UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended June 30, 2025

OR

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

For the transition period from _____ to _____

Commission file number: 001-36327

Neurogene Inc.

(Exact name of registrant as specified in its charter)

Delaware	**98-0542593**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
535 W 24th St. 5th Floor New York, NY	**10011**
(Address of principal executive offices)	(Zip Code)

(855) 508-3568

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 $0.000001 per share	NGNE	The Nasdaq Global 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 during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act:

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of August 6, 2025, there were 14,271,916 shares of the registrant's common stock outstanding.

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Part I - Financial Information

Item 1. Condensed Consolidated Financial Statements

Neurogene Inc.
Condensed Consolidated Balance Sheets
(In Thousands, Except Share Information)
(Unaudited)

	June 30, 2025	December 31, 2024
Assets		
Current assets:		
Cash and cash equivalents	$ 58,813	$ 136,586
Short-term investments	215,706	175,819
Prepaid expenses and other current assets	4,467	3,518
Total current assets	278,986	315,923
Property and equipment, net	14,249	15,422
Operating lease right-of-use assets	2,601	3,000
Finance lease right-of-use assets	45	71
Restricted cash	339	339
Other non-current assets	1,096	975
Total assets	$ 297,316	$ 335,730
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 2,060	$ 1,336
Accrued expenses and other current liabilities	9,097	9,731
Operating lease liabilities, current	3,092	2,945
Finance lease liabilities, current	42	54
Contingent value rights liability, current	1,149	1,091
Total current liabilities	15,440	15,157
Operating lease liabilities, non-current	7,823	9,403
Finance lease liabilities, non-current	9	26
Contingent value rights liability, non-current	738	718
Other liabilities	51	51
Total liabilities	24,061	25,355
Stockholders' equity:		
Preferred stock, $0.000001 par value; 50,000,000 shares authorized as of June 30, 2025 and December 31, 2024; 0 shares issued and outstanding as of June 30, 2025 and December 31, 2024	—	—
Common stock, $0.000001 par value; 450,000,000 shares authorized as of June 30, 2025 and December 31, 2024; 14,269,264 and 14,854,725 shares issued and outstanding as of June 30, 2025 and December 31, 2024, respectively	—	—
Additional paid-in capital	580,216	572,673
Accumulated deficit	(306,961)	(262,298)
Total stockholders' equity	273,255	310,375
Total liabilities and stockholders' equity	$ 297,316	$ 335,730

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

Neurogene Inc.
Condensed Consolidated Statements of Operations
(In Thousands, Except Share Information)
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2025	**2024**	**2025**	**2024**
Revenue under licensing agreements	$ —	$ 925	$ —	$ 925
Operating expenses:				
Research and development expenses	19,366	15,744	37,131	29,285
General and administrative expenses	6,715	5,315	14,869	10,553
Total operating expenses	26,081	21,059	52,000	39,838
Loss from operations	(26,081)	(20,134)	(52,000)	(38,913)
Other income (expense):				
Interest income	2,928	2,035	6,134	4,355
Interest expense	(1)	(4)	(3)	(7)
Other income	1,212	144	1,360	287
Other expense	(74)	(533)	(154)	(1,135)
Net loss	$ (22,016)	$ (18,492)	$ (44,663)	$ (35,413)
Per share information:				
Net loss per share, basic and diluted	$ (1.05)	$ (1.09)	$ (2.12)	$ (2.09)
Weighted-average shares of common stock outstanding, basic and diluted	21,055,378	16,941,524	21,025,996	16,922,630

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

Neurogene Inc.
Condensed Consolidated Statement of Stockholders' Equity
(In Thousands, Except Share Information)
(Unaudited)

