership and investment interests.

- Analogous state laws and regulations, such as state anti-kickback and false claims laws and transparency laws, may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payers, including private insurers, and some state laws require pharmaceutical companies to comply with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance.

- Guidance promulgated by the federal government in addition to requiring drug manufacturers to report information related to payments to physicians and other healthcare providers or marketing expenditures and drug pricing.

- Foreign Corrupt Practices Act and its application to marketing and selling practices as well as to clinical trials.

Ensuring that our future business arrangements with third parties comply with applicable healthcare laws and regulations could be costly. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations were found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines and exclusion from government funded healthcare programs, such as Medicare and Medicaid, any of which could substantially disrupt our operations. If any of the physicians or other providers or entities with whom we expect to do business are found to be out of compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs.

The FDA and other regulatory agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses. If we are found to have improperly promoted off-label uses, we may become subject to significant liability.

The FDA and other regulatory agencies strictly regulate the promotional claims that may be made about prescription products, such as PH94B, PH10 and AV-101, if approved. In particular, a product may not be promoted for uses that are not approved by the FDA or such other regulatory agencies as reflected in the product's approved labeling. For example, if we receive FDA marketing approval for PH94B as an as needed treatment of anxiety in adults with SAD, physicians may prescribe PH94B to their patients in a manner that is inconsistent with the FDA-approved label. However, if we are found to have promoted such off-label uses, we may become subject to significant liability. The federal government has levied large civil and criminal fines against companies for alleged improper off-label promotion and has enjoined several companies from engaging in off-label promotion. The FDA has also requested that companies enter into consent decrees or imposed permanent injunctions under which specified promotional conduct is changed or curtailed. If we cannot successfully manage the promotion of our product candidates, if approved, we could become subject to significant liability, which would materially adversely affect our business and financial condition.

Even if approved, reimbursement policies could limit our ability to sell our CNS product candidates.

Market acceptance and sales of our product candidates will depend heavily on reimbursement policies and may be affected by healthcare reform measures. Government authorities and third-party payers, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels for those medications. Cost containment is a primary concern in the United States healthcare industry and elsewhere. Government authorities and these third-party payers have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. We cannot be sure that reimbursement will be available for our product candidates and, if reimbursement is available, the level of such reimbursement. Reimbursement may impact the demand for, or the price of, 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.

In some foreign countries, particularly in Canada and European countries, the pricing of prescription pharmaceuticals is subject to strict governmental control. In these countries, pricing negotiations with governmental authorities can take six months or longer after the receipt of regulatory approval and product launch. To obtain favorable reimbursement for the indications sought or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of our product candidates with other available therapies. If reimbursement for our product candidates is unavailable in any country in which we seek reimbursement, if it is limited in scope or amount, if it is conditioned upon our completion of additional clinical trials, or if pricing is set at unsatisfactory levels, our operating results could be materially adversely affected.

We may seek FDA Orphan Drug designation for one or more of our CNS product candidates. Even if we have obtained FDA Orphan Drug designation for a product candidate, there may be limits to the regulatory exclusivity afforded by such designation.

We may, in the future, choose to seek FDA Orphan Drug designation for one or more of our current or future CNS product candidates. Even if we obtain Orphan Drug designation from the FDA for a product candidate, there are limitations to the exclusivity afforded by such designation. In the U.S., the company that first obtains FDA approval for a designated orphan drug for the specified rare disease or condition receives orphan drug marketing exclusivity for that drug for a period of seven years. This orphan drug exclusivity prevents the FDA from approving another application, including a full NDA to market the same drug for the same orphan indication, except in very limited circumstances, including when the FDA concludes that the later drug is safer, more effective or makes a major contribution to patient care. For purposes of small molecule drugs, the FDA defines "same drug" as a drug that contains the same active moiety and is intended for the same use as the drug in question. To obtain Orphan Drug status for a drug that shares the same active moiety as an already approved drug, it must be demonstrated to the FDA that the drug is safer or more effective than the approved orphan designated drug, or that it makes a major contribution to patient care. In addition, a designated orphan drug may not receive orphan drug exclusivity if it is approved for a use that is broader than the indication for which it received orphan designation. In addition, orphan drug exclusive marketing rights in the U.S. may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition or if another drug with the same active moiety is determined to be safer, more effective, or represents a major contribution to patient care.

Our future growth may depend, in part, on our ability to penetrate foreign markets, where we would be subject to additional regulatory burdens and other risks and uncertainties.

Our future profitability may depend, in part, on our ability to commercialize our product candidates in foreign markets for which we may rely on collaboration with third parties such as our collaboration with AffaMed to develop and commercialize PH94B in key Asian markets. If we commercialize our product candidates in foreign markets, we would be subject to additional risks and uncertainties, including:

- our customers' ability to obtain reimbursement for our product candidates in foreign markets;
- our inability to directly control commercial activities because we are relying on third parties;
- the burden of complying with complex and changing foreign regulatory, tax, accounting and legal requirements;
- different medical practices and customs in foreign countries affecting acceptance in the marketplace;
- import or export licensing requirements;
- longer accounts receivable collection times;
- longer lead times for shipping;
- language barriers for technical training;
- reduced protection of intellectual property rights, different standards of patentability and different availability of prior art in some foreign countries as compared with the U.S.;
- the existence of additional potentially relevant third-party intellectual property rights;
- foreign currency exchange rate fluctuations; and
- the interpretation of contractual provisions governed by foreign laws in the event of a contract dispute.

Foreign sales of our product candidates could also be adversely affected by the imposition of governmental controls, political and economic instability, trade restrictions and changes in tariffs.

We are a development-stage biopharmaceutical company with no recurring revenues from product sales or approved products, and limited experience developing new therapeutic product candidates, including conducting clinical trials and other areas required for the successful development and commercialization of therapeutic products, which makes it difficult to assess our future viability.

We are a development-stage biopharmaceutical company. We currently have no approved products and no recurring revenues from product sales, and we have not yet fully demonstrated an ability to overcome many of the fundamental risks and uncertainties frequently encountered by development stage companies in new and rapidly evolving fields of technology, particularly biotechnology. To execute our business plan successfully, we will need to accomplish or continue to accomplish the following fundamental objectives, either on our own or with collaborators:

- develop and obtain required regulatory approvals for commercialization of PH94B, PH10, AV-101 and/or other CNS product candidates;
- maintain, leverage and expand our intellectual property portfolio;
- establish and maintain sales, distribution and marketing capabilities, and/or enter into strategic partnering arrangements to access such capabilities;
- gain market acceptance for our product candidates; and
- obtain adequate capital resources and manage our spending as costs and expenses increase due to research, production, development, regulatory approval and commercialization of product candidates.

Our future success is highly dependent upon our ability to successfully develop and commercialize, on our own or with collaborators, any of our current CNS product candidates, acquire or license additional CNS product candidates, and we cannot provide any assurance that we will successfully develop and commercialize PH94B, PH10, or AV-101 or acquire or license additional CNS product candidates, or that, if approved, PH94B, PH10, AV-101 or any other CNS product candidate will be successfully commercialized.

Business development and research and development programs designed to identify, acquire or license additional product candidates require substantial technical, financial and human resources, whether or not any additional CNS product candidate is acquired or licensed. We are in the beginning stages of building a sales and marketing infrastructure, including hiring certain executive officers and other employees that have pharmaceutical sales, marketing or distribution experience. In addition, if beneficial, we may seek to collaborate with others to develop and commercialize PH94B, PH10, AV-101, and/or other CNS product candidates, if and when they are acquired and developed, or we may seek to establish those commercial capabilities ourselves. If we enter into arrangements with third parties to perform sales, marketing and distribution services for our products, the resulting revenues or the profitability from these revenues to us are likely to be lower than if we had sold, marketed and distributed our products ourselves. In addition, we may not be successful entering into arrangements with third parties to sell, market and distribute PH94B, PH10, AV-101, or other CNS product candidates or may be unable to do so on terms that are favorable to us. We likely will have little control over such third parties, and any of these third parties may fail to devote the necessary resources and attention to sell, market and distribute our products effectively. If we do not establish sales, marketing and distribution capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing our product candidates.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on the success of our business.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties.

Although we maintain workers' compensation insurance to cover us for costs and expenses, we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials.

In addition, we may incur substantial costs to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development, or production efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties, or other sanctions, which could have a material adverse effect on our operations.

Risks Related to Our Financial Position

We have incurred significant net losses since inception, and we will continue to incur substantial operating losses for the foreseeable future. We may never achieve or sustain profitability, which would depress the market price of our common stock and could cause you to lose all or a part of your investment.