	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Amount	Amount	Amount
Balance- December 31, 2024	14,854,725	$ —	$ 572,673	$ (262,298)	$ 310,375
Stock-based compensation expense	—	—	4,048	—	4,048
Common stock issued upon exercise of stock options	1,683	—	19	—	19
Common stock issued upon vesting of restricted stock units	73,158	—	—	—	—
Net loss	—	—	—	(22,647)	(22,647)
Balance- March 31, 2025	14,929,566	$ —	$ 576,740	$ (284,945)	$ 291,795
Stock-based compensation expense	—	—	3,408	—	3,408
Exchange of common stock for pre-funded warrants	(667,500)	—	—	—	—
Common stock issued upon exercise of stock options	7,198	—	68	—	68
Net loss	—	—	—	(22,016)	(22,016)
Balance- June 30, 2025	14,269,264	$ —	$ 580,216	$ (306,961)	$ 273,255

	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Amount	Amount	Amount
Balance- December 31, 2023	12,823,665	$ —	$ 373,178	$ (187,154)	$ 186,024
Stock-based compensation expense	—	—	1,045	—	1,045
Common stock issued upon exercise of stock options	37,330	—	629	—	629
Net loss	—	—	—	(16,921)	(16,921)
Balance- March 31, 2024	12,860,995	$ —	$ 374,852	$ (204,075)	$ 170,777
Shares issued upon the exercise of pre-funded warrants	103,407	—	—	—	—
Stock-based compensation expense	—	—	2,314	—	2,314
Common stock issued upon exercise of stock options	24,806	—	415	—	415
Net loss	—	—	—	(18,492)	(18,492)
Balance- June 30, 2024	12,989,208	$ —	$ 377,581	$ (222,567)	$ 155,014

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

Neurogene Inc.
Condensed Consolidated Statements of Cash Flows
(In Thousands)
(Unaudited)

	Six Months Ended June 30,	
	2025	**2024**
Operating activities		
Net loss	$ (44,663)	$ (35,413)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	7,456	3,359
Depreciation and amortization of property and equipment	1,503	1,615
Asset impairment	—	91
Non-cash operating lease expense	399	360
Amortization of finance lease right-of-use assets	26	27
Amortization and accretion of premiums/discounts on held-to-maturity investments	(3,220)	(772)
Change in contingent value rights liability	78	818
Changes in assets and liabilities:		
Prepaid expenses and other current assets	(949)	(2,053)
Other assets	(121)	(30)
Accounts payable	719	368
Accrued expenses and other liabilities	(31)	(4,672)
Operating lease liabilities	(1,433)	(1,241)
Net cash used in operating activities	(40,236)	(37,543)
Investing activities		
Purchases of property and equipment	(928)	(525)
Purchases of held-to-maturity investments	(149,367)	(42,654)
Proceeds from maturities of held-to-maturity investments	112,700	49,500
Net cash (used in) provided by investing activities	(37,595)	6,321
Financing activities		
Offering costs in connection with pre-closing financing	—	(4,287)
Transaction costs related to reverse merger	—	(2,855)
Proceeds from the issuance of common stock upon exercise of options	87	1,044
Principal payments on finance leases	(29)	(27)
Net cash provided by (used in) financing activities	58	(6,125)
Net decrease in cash, cash equivalents and restricted cash	(77,773)	(37,347)
Cash, cash equivalents and restricted cash at beginning of period	136,925	148,718
Cash, cash equivalents and restricted cash at end of period	$ 59,152	$ 111,371
Supplemental disclosure of non-cash investing and financing activities:		
Additions to operating lease right-of-use assets from new operating lease liabilities	$ —	$ 60
Property and equipment included in accounts payable and accrued expenses	$ 128	$ 71
Additions to finance lease right-of-use assets from new finance lease liabilities	$ —	$ 25
Supplemental cash flow information:		
Cash paid for interest	$ 3	$ 7

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

NEUROGENE INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

1. Organization and Description of Business

Neurogene Inc. (formerly known as Neoleukin Therapeutics, Inc. ("Neoleukin")) (the "Company" or "Neurogene") is a clinical-stage biotechnology company that is a result of the reverse merger discussed below. The operating entity of Neurogene Inc. is the wholly owned subsidiary incorporated in the state of Nevada and also named Neurogene Inc. ("Neurogene OpCo"). Neurogene OpCo was incorporated as a limited liability company in Delaware on January 26, 2018 and converted into a Delaware corporation on July 3, 2018, and then merged with a wholly owned subsidiary of the parent company and re-domiciled to Nevada on December 18, 2023 after completing a reverse merger with Neoleukin Therapeutics, Inc. (the "Closing"), in accordance with the terms of the Agreement and Plan of Merger, dated as of July 17, 2023 (the "Merger Agreement"). Both Neurogene and Neurogene OpCo have a principal place of business in New York, NY. Neurogene was formed to harness the power of gene therapy, combined with its EXACT™ transgene regulation technology, to turn today's complex devastating neurological diseases into treatable conditions. The Company's first clinical-stage program to utilize the EXACT technology is NGN-401, which is in an ongoing Phase 1/2 clinical trial for the treatment of Rett syndrome. Since beginning operations, the Company has devoted substantially all its efforts to research and development, recruiting management and technical staff, administration, and raising capital.

2. Risks and Uncertainties

The Company is subject to risks common to companies in the biotechnology industry, including, but not limited to, successful development of technology, obtaining additional funding, protection of proprietary technology, compliance with government regulations, risks of failure of preclinical studies, clinical studies and clinical trials, the need to obtain marketing approval for its drug candidates and its consumer products, fluctuations in operating results, economic pressure impacting therapeutic pricing and reimbursement, dependence on key personnel, risks associated with changes in technologies, development by competitors of technological innovations and the ability to transition from pilot scale manufacturing to large scale production.

Liquidity and Financial Condition

Since its inception, the Company has funded its operations primarily with proceeds from the sales of equity securities and has incurred significant recurring losses, including net losses of $44.7 million and $35.4 million for the six months ended June 30, 2025 and 2024, respectively. In addition, the Company used cash in operations of $40.2 million and $37.5 million for the six months ended June 30, 2025 and 2024, respectively, and had an accumulated deficit of $307.0 million as of June 30, 2025. Management expects to incur substantial and increasing losses in future periods as the Company advances its products through its clinical and regulatory process and will rely on outside capital to fund its operations for the foreseeable future. The Company has not generated positive cash flows from operations, and there are no assurances that the Company will be successful in obtaining an adequate level of financing for the development and commercialization of its product candidates.

As of June 30, 2025, the Company had cash, cash equivalents and short-term investments of approximately $274.5 million. The Company expects its available cash and cash equivalents on hand as of the issuance date of these financial statements will be sufficient to fund its obligations as they become due for at least one year beyond the issuance date of these financial statements.

In the event the Company is unable to secure additional outside capital, management will be required to seek other alternatives which may include, among others, a delay or termination of clinical trials or the development of its product candidates, temporary or permanent curtailment of the Company's operations, a sale of assets, or other alternatives with strategic or financial partners.

The accompanying condensed consolidated financial statements do not include any adjustments that might result from the outcome of these uncertainties. Accordingly, the condensed consolidated financial statements have been prepared on a basis that assumes the Company will continue as a going concern and which contemplates the realization of assets and satisfaction of liabilities and commitments in the ordinary course of business.

3. Summary of Significant Accounting Policies

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") and pursuant to the rules and regulations of the United States Securities and Exchange Commission ("SEC") for interim financial information. Accordingly, these financial statements do not include all of the information and footnotes required by U.S. GAAP for complete financial statements and should be read in conjunction with the audited consolidated financial statements and accompanying notes included in the Company's Annual Report on Form 10-K for the year ended December 31, 2024, filed with the SEC on March 24, 2025.

In management's opinion, the unaudited condensed consolidated financial statements reflect all adjustments (consisting of normal recurring adjustments) necessary to present fairly the financial position of the Company as of June 30, 2025, and results of operations and cash flows for all periods presented. The interim results presented are not necessarily indicative of results that can be expected for the full year ending December 31, 2025.