We have incurred significant net losses in each fiscal year since our inception in 1998, including net losses of approximately $47.0 million and $31.1 million for the nine months ended December 31, 2022 and 2021, respectively, and $47.8 million and $17.9 million during our fiscal years ended March 31, 2022 and 2021, respectively. At December 31, 2022, we had an accumulated deficit of approximately $314.6 million and our auditors have included a qualification to their opinion on our Financial Statements at March 31, 2022 as a result of the uncertainty of our ability to continue as a going concern. We do not know whether or when we will become profitable. Substantially all of our operating losses have resulted from costs incurred in connection with our research and development programs and from general and administrative costs associated with our operations. We expect to incur increasing levels of operating losses over the next several years and for the foreseeable future. Our prior losses, combined with expected future losses, have had and will continue to have an adverse effect on our stockholders' equity and working capital. We expect our research and development expense to significantly increase in connection with planned nonclinical and clinical studies, and out-sourced manufacturing, of our product candidates. In addition, if we obtain marketing approval for our product candidates, we expect to incur significant commercial operations expense, including medical education, sales and marketing expense. As a public company, we incur additional costs associated with operating as a public company. As a result, we expect to continue to incur significant and increasing operating losses for the foreseeable future. Because of the numerous risks and uncertainties associated with developing pharmaceutical products, we are unable to predict the extent of any future losses or when we will become profitable, if at all. Even if we do become profitable, we may not be able to sustain or increase our profitability on a quarterly or annual basis.

Our ability to become profitable depends upon our ability to generate recurring revenues. Through December 31, 2022, we have generated approximately $22.7 million in revenues, consisting of receipts of non-dilutive cash payments from collaborators, sublicense revenue, including the $5.0 million cash payment received under the AffaMed Agreement during the quarter ended December 31, 2020, the majority of which remains recorded as deferred revenue at December 31, 2022, and research and development grant awards from the NIH. We have not yet commercialized any product or generated any revenues from product sales, and we do not know when, or if, we will generate any revenue from product sales. We do not expect to generate significant revenue unless and until we obtain marketing approval of, and begin to experience sales of, PH94B, PH10, AV-101 or another future CNS product candidate, or we enter into one or more development and commercialization agreements with respect to PH94B, PH10, AV-101 or one or more other future CNS product candidates. Our ability to generate recurring revenue depends on a number of factors, including, but not limited to, our ability to:

- initiate and successfully complete nonclinical and clinical trials that meet their prescribed endpoints;
- initiate and successfully complete all safety studies required to obtain U.S. and foreign marketing approval for our CNS product candidates;
- timely complete and compose successful regulatory submissions such as NDAs or comparable documents for both the U.S. and foreign jurisdictions;
- commercialize our CNS product candidates, if approved, by developing a sales force and/or entering into collaborations with third parties for sales and marketing capabilities; and
- achieve market acceptance of our CNS product candidates in the medical community and with third-party payers.

We require additional financing to execute our long-term business plan.

From our inception through 2019, a substantial portion of our resources were dedicated to research and development of AV-101 and VistaStem's stem cell technology platform.

Since 2019, we have expended a considerable portion of our resources for research, clinical development, manufacturing and regulatory expense related to PH94B and PH10, including costs related to the PALISADE Phase 3 Program and our Phase 1 study of PH10 in MDD. We expect to continue to expend substantial resources for the foreseeable future developing and commercializing PH94B, PH10 and AV-101 on our own and in collaborations. These expenditures will include costs associated with general and administrative costs, facilities costs, research and development, acquiring new technologies, manufacturing product candidates, conducting nonclinical experiments and clinical trials and obtaining regulatory approvals, as well as commercializing PH94B and our other product candidates, should the FDA approve any of such product candidates for sale.

Although we had cash and cash equivalents of approximately $25.0 million at December 31, 2022, we have not yet developed products that generate recurring revenue and, assuming successful completion of our planned clinical and nonclinical programs, we will need to invest substantial additional capital resources to commercialize any of them.

During the next twelve months, we plan to (i) pursue a revised Phase 3 clinical development plan for PH94B, (ii) continue to advance our opportunities to explore PH94B's therapeutic potential beyond SAD, (ii) complete clinical, if any, and nonclinical preparations to initiate Phase 2B clinical development of PH10 as a potential stand-alone treatment for MDD, (iii) complete our exploratory Phase 1B drug-drug interaction clinical study of AV-101 in combination with probenecid to better understand opportunities to explore its therapeutic potential in certain neurological disorders, and (iv) conduct various nonclinical studies involving PH94B, PH10 and AV-101.

Although we received the $5 million upfront payment under the AffaMed Agreement in August 2020 and expect to recognize that amount as revenue in future periods, we have no other recurring source of revenue or recurring cash flows from product sales to sustain our present activities, and we do not expect to generate sustainable positive operating cash flows until, and unless, we (i) out-license or sell a product candidate to a third-party that is subsequently successfully developed and commercialized, (ii) enter into additional transactions involving our stem cell technology, or (iii) obtain approval from the FDA and other regulatory authorities and successfully commercialize PH94B, or one of our other product candidates, on our own in the U.S. and through collaborations outside the U.S.

As the outcome of our ongoing research and development activities, including the outcome of future anticipated nonclinical studies and clinical trials is highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully complete the development and commercialization of PH94B or our other current CNS product candidates, on our own or in collaboration with others. As in prior periods, we will continue to incur substantial costs associated with other clinical and nonclinical development programs for PH94B, PH10 and AV-101. In addition, other unanticipated costs may arise. As a result of these and other factors, we will need to seek additional capital to meet our future operating plans and requirements, including capital necessary to develop, obtain regulatory approval for, and to commercialize PH94B and our other CNS product candidates, and may seek additional capital in the event there exists favorable market conditions or strategic considerations, even if we believe we have sufficient funds for our current or future operating plans and requirements.

We have completed in the past a range of potential financing transactions, including public or private equity or debt financings, government or other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements or a combination of these approaches, and we may pursue and complete additional financing arrangements in the future. Even if we believe we have sufficient funds for our current or future operating plans and requirements, we may seek additional capital if market conditions are favorable or if we have specific strategic considerations.

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

- the number and characteristics of the product candidates we pursue;
- the scope, progress, results and costs of researching and developing our product candidates, and conducting preclinical and clinical studies;
- the timing of, and the costs involved in, obtaining regulatory approvals for our product candidates;
- the cost of commercialization activities if any of our product candidates are approved for sale, including marketing, sales and distribution costs;
- the cost of manufacturing and formulating our product candidates and any products we successfully commercialize;
- our ability to establish and maintain strategic partnerships, licensing or other collaborative arrangements and the financial terms of such agreements;
- market acceptance of our product candidates;
- the effect of competing technological and market developments;
- our ability to obtain government funding for our research and development programs;
- the costs involved in obtaining, maintaining and enforcing patents to preserve our intellectual property;
- the costs involved in defending against such claims that we infringe third-party patents or violate other intellectual property rights and the outcome of such litigation;
- the timing, receipt and amount of potential future licensee fees, milestone payments, and sales of, or royalties on, our future products, if any; and
- the extent to which we may acquire or invest in additional businesses, product candidates and technologies.

Any additional fundraising efforts will divert certain members of our management team from their day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates. We cannot guarantee that future financing will be available in sufficient amounts, in a timely manner, or on terms acceptable to us, if at all. The terms of any future financing may adversely affect the holdings or the rights of our stockholders and the issuance of additional securities, whether equity or debt, by us, or the possibility of such issuance, may cause the market price of our shares to decline. The sale of additional equity securities and the conversion, exchange or exercise of certain of our outstanding securities will dilute all of our stockholders. The incurrence of debt could result in increased fixed payment obligations, and we could be required to agree to certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. We could also be required to seek funds through arrangements with collaborative partners in certain territories, including the U.S., or at an earlier stage than otherwise would be desirable or aligned with our business plan, and we may be required to relinquish rights to some of our technologies or product candidates or otherwise agree to terms unfavorable to us, any of which may have a material adverse effect on our business, operating results and prospects.

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

Current volatile and/or recessionary economic conditions in the U.S. or abroad could adversely affect our business or our access to capital markets in a material manner.

To date, our principal sources of capital used to fund our development programs and other operations have been the net proceeds we received from sales of equity securities. We have and will continue to use significant capital for the development and commercialization of our product candidates, and, as such, we expect to seek additional capital from future issuance(s) of our securities, which may consist of issuances of equity and/or debt securities, to fund our planned operations.

Accordingly, our results of operations and the implementation of both our short-term and long-term business plan could be adversely affected by general conditions in the global economy, including conditions that are outside of our control. A prolonged economic downturn could result in a variety of risks to our business and may have a material adverse effect on us, including limiting or restricting our ability to access capital on favorable terms, or at all, which would limit our ability to obtain adequate financing to maintain our operations.

We previously identified material weaknesses in our internal control over financial reporting, and we may identify future material weaknesses in our internal control over financial reporting. If we are unable to remediate these material weaknesses, or if we fail to establish and maintain adequate internal control over financial reporting, we may not be able to produce timely and accurate financial statements, and we may conclude that our internal control over financial reporting is not effective, which may adversely affect our business.

We previously identified material weaknesses in our internal control over financial reporting that, as of March 31, 2022, were remediated. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim condensed consolidated financial statements will not be prevented or detected on a timely basis.

Although we have determined that the previously identified material weaknesses have been remediated as of March 31, 2022, we cannot assure you that we will not identify other material weaknesses in the future, which could negatively impact our results of operations in future periods.

Ensuring that we have adequate internal control over financial reporting in place so that we can produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be re-evaluated frequently. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with generally accepted accounting principles.

Implementing any appropriate changes to our internal control over financial reporting may entail substantial costs to modify our existing processes and take significant time to complete. These changes may not, however, be effective in establishing and maintaining the adequacy of our internal control, and any failure to maintain that adequacy, or consequent inability to produce accurate financial statements on a timely basis, could increase our operating costs and harm our business.

Any failure to maintain or implement required effective internal control over financial reporting, or any difficulties we encounter in their implementation, could result in additional material weaknesses, cause us to fail to meet our reporting obligations or result in material misstatements in our financial statements. Furthermore, if we cannot provide reliable financial reports or prevent material misstatements due to fraud or error, our business and results of operations could be harmed, and investors could lose confidence in our reported financial information. We also could become subject to investigations by The Nasdaq Stock Market, the Securities and Exchange Commission or other regulatory authorities, which could require additional financial and management resources.

Raising additional capital is likely to cause substantial dilution to our existing stockholders, may restrict our operations or require us to relinquish rights, and may require us to seek stockholder approval to authorize additional shares of our common stock.

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

We may be required to raise additional financing by issuing new securities with terms or rights superior to those of our existing securityholders, which could adversely affect the market price of shares of our common stock and our business.

We will require substantial additional financing to fund future operations, including research and development activities for our CNS product candidates and our anticipated pre-launch and other commercialization activities, assuming our clinical development programs are successful and we receive necessary regulatory approvals from the FDA. We may not be able to obtain financing on favorable terms, if at all. If we raise additional funds by issuing equity securities, the percentage ownership of our current stockholders will be reduced, and the holders of the new equity securities may have rights superior to those of our existing security holders, which could adversely affect the market price of our common stock and the voting power of shares of our common stock. If we raise additional funds by issuing debt securities, the holders of these debt securities would similarly have some rights senior to those of our existing securityholders, and the terms of these debt securities could impose restrictions on operations and create a significant interest expense for us, which could have a materially adverse effect on our business.

Our ability to use net operating losses to offset future taxable income is subject to certain limitations.

As of March 31, 2022, we had federal and state net operating loss carryforwards of approximately $182.2 million and $65.5 million, respectively, which have begun to expire in fiscal 2022 and will continue to expire in future periods. Under Section 382 of the Internal Revenue Code of 1986, as amended (the *Code*), changes in our ownership may limit the amount of our net operating loss carryforwards that could be utilized annually to offset our future taxable income, if any. This limitation would generally apply in the event of a cumulative change in ownership of our company of more than 50% within a three-year period. Any such limitation may significantly reduce our ability to utilize our net operating loss carryforwards and tax credit carryforwards before they expire. Any such limitation, whether as the result of prior or future offerings of our debt and/or equity securities, private placements, sales of our common stock by our existing stockholders or additional sales of our common stock by us could have a material adverse effect on our results of operations in future years. We have not yet completed a study to assess whether an ownership change for purposes of Section 382 has occurred, or whether there have been multiple ownership changes since our inception, due to the significant costs and complexities associated with such study.

General Company-Related Risks

If we fail to retain and attract senior management and key scientific personnel, we may be unable to successfully produce, develop and commercialize our product candidates.

Our success depends in part on our continued ability to attract, retain and motivate highly qualified management and technical personnel across multiple key functions, including, but not limited to clinical operations, commercial operations, finance, human resources, information technology, manufacturing and quality assurance, regulatory affairs and medical affairs. We are highly dependent upon our Chief Executive Officer and Chief Financial Officer, as well as our other senior management personnel, advisors, consultants and scientific and clinical collaborators. As of the date of this Report, we have 32 full-time employees, which may make us more reliant on our individual employees than companies with a greater number of employees. The loss of services of any of these individuals could delay or prevent the successful development of our product candidates or disrupt our administrative functions.

Although we have not historically experienced unique difficulties attracting and retaining qualified employees, we could experience such problems following our change in business plans as a result of the negative results of our PALISADE-1 clinical trial or in the future. As of the date of this Report, a total of eight employees have voluntarily resigned from their positions within the Company since the PALISADE-1 outcome was reported, including our Chief Commercial Officer and Chief Medical Officer. We expect the work conducted by these individuals will, in the near term, be assumed by other employees and, when appropriate, resumed by personnel that may be hired in the future as we advance the development and potential commercialization of one or more of our product candidates. However, competition for qualified personnel in the pharmaceuticals field is intense, and we may not be able to attract and retain quality personnel on acceptable terms.

In addition, we rely on a broad and diverse range of strategic consultants and advisors, including manufacturing, nonclinical and clinical development and regulatory advisors and CMOs and CROs, to assist us in designing and implementing our research and development and regulatory strategies and plans for our product candidates. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us.

As we seek to advance development of our product candidates, we will need to further expand our research and development capabilities and our contractual arrangements with third parties to provide these capabilities for us. As our operations expand, we expect that we will need to manage additional relationships with various strategic partners and other third parties. Future growth will impose significant added responsibilities on members of management.

Our future financial performance and our ability to develop and commercialize our product candidates and to compete effectively will depend, in part, on our ability to manage any future growth effectively. To that end, we must be able to manage our research, development and regulatory efforts effectively, and hire, train and integrate additional management, administrative, research and development, regulatory, commercial and other personnel. The hiring, training and integration of new employees may be more difficult, costly and/or time-consuming for us because we have fewer resources than a larger organization. We may not be able to accomplish these tasks, and our failure to accomplish any of them could prevent us from successfully growing the company.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of our product candidates.

As we develop our product candidates. either on our own or in collaboration with others, we will face inherent risks of product liability as a result of the required clinical testing of such product candidates and will face an even greater risk if we or our collaborators commercialize any such product candidates. For example, we may be sued if PH94B, PH10, AV-101, or any other product candidate we or our collaborators develop allegedly causes injury or is found to be otherwise unsuitable during product testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability, and a breach of warranties. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our product candidates. Even successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for product candidates that we may develop;
- injury to our reputation;
- withdrawal of clinical trial participants;
- costs to defend the related litigation;
- a diversion of management's time and our resources;
- substantial monetary awards to trial participants or patients; or
- product recalls, withdrawals or labeling, marketing or promotional restrictions.

Our inability to obtain and retain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of products we develop. Although we currently maintain general and product liability insurance, any claim that may be brought against us could result in a court judgment or settlement in an amount that is not covered, in whole or in part, by our insurance or that is in excess of the limits of our insurance coverage. Our insurance policies also have various exclusions, and we may be subject to a product liability claim for which we have no coverage. We will have to pay any amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient capital to pay such amounts.

Unfavorable global economic or political conditions could adversely affect our business, financial condition or results of operations.

Our results of operations could be adversely affected by global political conditions, as well as general conditions in the global economy and in the global financial and stock markets. Global financial and political crises cause extreme volatility and disruptions in the capital and credit markets. A severe or prolonged economic downturn, such as the recent economic downturn triggered by the ongoing COVID-19 pandemic, could result in a variety of risks to our business, including, weakened demand for our product candidates and our ability to raise additional capital when needed on acceptable terms, if at all. A weak or declining economy could also strain our suppliers, possibly resulting in supply disruption, or cause our customers to delay making payments for our services. Any of the foregoing could harm our business and we cannot anticipate all of the ways in which the current economic climate and financial market conditions could adversely impact our business.

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

Natural disasters could severely disrupt our operations, and have a material adverse effect on our business, results of operations, financial condition and prospects. If a natural disaster, power outage or other event occurred that prevented us from using all or a significant portion of our headquarters, that damaged critical infrastructure, such as the manufacturing facilities of our third-party CMOs, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time. The disaster recovery and business continuity plans we have in place may prove inadequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which could have a material adverse effect on our business.

Our business and operations would suffer in the event of cybersecurity or other system failures. Our business depends on complex information systems, and any failure to successfully maintain these systems or implement new systems to handle our changing needs could result in a material disruption of our product candidates' development programs or otherwise materially harm our operations.