Use of Estimates

The preparation of the financial statements in accordance with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. In preparing these financial statements, management used significant estimates in the following areas, among others: recoverability of the Company's net deferred tax assets and related valuation allowance, useful lives and recoverability of property and equipment, determining the incremental borrowing rate for calculating lease liabilities and related right-of-use assets and finance lease assets, revenue recognition, clinical trial accruals, accrual estimates for all contingent value rights ("CVRs"), and the value attributed to employee stock options and other stock-based awards. On an ongoing basis, the Company reviews its estimates to ensure that they appropriately reflect changes in the business or as new information becomes available. Actual results may differ from these estimates.

Segment Information

The Company determines and presents operating segments based on the information internally provided to the Chief Operating Decision Makers ("CODM") in accordance with Accounting Standards Codification ("ASC") 280, Segment Reporting. The Company's CODMs are (i) the Chief Executive Officer and (ii) the President and Chief Financial Officer. The Company is a clinical stage biotechnology company that operates as a single operating segment and has one reportable segment. Refer to Note 13, *Segment Information,* for further information related to the Company's segment.

Cash and Cash Equivalents

The Company considers all highly-liquid investments purchased with original maturities of 90 days or less at time of purchase to be cash equivalents. Cash and cash equivalents include cash held in banks and are stated at fair value.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash in the balance sheets that sum to the total of the same such amounts shown in the statements of cash flows (in thousands):

	June 30, 2025	December 31, 2024
Cash and cash equivalents	$ 58,813	$ 136,586
Restricted cash	339	339
Total cash, cash equivalents and restricted cash	$ 59,152	$ 136,925

Cash equivalents consist of money market funds in which the carrying value equals the fair value. Restricted cash includes $0.3 million in cash deposits the Company maintains with its bank as collateral for the irrevocable letters of credits related to its lease obligations.

Concentrations of Credit Risk

Financial instruments that subject the Company to significant concentrations of credit risk consist primarily of cash and cash equivalents. The Company's cash and cash equivalent accounts, at times, may exceed federally insured limits. As of June 30, 2025, the Company had $58.7 million in excess of the federally insured limits. The Company places its cash in financial institutions that management believes to be of high credit quality.

Revenue Recognition

The Company recognizes revenue when its customers obtain control of promised goods or services in an amount that reflects the consideration that the Company expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements within the scope of Accounting Standards Codification ("ASC") 606, *Revenue from Contracts with Customers* ("ASC 606"), the Company performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the performance obligation is satisfied.

In applying the ASC 606 framework, the Company must apply judgment to determine the nature of the promises within a revenue contract and whether those promises represent distinct performance obligations. In determining the transaction price, the Company does not include amounts subject to uncertainties unless it is probable that there will be no significant reversal of cumulative revenue when the uncertainty is resolved. Milestone and other forms of variable consideration that the Company may earn are subject to significant uncertainties of research and development related achievements, which generally are deemed not probable until such milestones are actually achieved. For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and where the license is deemed to be the predominant item to which the royalties relate, the Company recognizes revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied). Additionally, the Company develops assumptions that require judgment to determine the standalone selling price of each performance obligation identified in the contract. The Company then allocates the total transaction price to each performance obligation based on the estimated standalone selling prices of each performance obligation for which it recognizes revenue as or when the performance obligations are satisfied. At the end of each subsequent reporting period, the Company re-evaluates the variable consideration and any related constraint and, if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis.

Under the Company's license agreements, the Company grants the license to a customer as it exists at the point of transfer and the nature of the license is a right to use the Company's intellectual property as transferred. If the license to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenue from non-refundable, upfront fees allocated to the license when the license is transferred to the customer and the customer is able to use and benefit from the license. As of June 30, 2025, the Company has two revenue-generating agreements that are related to the legacy Neoleukin business as part of the reverse merger: the December 2023 CVR Licensing Agreement (as defined below) and the April 2024 CVR Licensing Agreement (as defined below). Refer to Note 9, *Commitments and Contingencies*, for further discussion on the CVR components.