In the ordinary course of our business, we collect and store sensitive data, including intellectual property, our proprietary business information and that of our suppliers, as well as personally identifiable information of employees. Similarly, our third-party CROs, CMOs and other contractors and consultants possess certain of our sensitive data. The secure maintenance of this information is material to our operations and business strategy. Despite the implementation of security measures, our internal computer systems and those of our third-party CROs, CMOs and other contractors and consultants are vulnerable to attacks by hackers, damage from computer viruses, unauthorized access, breach due to employee error, malfeasance or other disruptions, natural disasters, terrorism and telecommunication and electrical failures. Additionally, having shifted substantially to remote working arrangements, we also face a heightened risk of cybersecurity attacks or data security incidents and are more dependent on internet and telecommunications access and capabilities. Any such attack or breach could compromise our networks and the information stored there could be accessed, publicly disclosed, lost or stolen. The legislative and regulatory landscape for privacy and data protection continues to evolve, and there has been an increasing amount of focus on privacy and data protection issues with the potential to affect our business, including recently enacted laws in a majority of states requiring security breach notification. Thus, any access, disclosure or other loss of information, including our data being breached at our partners or third-party providers, could result in legal claims or proceedings and liability under laws that protect the privacy of personal information, disruption of our operations, and damage to our reputation, which could adversely affect our business.

While we have not experienced any such system failure, accident, or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our programs. For example, the loss of clinical trial data for PH94B, PH10, AV-101 or other product candidates could result in substantial 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 results in a loss of or damage to our data or applications or other data or applications relating to our technology or product candidates, or inappropriate disclosure of confidential or proprietary information, we could incur liabilities and the further development of our product candidates could be delayed.

Remote working arrangements could significantly increase the Company's digital and cybersecurity risks.

Most of our employees are geographically dispersed from our headquarters facility in South San Francisco and now routinely work remotely. With the continuing shift to remote working, and the use of virtual board and executive management meetings, cybersecurity risks are exponentially greater, including increased risk of phishing and other cybersecurity attacks as well as increased risk of unauthorized dissemination of sensitive personal information or proprietary or confidential information about us or our customers, employees, or business partners. Despite our cybersecurity measures, we may be more susceptible to security breaches and other security incidents because we have less capability to implement, monitor, and enforce our information security and data protection policies. Techniques or software used to gain unauthorized access, and/or disable, degrade, or harm our systems may be difficult to detect for prolonged periods of time, and we may be unable to anticipate these techniques or put in place protective or preventive measures. The damage or disruption of our systems, or the theft or compromise of our technology, data, or intellectual property, may negatively impact our business, financial condition and results of operations, reputation, stock price and long-term value, which could adversely affect our Company's business.

We may acquire businesses or product candidates, or form strategic alliances, in the future, and we may not realize the benefits of such acquisitions.

We may acquire additional businesses or CNS product candidates, form strategic alliances, or create joint ventures with third parties that we believe will complement or augment our existing business. If we acquire businesses with promising markets or technologies, we may not be able to realize the benefit of acquiring such businesses if we are unable to successfully integrate them with our existing operations and company culture. We may encounter numerous difficulties in developing, manufacturing and marketing any new product candidates resulting from a strategic alliance, licensing transaction or acquisition that delay or prevent us from realizing their expected benefits or enhancing our business. We cannot assure you that, following any such acquisition or licensing transaction, we will achieve the expected synergies to justify the transaction.

Current politics in the U.S. could diminish the value of the pharmaceutical industry, thereby diminishing the value of our securities.

The current political environment in the U.S. has led many incumbents and political candidates to propose various measures to reduce the prices for pharmaceuticals. These proposals may receive increasing publicity which, in turn, may cause the investing public to reduce the perceived value of pharmaceutical companies. Any decrease in the overall perception of the pharmaceutical industry may have an adverse impact on our share price and may limit our ability to raise capital needed to continue our drug development programs.

Risks Related to Our Intellectual Property Rights

If we are unable to adequately protect our proprietary technology or obtain and maintain issued patents that are sufficient to protect our product candidates, others could compete against us more directly, which would have a material adverse impact on our business, results of operations, financial condition and prospects.

We strive to protect and enhance the proprietary technologies that we believe are important to our business, including seeking patents intended to cover our product candidates, their compositions and formulations, their methods of use and methods of manufacturing and any other inventions we consider important to the development of our business. We also rely on trade secrets to protect aspects of our business that are not amenable to, or that we do not consider appropriate for, patent protection.

Our success will depend significantly on our ability to obtain and maintain patent and other proprietary protection for commercially important technology, inventions and know-how related to our business, to defend and enforce our patents, to preserve the confidentiality of our trade secrets and to operate without infringing the valid and enforceable patents and proprietary rights of third parties. We also rely on know-how, continuing technological innovation and in-licensing opportunities to develop, strengthen and maintain the proprietary position of our product candidates. We own and have licensed patents and patent applications related to product candidates PH94B, PH10, AV-101 and also to certain stem cell technology.

Although we own and have licensed issued and allowed patents and patent applications relating to PH94B, PH10 and AV-101 in the U.S. and selected countries in other jurisdictions, we cannot yet provide any assurances that any of our pending U.S. and additional foreign patent applications will mature into issued patents and, if they do, that any of our patents will include claims with a scope sufficient to protect our product candidates or otherwise provide any competitive advantage.

Moreover, other parties may have developed technologies that may be related or competitive to our approach and may have filed or may file patent applications and may have received or may receive patents that may overlap or conflict with our patent properties, for example, either by claiming the same methods or formulations or by claiming subject matter that could dominate our patent position. Such third-party patent positions may limit or even eliminate our ability to obtain or maintain patent protection.

The uncertainty about adequate protection includes changes to the patent laws through either legislative action to change statutory patent law or court action that may reinterpret existing law in ways affecting the scope or validity of issued patents. Moreover, relevant laws differ from country-to-country.

The patent positions of biopharmaceutical companies, including our patent portfolio with respect to our product candidates, involve complex legal and factual questions, and, therefore, the issuance, scope, validity and enforceability of any patent claims that we may be granted cannot be predicted with certainty.

Our ability to obtain valid and enforceable patents depends, among other factors, on whether the differences between our technology and the prior art allow our inventions to be patentable over relevant prior art. Such prior art includes, for example, scientific publications, investment blogs, granted patents and published patent applications. Patent uncertainty cannot be eliminated because of the potential existence of other prior art, about which we are currently unaware, that may be relevant to our patent applications and patents and that may prevent a pending patent application from being granted or result in an issued patent being held invalid or unenforceable. Moreover, the relevant standards for granting and reviewing patents varies among countries in which we pursue patents.

In addition, some patent-related uncertainty exists because of the challenge in finding and addressing all of the relevant and material prior art in the biotechnology and pharmaceutical fields. For example, there are numerous reports in the scientific literature of compounds that target similar cellular receptors as do certain of our product candidates or that were evaluated in early (often pre-clinical) studies that did not progress to regulatory approval. In addition, even some reports in the trade press and public announcements made by us before the filing date of our AV-101 patent applications mentioned that AV-101 was in development for certain therapeutic purposes. For example, we published a web post on the NIH clinical trials website prior to the filing of our initial AV-101 patent application, which describes unit doses for a then future study, but does not mention treatment of depression and does not provide any preclinical or clinical study data relating to depression or any other medical condition, disease or disorder. This post was not submitted to the United States Patent and Trademark Office (*USPTO*) in our two granted U.S. patents related to (i) unit dose formulations of AV-101 effective to treat depression and (ii) methods of treating depression with AV-101, respectively. However, it was submitted in two continuation depression-related AV-101 patent applications that have similar claims and the USPTO did not make further rejection based on that post. Another source of uncertainty pertains to patent properties that were in-licensed by us for which prior art submissions were under the control of the licensor. We rely on these licensors to have satisfied the relevant disclosure obligations.

In the event any previously published prior art is deemed to be invalidating prior art, it may cause certain of our issued patents to be invalid and/or unenforceable, which would cause us to lose at least part, and perhaps all, of the patent protection on relevant product candidates. Such a loss of patent protection would have a material adverse impact on our business.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, 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 and various other foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process. There are situations in which noncompliance can result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, competitors might be able to enter the market earlier than would otherwise have been the case.

Even if patents do successfully issue, third parties may challenge the validity, enforceability or scope of such issued patents or any other issued patents we own or license, which may result in such patents being narrowed, invalidated or held unenforceable.

United States and foreign patents and patent applications may be subject to various types of infringement and validity proceedings, including interference proceedings, *ex parte* reexamination, *inter partes* review proceedings, supplemental examination and challenges in district court. Patents may be subjected to opposition, post-grant review, invalidity actions, or comparable proceedings lodged in various foreign, both national and regional, patent offices or courts. These proceedings could result in loss of the patent or denial of the patent application or loss or reduction in the scope of one or more of the claims of the patent or patent in such a way that they no longer cover our product candidates or competitive products.

Furthermore, though an issued patent is presumed valid and enforceable, its issuance is not conclusive as to its validity or its enforceability and it may not provide us with adequate proprietary protection or competitive advantages against competitors with similar products. Even if a patent issues and is held to be valid and enforceable, competitors may be able to design around our patents, for example, by using pre-existing or newly developed technology. Other parties may develop and obtain patent protection for more effective technologies, designs or methods.

If we or one of our licensing partners initiated legal proceedings against a third-party to enforce a patent covering one of our product candidates, including patents related to PH94B, PH10 or AV-101, the defendant could counterclaim that the patent covering our product candidate is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge include alleged failures to meet any of several statutory requirements, including lack of novelty, obviousness or non-enablement. Grounds for unenforceability assertions include allegations that someone connected with prosecution of the patent withheld relevant information from the USPTO or made a misleading statement during prosecution.

Third parties may also raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our product candidates. Such a loss of patent protection would have a material adverse impact on our business.

In addition, such patent-related proceedings may be costly. Thus, any patent properties that we may own or exclusively license ultimately may not provide commercially meaningful protection against competitors. Furthermore, an adverse decision in an interference proceeding can result in a third party receiving the patent right sought by us, which in turn could affect our ability to develop, market or otherwise commercialize our product candidates.

We may not be able to prevent the unauthorized disclosure or use of our technical knowledge or trade secrets by consultants, vendors, or former or current employees. The laws of some foreign countries do not protect our proprietary rights to the same extent as the laws of the United States, and we may encounter significant problems in protecting our proprietary rights in these countries. If these developments were to occur, they could have a material adverse effect on our sales.

Our ability to enforce our patent rights also depends on our ability to detect infringement. It is difficult to detect infringers who do not advertise the components or manufacturing processes that are used in their products. Moreover, it may be difficult or impossible to obtain evidence of infringement in a competitor’s or potential competitor’s product. Any litigation to enforce or defend our patent rights, even if we were to prevail, could be costly and time-consuming and would divert the attention of our management and key personnel from our business operations. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded if we were to prevail may not be commercially meaningful.

In addition, proceedings to enforce or defend our patents could put our patents at risk of being invalidated, held unenforceable, or interpreted narrowly. Such proceedings could also provoke third parties to assert claims against us, including that some or all of the claims in one or more of our patents are invalid or otherwise unenforceable. If any patents covering our product candidates are invalidated or found unenforceable, our financial position and results of operations would be materially and adversely impacted. In addition, if a court found that valid, enforceable patents held by third parties covered our product candidates, our financial position and results of operations would also be materially and adversely impacted.

Overall, the degree of future protection for our proprietary rights is uncertain, and we cannot ensure that:

- any issued patents related to PH94B, PH10, AV-101 or any pending patent applications, if issued and challenged by others, will include or maintain claims having a scope sufficient to protect PH94B, PH10, AV-101 or any other products or product candidates against generic or other competition, particularly considering that any patent rights to these compounds *per se* have expired;
- any of our pending patent applications will issue as patents at all;
- we will be able to successfully commercialize our product candidates, if approved, before our relevant patents expire;
- we were the first to make the inventions covered by each of our patents and pending patent applications;
- we were the first to file patent applications for these inventions;
- others will not develop similar or alternative technologies that do not infringe our patents;
- others will not use pre-existing technology to effectively compete against us;
- any of our patents, if issued, will ultimately be found to be valid and enforceable, including on the basis of prior art relating to our patent applications and patents;
- any patents currently held or issued to us in the future will provide a basis for an exclusive market for our commercially viable products, will provide us with any competitive advantages or will not be challenged by third parties;
- we will develop additional proprietary technologies or product candidates that are separately patentable; or
- our commercial activities or products will not infringe upon the patents or proprietary rights of others.

We also rely upon unpatented trade secrets, unpatented know-how and continuing technological innovation to develop and maintain our competitive position, which we seek to protect, in part, by confidentiality agreements with our employees and our collaborators and consultants. It is possible that technology relevant to our business will be independently developed by a person that is not a party to such an agreement. Furthermore, if the employees, collaborators and consultants who are parties to these agreements breach or violate the terms of these agreements, we may not discover or have adequate remedies for any such breach or violation, and we could lose our trade secrets through such breaches or violations. Further, our trade secrets could otherwise become known or be independently discovered by our competitors.

Third parties may initiate legal proceedings against us alleging that we infringe their intellectual property rights, which may prevent or delay our product development efforts and stop us from commercializing candidate products or increase the costs of commercializing them, if approved. Also, we may file counterclaims or initiate other legal proceedings against third parties to challenge the validity or scope of their intellectual property rights, the outcomes of which also would be uncertain and could have a material adverse effect on the success of our business.

We cannot assure that our business, product candidates and methods do not or will not infringe the patents or other intellectual property rights of third parties. Third parties may initiate legal proceedings against us or our licensors or collaborators alleging that we or our licensors or collaborators infringe their intellectual property rights. In addition, we or our licensors or collaborators may file counterclaims in such proceedings or initiate separate legal proceedings against third parties to challenge the validity or scope of their intellectual property rights, including in oppositions, interferences, reexaminations, *inter partes* reviews or derivation proceedings before the United States or other jurisdictions.

Our success will depend in part on our ability to operate without infringing the intellectual property and proprietary rights of third parties. Success also will depend on our ability to prevail in litigation if we are sued for infringement or to resolve litigation matters with rights and at costs favorable to us.

The biopharmaceutical industry is characterized by extensive litigation regarding patents and other intellectual property rights. Other parties may allege that our product candidates or the use of our technologies infringes patent claims or other intellectual property rights held by them or that we are employing their proprietary technology without authorization. As we continue to develop and, if approved, commercialize our current product candidates and future product candidates, competitors may claim that our technology infringes their intellectual property rights as part of their business strategies designed to impede our successful commercialization. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates. Because patent applications can take many years to issue, third parties may have currently pending patent applications that later result in issued patents that our product candidates may infringe, or that such third parties assert are infringed by our technologies.

The foregoing types of proceedings can be expensive and time-consuming and many of our own or our licensors' or collaborators' adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we or our licensors or collaborators can. Our defense of litigation or other proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. We may not be able to prevent, alone or with our licensors, misappropriation of our intellectual property rights, particularly in countries where the laws may not protect those rights as fully as in the United States or European Union.

The outcome of intellectual property litigation is subject to uncertainties that cannot be adequately quantified in advance. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform. If we are sued for patent infringement, we would need to demonstrate that our product candidates, products or methods either do not infringe the patent claims of the relevant patent or that the patent claims are invalid, and we may not be able to do this. Even if we are successful in these proceedings, we may incur substantial costs and the time and attention of our management and scientific personnel could be diverted in pursuing these proceedings, which could have a material adverse effect on us. In addition, we may not have sufficient financial resources to bring these actions to a successful conclusion.

An unfavorable outcome in the foregoing kinds of proceedings could require us or our licensors or collaborators to cease using the related technology or developing or commercializing our product candidates, or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us or our licensors or collaborators a license on commercially reasonable terms or at all. Even if we or our licensors or collaborators obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us or our licensors or collaborators.

In addition, we could be found liable for monetary damages, including treble damages and attorneys' fees, if we are found to have willfully infringed a patent. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations, which could materially harm our business.

Furthermore, 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. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock.

Patent and other types of intellectual property litigation can involve complex factual and legal questions, and their outcomes are uncertain. Any claim relating to intellectual property infringement that is successfully asserted against us may require us to pay substantial damages, including treble damages and attorney's fees if we are found to have willfully infringed a third party's patents, for past use of the asserted intellectual property and royalties and other consideration going forward if we are forced to take a license. In addition, if any such claim is successfully asserted against us and we could not obtain such a license, we may be forced to stop or delay developing, manufacturing, selling or otherwise commercializing our product candidates.

Patent litigation is costly and time-consuming. We may not have sufficient resources to bring these actions to a successful conclusion. Even if we are successful in these proceedings, we may incur substantial costs and divert management time and attention in pursuing these proceedings, which could have a material adverse effect on us. If we are unable to avoid infringing the patent rights of others, we may be required to seek a license, defend an infringement action or challenge the validity of the patents in court, or redesign our products.

In addition, intellectual property litigation or claims could force us to do one or more of the following:

- cease developing, selling or otherwise commercializing our product candidates;
- pay substantial damages for past use of the asserted intellectual property;
- obtain a license from the holder of the asserted intellectual property, which license may not be available on reasonable terms, if at all; and
- in the case of trademark claims, redesign, or rename, some or all of our product candidates to avoid infringing the intellectual property rights of third parties, which may not be possible and, even if possible, could be costly and time-consuming.