Contingent Value Rights

In conjunction with the reverse merger, the Company entered into a CVR Agreement on December 18, 2023 with the Rights Agent named therein (the "CVR Agreement") prior to Closing. Included in the CVR Agreement are three different types of CVRs: (i) the Lease CVR, (ii) the Intellectual Property CVR, and (iii) the Sales Tax CVR (each as defined in the CVR Agreement). The Company evaluated each of the CVRs to determine if they qualified as derivatives under ASC 815, *Derivatives and Hedging*, and concluded that since certain scope exceptions were met, the CVRs did not qualify as derivatives. Instead, the Company records a contingent consideration liability associated with the CVRs when payments are probable and estimable under ASC 450, *Contingencies*. In assessing whether payments are probable and estimable, the Company considers the existence of or ability to enter into agreements with third parties or government agencies and the timing of potential payments. Refer to Note 9, *Commitments and Contingencies*, for further discussion on the CVRs.

Exit and Disposal Costs

In connection with the reverse merger and through early fiscal 2025, the Company has incurred costs to wind-down Neoleukin's Phase 1 trial of the NL-201 study. This trial has ceased further development, and the Company has no plans to continue developing Neoleukin's *de novo* protein technology. As a result, the trial's activities do not provide the Company any future economic benefit. In accordance with ASC 420, *Exit or Disposal Costs*, the Company accrued the remaining costs incurred in the trial. The liability was classified as accrued expenses and other current liabilities in the condensed consolidated balance sheet.

A summary of the accrued liabilities activity recorded in connection with the wind-down of Neoleukin's Phase 1 trial of NL-201 for the six months ended June 30, 2025 is as follows (in thousands):

	Balance at December 31, 2024	Liability Adjustment	Amounts Paid	Balance at June 30, 2025
Trial wind-down costs:				
Phase 1 NL-201 Trial	$ 209	$ 101	$ (117)	$ 193

Significant Accounting Policies

The Company's significant accounting policies are disclosed in the audited financial statements filed with the Company's Annual Report on Form 10-K for the year ended December 31, 2024. Since the date of those financial statements, there have been no changes to the Company's significant accounting policies.

Net Loss Per Share Attributable to Common Stockholders

Basic net loss per share of common stock is computed by dividing net income attributable to the Company by the weighted-average number of shares of common stock outstanding during the period. In periods of losses, diluted net loss per share is computed on the same basis as basic net loss per share as the inclusion of any other potential shares outstanding would be anti-dilutive. Outstanding pre-funded warrants as of June 30, 2025 and June 30, 2024 are 6,792,559 and 3,959,954, respectively. Pre-funded warrants are considered outstanding as of their issuance date and are included in basic and diluted net loss per share because they are fully vested and exercisable for nominal cash consideration.

The following potentially dilutive securities have been excluded from the diluted per share calculations as they would be anti-dilutive:

	Six Months Ended June 30,	
	2025	2024
Outstanding stock options	2,125,498	1,496,652
Restricted stock units	271,923	227,425
Performance stock units	252,124	252,124
Shares issuable under 2023 ESPP	10,225	—
Total	2,659,770	1,976,201

Recently Issued Accounting Standards

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board ("FASB") or other standard setting bodies that the Company adopts as of the specified effective date. Unless otherwise discussed below, the Company does not believe that the adoption of recently issued standards have or may have a material impact on its condensed financial statements or disclosures.

Recently Issued Accounting Pronouncements Not Yet Adopted

In November 2024, the FASB issued ASU 2024-03, *Income Statement - Reporting Comprehensive Income - Expense Disaggregation Disclosures* ("ASU 2024-03") which requires public entities to provide disaggregated disclosure of income statement expenses. Public entities are required to disaggregate, in a tabular presentation, each relevant expense caption on the face of the condensed consolidated statements of operations such as the following expenses: purchases of inventory, employee compensation, intangible asset amortization, and depreciation. In January 2025, the FASB issued ASU 2025-01, *Income Statement - Reporting Comprehensive Income - Expense Disaggregation Disclosures*, to clarify the effective date. The updated effective date for the Company to adopt ASU 2024-03 is for annual reporting periods beginning after December 15, 2026 and interim periods within annual reporting periods beginning after December 15, 2027, with early adoption permitted. The Company is currently evaluating the potential impact that ASU 2024-03 will have on its financial statement disclosures.