Any of these risks coming to fruition could have a material adverse effect on our business, results of operations, financial condition and prospects.

We may be subject to claims challenging the inventorship or ownership of our patents and other intellectual property.

We enter into confidentiality and intellectual property assignment agreements with our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors. These agreements generally provide that inventions conceived by the party in the course of rendering services to us will be our exclusive property. However, these agreements may not be honored and may not effectively assign intellectual property rights to us. For example, even if we have a consulting agreement in place with an academic advisor pursuant to which such academic advisor is required to assign any inventions developed in connection with providing services to us, such academic advisor may not have the right to assign such inventions to us, as it may conflict with his or her obligations to assign their intellectual property to his or her employing institution.

Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

We do not seek to protect our intellectual property rights in all jurisdictions throughout the world and we may not be able to adequately enforce our intellectual property rights even in the jurisdictions where we seek protection.

Filing, prosecuting and defending patents on product candidates in all countries and jurisdictions throughout the world is prohibitively expensive, and our intellectual property rights in some countries outside the U.S. could be less extensive than those in the U.S., assuming that rights are obtained in the U.S. 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 U.S. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the U.S., or from selling or importing products made using our inventions in and into the U.S. or other jurisdictions. The statutory deadlines for pursuing patent protection in individual foreign jurisdictions are based on the priority date of each of our patent applications. For the pending patent applications relating to AV-101, as well as for other of the patent families that we own or license, the relevant statutory deadlines have not yet expired. Thus, for each of the patent families that we believe provide coverage for our lead product candidates or technologies, we will need to decide whether and where to pursue protection outside the U.S.

Competitors may use our technologies in jurisdictions where we do not pursue and obtain patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement is not as strong as that in the U.S. These products may compete with our products and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing. Even if we pursue and obtain issued patents in particular jurisdictions, our patent claims or other intellectual property rights may not be effective or sufficient to prevent third parties from so competing.

The laws of some foreign countries do not protect intellectual property rights to the same extent as the laws of the U.S. Many companies have encountered significant problems in protecting and defending intellectual property rights in certain foreign jurisdictions. The legal systems of some countries, particularly developing countries, do not favor the enforcement of patents and other intellectual property protection, especially those relating to biotechnology and pharmaceuticals. This could make it difficult for us to stop the infringement of our patents, if obtained, or the misappropriation of our other intellectual property rights. For example, many foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties under certain circumstances. In addition, many countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. Patent protection must ultimately be sought on a country-by-country basis, which is an expensive and time-consuming process with uncertain outcomes. Accordingly, we may choose not to seek patent protection in certain countries, and we will not have the benefit of patent protection in such countries.

An unfavorable outcome could require us or our licensors or collaborators to cease using the related technology or developing or commercializing our product candidates, or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us or our licensors or collaborators a license on commercially reasonable terms or at all. Even if we or our licensors or collaborators obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us or our licensors or collaborators. In addition, we could be found liable for monetary damages, including treble damages and attorneys' fees, if we are found to have willfully infringed a patent. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations, which could materially harm our business.

Furthermore, 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. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock.

Furthermore, proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly, could put our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, 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.

We are dependent, in part, on licensed intellectual property. If we were to lose our rights to licensed intellectual property, we may not be able to continue developing or commercializing our product candidates, if approved. If we breach any of the agreements under which we license the use, development and commercialization rights to our product candidates or technology from third parties or, in certain cases, we fail to meet certain development or payment deadlines, we could lose license rights that are important to our business.

For PH94B, PH10 and certain stem cell technologies, we are a party to a number of license agreements under which we are granted rights to intellectual properties that are or could become important to our business. Our existing license agreements impose, and we expect that any future license agreements will impose on us, various development, regulatory and/or commercial diligence obligations, payment of fees, milestones and/or royalties and other obligations. If we fail to comply with our obligations under these agreements, or we are subject to a bankruptcy, the licensor may have the right to terminate the license, in which event we would not be able to develop or market products, which could be covered by the license. Our business could suffer, for example, if any current or future licenses terminate, if the licensors fail to abide by the terms of the license, if the licensed patents or other rights are found to be invalid or unenforceable, or if we are unable to enter into necessary licenses on acceptable terms.

As we have done previously, we may need to obtain licenses from third parties to advance our research or allow commercialization of our product candidates, and we cannot provide any assurances that third-party patents do not exist that might be enforced against our current product candidates or future products in the absence of such a license. We may fail to obtain any of these licenses on commercially reasonable terms, if at all. Even if we are able to obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. In that event, we may be required to expend significant time and resources to develop or license replacement technology. If we are unable to do so, we may be unable to develop or commercialize the affected product candidates, which could materially harm our business and the third parties owning such intellectual property rights could seek either an injunction prohibiting our sales, or, with respect to our sales, an obligation on our part to pay royalties and/or other forms of compensation.

Licensing of intellectual property is of critical importance to our business and involves complex legal, business and scientific issues. Disputes may arise between us and our licensors regarding intellectual property subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our right to sublicense patent and other rights to third parties under collaborative development relationships;
- our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our product candidates, and what activities satisfy those diligence obligations; and
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates.

We have entered into several licenses, both in-license agreements and out-license agreements, to support and leverage our various stem cell technology-related programs. We may enter into additional license(s) to third-party intellectual property that are necessary or useful to our business. Our current licenses, and any future licenses that we may enter into, impose various royalty payments, milestone, and other obligations on us. For example, the licensor may retain control over patent prosecution and maintenance under a license agreement, in which case, we may not be able to adequately influence patent prosecution or prevent inadvertent lapses of coverage due to failure to pay maintenance fees. If we fail to comply with any of our obligations under a current or future license agreement, our licensor(s) may allege that we have breached our license agreement and may accordingly seek to terminate our license with them. In addition, future licensor(s) may decide to terminate our license at will. Termination of any of our current or future licenses could result in our loss of the right to use the licensed intellectual property, which could materially adversely affect our ability to develop and commercialize a product candidate or product, if approved, as well as harm our competitive business position and our business prospects.

In addition, if our licensors fail to abide by the terms of the license, if the licensors fail to prevent infringement by third parties, if the licensed patents or other rights are found to be invalid or unenforceable, or if we are unable to enter into necessary licenses on acceptable terms our business could suffer.

Some intellectual property which we have licensed may have been discovered through government-funded programs and thus may be subject to federal regulations such as "march-in" rights, certain reporting requirements, and a preference for U.S. industry. Compliance with such regulations may limit our exclusive rights, subject us to expenditure of resources with respect to reporting requirements and limit our ability to contract with non-U.S. manufacturers.

Some of the intellectual property rights we have licensed or will license in the future may have been generated through the use of U.S. government funding and may therefore be subject to certain federal regulations. As a result, the U.S. government may have certain rights to intellectual property embodied in our current or future product candidates pursuant to the Bayh-Dole Act of 1980 (*Bayh-Dole Act*). These U.S. government rights in certain inventions developed under a government-funded program include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose.

In addition, the U.S. government has the right to require us to grant exclusive, partially exclusive, or non-exclusive licenses to any of these inventions to a third party if it determines that: (i) adequate steps have not been taken to commercialize the invention; (ii) government action is necessary to meet public health or safety needs; or (iii) government action is necessary to meet requirements for public use under federal regulations (also referred to as "march-in rights"). The U.S. government also has the right to take title to these inventions if we fail, or the applicable licensor fails, to disclose the invention to the government and fail to file an application to register the intellectual property within specified time limits. Also, the U.S. government may acquire title to these inventions in any country in which a patent application is not filed within specified time limits.

Intellectual property generated under a government funded program is further subject to certain reporting requirements, compliance with which may require us, or the applicable licensor, to expend substantial resources. In addition, the U.S. government requires that any products embodying the subject invention or produced through the use of the subject invention be manufactured substantially in the U.S. The manufacturing preference requirement can be waived if the owner of the intellectual property can show that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the U.S. or that under the circumstances domestic manufacture is not commercially feasible. This preference for U.S. manufacturers may limit our ability to contract with non-U.S. product manufacturers for products covered by such intellectual property.

In the event we apply for additional U.S. government funding, and we discover compounds or drug candidates as a result of such funding, intellectual property rights to such discoveries may be subject to the applicable provisions of the Bayh-Dole Act.

If we do not obtain additional protection under the Hatch-Waxman Amendments and similar foreign legislation by extending the patent terms and obtaining data exclusivity for our product candidates, our business may be materially harmed.

In the U.S., depending upon the timing, duration and specifics of FDA marketing approval of our product candidates, one or more of the U.S. patents we own or license may be eligible for limited patent term restoration under the Drug Price Competition and Patent Term Restoration Act of 1984, referred to as the Hatch-Waxman Amendments. The Hatch-Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. However, we may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. For example, we may not be granted an extension if the active ingredient of PH94B, PH10 or AV-101 is used in another drug company's product candidate and that product candidate is the first to obtain FDA approval.

Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we are unable to obtain patent term extension or restoration or the term of any such extension is less than we request, our competitors may obtain approval of competing products following our patent expiration, and our ability to generate revenues could be materially adversely affected.

Similar kinds of patent term and regulatory and data protection periods are available outside of the U.S. We will pursue such opportunities to extend the exclusivity of our products, but we cannot predict the availability of such exclusivity pathways or that we will be successful in pursuing them.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our products.

As is the case with other pharmaceutical and biotechnology companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biotechnology industry involve both technological and legal complexity, and is therefore costly, time-consuming and inherently uncertain. In addition, the U.S. in recent years enacted and is currently implementing wide-ranging patent reform legislation: the Leahy-Smith America Invents Act, referred to as the America Invents Act. The America Invents Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. It is not yet clear what, if any, impact the America Invents Act will have on the operation of our business. However, the America Invents Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of any patents that may issue from our patent applications, all of which could have a material adverse effect on our business and financial condition.

In addition, recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. The full impact of these decisions is not yet known. For example, on March 20, 2012 in *Mayo Collaborative Services, DBA Mayo Medical Laboratories, et al. v. Prometheus Laboratories, Inc.*, the Court held that several claims drawn to measuring drug metabolite levels from patient samples and correlating them to drug doses were not patentable subject matter. The decision appears to impact diagnostics patents that merely apply a law of nature via a series of routine steps and it has created uncertainty around the ability to obtain patent protection for certain inventions. Additionally, on June 13, 2013 in *Association for Molecular Pathology v. Myriad Genetics, Inc.*, the Court held that claims to isolated genomic DNA are not patentable, but claims to complementary DNA molecules are patent eligible because they are not a natural product. The effect of the decision on patents for other isolated natural products is uncertain.

Additionally, on March 4, 2014, the USPTO issued a memorandum to patent examiners providing guidance for examining claims that recite laws of nature, natural phenomena or natural products under the Myriad and Prometheus decisions. This guidance did not limit the application of Myriad to DNA but, rather, applied the decision to other natural products. Further, in 2015, in *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, the Court of Appeals for the Federal Circuit held that methods for detecting fetal genetic defects were not patent eligible subject matter. Other more recent court decisions and related USPTO examination guidelines must be taken into account, particularly as they relate to changes in what types of inventions are eligible for patent protection. Foreign patent and intellectual property laws also are evolving and are not predictable as to their impact on the Company and other biopharmaceutical companies.

In addition to increasing uncertainty regarding our ability to obtain future patents, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on these and other decisions by the U.S. Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce any patents that may issue in the future.

We may be subject to damages resulting from claims that we or our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

Certain of our current employees have been, and certain of our future employees may have been, previously employed at other biotechnology or pharmaceutical companies, including our competitors or potential competitors. We also engage advisors and consultants who are concurrently employed at universities or who perform services for other entities.

Although we are not aware of any claims currently pending or threatened against us, we may be subject to claims that we or our employees, advisors or consultants have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other proprietary information, of a former employer or other third party. We have and may in the future also be subject to claims that an employee, advisor or consultant performed work for us that conflicts with that person’s obligations to a third party, such as an employer, and thus, that the third party has an ownership interest in the intellectual property arising out of work performed for us. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management. If we fail in defending such claims, in addition to paying monetary claims, we may lose valuable intellectual property rights or personnel. A loss of key personnel or their work product could hamper or prevent our ability to commercialize our product candidates, which would materially adversely affect our commercial development efforts.

Numerous factors may limit any potential competitive advantage provided by our intellectual property rights.

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, provide a barrier to entry against our competitors or potential competitors, or permit us to maintain our competitive advantage. Moreover, if a third party has intellectual property rights that cover the practice of our technology, we may not be able to fully exercise or extract value from our intellectual property rights. The following examples are illustrative:

- others may be able to develop and/or practice technology that is similar to our technology or aspects of our technology but that is not covered by the claims of patents, should such patents issue from our patent applications;
- we might not have been the first to make the inventions covered by a pending patent application that we own;
- we might not have been the first to file patent applications covering an invention;
- others may independently develop similar or alternative technologies without infringing our intellectual property rights;
- pending patent applications that we own or license may not lead to issued patents;
- patents, if issued, that we own or license may not provide us with any competitive advantages, or may be held invalid or unenforceable or be narrowed, as a result of legal challenges by our competitors;
- third parties may compete with us in jurisdictions where we do not pursue and obtain patent protection;
- we may not be able to obtain and/or maintain necessary or useful licenses on reasonable terms or at all; and
- the patents of others may have an adverse effect on our business.

Should any of these events occur, they could significantly harm our business and results of operations.

With regard to our stem cell technology, if, instead of identifying a potential NCE candidate based on information available to us in the public domain, we seek to in-license a NCE candidate from biotechnology, medicinal chemistry and pharmaceutical companies, academic, governmental and nonprofit research institutions, including the NIH, or other third parties, there can be no assurances that we will obtain material ownership or economic participation rights over intellectual property we may derive from such licenses or similar rights to the NCEs that we may produce and develop. If we are unable to obtain ownership or substantial economic participation rights over intellectual property related to NCEs we produce and develop, our business may be adversely affected.

Risks Related to our Securities

If we fail to comply with the continued listing requirements of the Nasdaq Capital Market, our common stock may be delisted and the price of our common stock and our ability to access the capital markets could be negatively impacted.

On September 6, 2022, we were notified by the Nasdaq Stock Market, LLC (*Nasdaq*) that we were not in compliance with the minimum bid price requirements set forth in Nasdaq Listing Rule 5550(a)(2) for continued listing on the Nasdaq Capital Market. Nasdaq Listing Rule 5550(a)(2) requires listed securities to maintain a minimum bid price of $1.00 per share, and Nasdaq Listing Rule 5810(c)(3)(A) provides that a failure to meet the minimum bid price requirement exists if the deficiency continues for a period of 30 consecutive business days. The notification provided that we had 180 calendar days, or until March 6, 2023, to regain compliance with Nasdaq Listing Rule 5550(a)(2). To regain compliance, the bid price of our common stock must have a closing bid price of at least $1.00 per share for a minimum of 10 consecutive business days. If we do not regain compliance by March 6, 2023, an additional 180 days may be granted to regain compliance, so long as we meet the Nasdaq Capital Market continued listing requirements (except for the bid price requirement) and notify Nasdaq in writing of our intention to cure the deficiency during the second compliance period by implementing a reverse stock split, if necessary. If we do not qualify for the second compliance period or fail to regain compliance during the second 180-day period, then Nasdaq will notify us of its determination to delist our common stock, at which point we will have an opportunity to appeal the delisting determination to a hearings panel.

No assurance can be given that we will meet applicable Nasdaq continued listing standards. Failure to meet applicable Nasdaq continued listing standards could result in a delisting of our common stock, which could materially reduce the liquidity of our common stock and result in a corresponding material reduction in the price of our common stock. In addition, delisting could harm our ability to raise capital through alternative financing sources on terms acceptable to us, or at all, and may result in the inability to advance our drug development programs, potential loss of confidence by investors and employees, and fewer business development opportunities.

Market volatility may affect our stock price and the value of your investment.

The market price for our common stock, similar to that of other biopharmaceutical companies, is likely to remain highly volatile. The market price of our common stock may fluctuate significantly in response to a number of factors, most of which we cannot control, including, among others:

- volatility resulting from uncertainty and general economic conditions;
- plans for, progress of or results from nonclinical and clinical development activities related to our product candidates;
- the failure of the FDA or other regulatory authority to approve our product candidates;
- announcements of new products, technologies, commercial relationships, acquisitions or other events by us or our competitors;
- the success or failure of other CNS therapies;
- regulatory or legal developments in the U.S. and other countries;
- announcements regarding our intellectual property portfolio;
- failure of our product candidates, if approved, to achieve commercial success;
- fluctuations in stock market prices and trading volumes of similar companies;
- general market conditions and overall fluctuations in U.S. equity markets;
- variations in our quarterly operating results;
- changes in our financial guidance or securities analysts' estimates of our financial performance;
- changes in accounting principles;
- our ability to raise additional capital and the terms on which we can raise it;
- sales or purchases of large blocks of our common stock, including sales or purchases by our executive officers, directors and significant stockholders;
- establishment of short positions by holders or non-holders of our stock or warrants;
- additions or departures of key personnel;
- discussion of us or our stock price by the press and by online investor communities; and
- other risks and uncertainties described in these risk factors.