Recently Adopted Accounting Pronouncements

In December 2023, the FASB issued ASU 2023-09, *Improvements to Income Tax Disclosures* ("ASU 2023-09"), to expand the disclosure requirements for income taxes. Upon adoption, the Company will be required to disclose standardized categories in the rate reconciliation in both percentage and dollar amounts. ASU 2023-09 will also require income taxes paid to be disaggregated by jurisdiction, among other disclosure requirements. The Company adopted ASU 2023-09 for annual periods beginning January 1, 2025. The adoption does not have a material impact to the interim financial statements.

4. Investments

The following table summarizes the Company's investment securities as of June 30, 2025 and December 31, 2024 (in thousands):

	June 30, 2025			
	Amortized cost, as adjusted	**Gross unrealized holding gains**	**Gross unrealized holding losses**	**Estimated fair value**
Cash equivalents:				
Money market funds	$ 50,114	$ —	$ —	$ 50,114
Short-term investments:				
U.S. treasury notes	215,706	24	(35)	215,695
Total	$ 265,820	$ 24	$ (35)	$ 265,809

All of the Company's investments mature within the next 12 months.

	December 31, 2024			
	Amortized cost, as adjusted	**Gross unrealized holding gains**	**Gross unrealized holding losses**	**Estimated fair value**
Cash equivalents:				
Money market funds	$ 131,420	$ —	$ —	$ 131,420
Short-term investments:				
U.S. treasury notes	175,819	126	(3)	175,942
Total	$ 307,239	$ 126	$ (3)	$ 307,362

5. Fair Value of Financial Instruments

As of June 30, 2025 and December 31, 2024, financial assets measured at fair value on a recurring basis are categorized in the table below based upon the lowest level of significant input to the valuations (in thousands):

	June 30, 2025		
	Level 1	Level 2	Level 3
Assets:			
Money market funds	$ 50,114	$ —	$ —
U.S. treasury notes	215,695	—	—
Total	$ 265,809	$ —	$ —

	December 31, 2024		
	Level 1	Level 2	Level 3
Assets:			
Money market funds	$ 131,420	$ —	$ —
U.S. treasury notes	175,942	—	—
Total	$ 307,362	$ —	$ —

Money market funds are cash equivalents and are included in cash and cash equivalents in the condensed consolidated balance sheet as of June 30, 2025 and December 31, 2024.

6. Prepaid expenses and other current assets

Prepaid expenses and other assets consist of the following (in thousands):

	June 30, 2025	December 31, 2024
Refunds and other receivables	$ 1,309	$ 648
Prepaid expenses	2,188	1,889
Other current assets	970	981
Total prepaid and other current assets	$ 4,467	$ 3,518

7. Property and Equipment, Net

Property and equipment, net consist of the following (in thousands):

	June 30, 2025	December 31, 2024
Lab equipment	$ 3,307	$ 3,259
Manufacturing equipment	6,451	6,326
Office equipment	19	19
Leasehold improvements	15,418	15,396
Software	285	285
Construction in progress	1,435	1,308
Total property and equipment, cost	26,915	26,593
Less accumulated depreciation	(12,666)	(11,171)
Property and equipment, net	$ 14,249	$ 15,422

The Company recorded depreciation and amortization expense of $0.8 million and $0.8 million for the three months ended June 30, 2025 and 2024, respectively, and recorded $1.5 million and $1.6 million for the six months ended June 30, 2025 and 2024, respectively.