Future sales and issuances of our common stock may cause our stock price to decline.

Sales or issuances of a substantial number of shares of our common stock in the public market, or the perception that such sales or issuances are occurring or might occur, including under our Sales Agreement, could significantly reduce the market price of our common stock and impair our ability to raise adequate capital through the sale of additional equity securities.

The stock market in general, and small biopharmaceutical companies like ours in particular, have frequently experienced significant volatility in the market prices for securities that often has been unrelated to the operating performance of the underlying companies. These broad market and industry fluctuations may adversely affect the market price of our common stock, regardless of our actual operating performance. In certain situations in which the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. If any of our stockholders were to bring a lawsuit against us, the defense and disposition of the lawsuit could be costly and divert the time and attention of our management and harm our operating results. Additionally, if the trading volume of our common stock remains low and limited there will be an increased level of volatility and you may not be able to generate a return on your investment.

If equity research analysts do not publish research or reports about our business or if they issue unfavorable commentary or downgrade our common stock, the price of our common stock could decline.

The trading market for our common stock relies in part on the research and reports that equity research analysts publish about us and our business. We do not control these analysts. The price of our common stock could decline if one or more equity research analysts downgrade our common stock or if such analysts issue other unfavorable commentary or cease publishing reports about us or our business.

There may be additional issuances of shares of preferred stock in the future.

Our Restated Articles of Incorporation, as amended (the *Articles*), permit us to issue up to 10.0 million shares of preferred stock. As a result, our Board could authorize the issuance of additional series of preferred stock in the futures and such preferred stock could grant holders preferred rights to our assets upon liquidation, the right to receive dividends before dividends would be declared to holders of our common stock, and the right to the redemption of such shares, possibly together with a premium, prior to the redemption of the common stock. In the event and to the extent that we do issue additional preferred stock in the future, the rights of holders of our common stock could be impaired thereby, including without limitation, with respect to liquidation.

We do not intend to pay dividends on our common stock and, consequently, our stockholders' ability to achieve a return on their investment will depend on appreciation in the price of our common stock.

We have never declared or paid any cash dividend on our common stock and do not currently intend to do so in the foreseeable future. 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 in the foreseeable future. Therefore, the success of an investment in shares of our common stock will depend upon any future appreciation in their value. There is no guarantee that shares of our common stock will appreciate in value or even maintain the price at which our stockholders purchased them.

We incur significant costs to ensure compliance with corporate governance, federal securities law and accounting requirements.

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended (*Exchange Act*), which requires that we file annual, quarterly and current reports with respect to our business and financial condition, and the rules and regulations implemented by the SEC, the Sarbanes-Oxley Act of 2002, the Dodd-Frank Act, and the Public Company Accounting Oversight Board, each of which imposes additional reporting and other obligations on public companies. We have incurred and will continue to incur significant costs to comply with these public company reporting requirements, including accounting and related audit costs, legal costs to comply with corporate governance requirements and other costs of operating as a public company. These legal and financial compliance costs will continue to require us to divert significant resources that we could otherwise use to achieve our research and development and other strategic objectives.

The filing and internal control reporting requirements imposed by federal securities laws, rules and regulations on companies that are not "smaller reporting companies" under federal securities laws are rigorous and, once we are no longer a smaller reporting company, we may not be able to meet them, resulting in a possible decline in the price of our common stock and our inability to obtain future financing. Certain of these requirements may require us to carry out activities we have not done previously and complying with such requirements may divert management's attention from other business concerns, which could have a material adverse effect on our business, results of operations, financial condition and cash flows. Any failure to adequately comply with applicable federal securities laws, rules or regulations could subject us to fines or regulatory actions, which may materially adversely affect our business, results of operations and financial condition.

In addition, changing laws, regulations and standards relating to corporate governance and public disclosure are creating uncertainty for public companies, increasing legal and financial compliance costs and making some activities more time consuming. These laws, regulations and standards are 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. We will continue to invest resources to comply with evolving laws, regulations and standards, however this investment may result in increased general and administrative expense and a diversion of management's time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to their application and practice, regulatory authorities may initiate legal proceedings against us and our business may be adversely affected.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

None.

Item 3. Defaults Upon Senior Securities

None.

Item 6. EXHIBITS

Exhibit Number	Description
2.1	Agreement and Plan of Merger, by and among Vistagen Therapeutics, Inc.,VTGN Merger Sub, Inc., Pherin Pharmaceuticals, Inc. and Kevin McCarthy dated December 20, 2022, filed as an exhibit to the Company's Current Report on Form 8-K dated December 21, 2022.
10.1*	Amendment No 2. to Consulting Services Agreement between Vistgen Therapeutics, Inc. and FitzPatrick & Co. LLC effective January 1, 2023
31.1*	Certification of the Principal Executive Officer required by Rule 13a-14(a) under the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of the Principal Financial Officer required by Rule 13a-14(a) under the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32*	Certification of the Principal Executive and Financial Officers required by Rule 13a-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS *	The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH*	Inline XBRL Taxonomy Extension Schema
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase
104*	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

* Filed herewith.

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.

VISTAGEN THERAPEUTICS, INC.

/s/ Shawn K. Singh
Shawn K. Singh
Chief Executive Officer (Principal Executive Officer)

/s/ Jerrold D. Dotson
Jerrold D. Dotson
Chief Financial Officer (Principal Financial and Accounting Officer)

Dated: February 7, 2023

Exhibit 10.1

AMENDMENT NO. 2

TO

CONSULTING SERVICES AGREEMENT

This Amendment ("Amendment No. 2") is made between **Vistagen Therapeutics, Inc.**, a Nevada corporation having an address at 343 Allerton Avenue, South San Francisco, California 94080 ("Vistagen"), and **FitzPatrick & Co. LLC**, a Delaware limited liability company, having an address at 2023 Allen Place, NW, Washington DC 20009 ("Consultant"), and is retroactively effective as of January 1, 2023.

WHEREAS, Vistagen and Consultant entered into a Consulting Services Agreement dated January 21, 2022, and Amendment No. 1 to the Consulting Agreement dated June 1, 2022 (collectively, the "Agreement"); and

WHEREAS, the parties wish to amend the Agreement to extend its term and modify certain provisions relating to Vistagen's compensation of Consultant.

Vistagen and Consultant therefore agree as follows:

AMENDMENT

1. The term of this Agreement shall be extended and continue until June 30, 2023; and

2. Appendix A to the Agreement is amended as follows:

> **"Compensation from Vistagen to Consultant:**
> For Services requested by Vistagen, and rendered by Consultant, pursuant to this Agreement, Vistagen agrees to pay Consultant in arrears, at a rate of $10,000 per month, by check or wire to a U.S. bank account within 30 days of Vistagen's receipt of Consultant's invoice. Reasonable expenses will be reimbursed by Vistagen at cost. Substantial expenses not in the usual course of business, and air and hotel travel must be pre-approved by Vistagen."

Except as expressly provided in this Amendment No. 2, the Agreement remains unchanged and in full force and effect.

[Remainder of page intentionally left blank]

Each party is signing this agreement with the party's authorized signature.

AGREED TO:

VISTAGEN THERAPEUTICS, INC.

By: /s/ Shawn K. Singh, J.D.

Name: Shawn K. Singh, J.D.

Title: Chief Executive Officer

Date: January 4, 2023

AGREED TO:

FITZPATRICK & CO., LLC

By: /s/ Margaret Mary FitzPatrick

Name: Margaret Mary FitzPatrick

Title: Managing Director

Date: January 4, 2023

EXHIBIT 31.1

CERTIFICATION

I, Shawn K. Singh, certify that;

1. I have reviewed this quarterly report on Form 10-Q of Vistagen 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 the 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 internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

February 7, 2023

/s/ Shawn K. Singh
Shawn K. Singh
Principal Executive Officer

EXHIBIT 31.2

CERTIFICATION

I, Jerrold D. Dotson, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Vistagen 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 the 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 internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

February 7, 2023

/s/ Jerrold D. Dotson
Jerrold D. Dotson
Principal Financial Officer

EXHIBIT 32

CERTIFICATION 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 on Form 10-Q of Vistagen Therapeutics, Inc. (the "*Company*") for the quarter ended December 31, 2022, as filed with the Securities and Exchange Commission on the date hereof (the "*Report*"), Shawn K. Singh, JD, the Company's Principal Executive Officer, and Jerrold D. Dotson, the Company's Principal Financial Officer, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that to the best of their knowledge:

1. The Report fully complies with the requirement of Section 13(a) or Section 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 results of operations of the Company.

February 7, 2023

/s/ Shawn K. Singh
Shawn K. Singh
Principal Executive Officer

/s/ Jerrold D. Dotson
Jerrold D. Dotson
Principal Financial Officer