Management has reviewed its property and equipment for impairment whenever events and circumstances indicate that the carrying value of an asset might not be recoverable. During the six months ended June 30, 2025 there were no impairment losses, and for the six months ended June 30, 2024, the Company recorded impairment losses on idle equipment of $0.1 million. Impairment losses are charged to research and development expenses in the condensed consolidated statement of operations. Fair value for the idle assets was determined by a quoted purchase price for the assets.

8. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consist of the following (in thousands):

	June 30, 2025	December 31, 2024
Compensation, bonuses and related benefits	$ 2,638	$ 4,235
Research and development	6,100	5,047
Accrued severance	—	107
Other	359	342
Total accrued expenses and other current liabilities	$ 9,097	$ 9,731

9. Commitments and Contingencies

Lease Obligations

New York Headquarters Lease

In September 2019, the Company commenced a sub-lease of approximately 6,000 square feet of office space for the corporate headquarters in New York, New York with a term expiring in June 2023. In connection with the lease, the Company established an irrevocable letter of credit for approximately $0.4 million. Monthly lease payments were approximately $0.04 million.

In July 2021, the sublessor was released from the original lease by the landlord, and the Company attorned to the landlord the executory terms and provisions of the sub-lease. In February 2022, the Company entered into an extension of the New York office lease (retroactive to December 2021) through June 2026, with new monthly lease payments ranging from approximately $0.03 million to $0.04 million. The Company accounted for the amendment as a contract modification, and accordingly recorded an additional operating right-of-use asset of approximately $1.0 million and an additional operating lease liability of approximately $1.0 million.

Houston Lease

In August 2019, the Company entered into an agreement to lease approximately 26,905 square feet in Houston, Texas to build a manufacturing facility and office with a term expiring in August 2029. The Company has the option to renew the lease term for two additional five-year terms. The renewal periods were not included in the lease term for purposes of determining the lease liability or right-of-use asset. Monthly rent payments were approximately $0.03 million. In connection with the lease, the Company paid a security deposit of approximately $0.04 million and prepaid rent of approximately $0.04 million.

In September 2020, the Company amended the lease agreement to further increase the rentable space to 42,342 square feet. The commencement date of the expansion space lease was January 1, 2021 and the monthly rent payments increased to a range of approximately $0.05 million to $0.06 million.

Blaine Lease in Seattle

As a result of the reverse merger, the Company assumed an operating lease for approximately 33,300 square feet of office space in Seattle, Washington for offices, a laboratory for research and development, and related uses. The lease expires on February 1, 2029, with the option to extend the lease for two additional five-year terms. The renewal periods were not included in the lease term for purposes of determining the lease liability or right-of-use asset.

Eastlake Lease in Seattle

As a result of the reverse merger, the Company assumed an operating lease for approximately 6,272 square feet of office space in Seattle, Washington for additional office and laboratory space for research and development and related uses (the "Eastlake Lease"). The lease expires on September 30, 2026. The Company also assumed the existing agreement to sublease the Eastlake Lease to an unrelated third party ("Eastlake Sublease"). Pursuant to the terms of the Eastlake Sublease, Neurogene is entitled to receive approximately $1.6 million in lease payments. The Company recorded sublease income of $0.1 million for the three months ended June 30, 2025 and $0.1 million for the three months ended June 30, 2024. The Company recorded sublease income of $0.3 million for the six months ended June 30, 2025 and $0.3 million for the six months ended June 30, 2024. Sublease income is included in other income in the statement of operations. The term of the sublease is through September 30, 2026.

Supplemental lease expense for the six months ended June 30, 2025 and 2024 was as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2025	2024	2025	2024
Operating lease cost	$ 472	$ 519	$ 956	$ 1,045
Finance lease cost				
Amortization of finance leases	12	17	26	27
Interest on finance lease liabilities	1	4	3	7
Variable lease cost	385	285	737	614
Short-term lease cost	11	13	29	35
Total lease cost	$ 881	$ 838	$ 1,751	$ 1,728

Lease CVR

Under the CVR Agreement, each CVR holder is eligible to receive certain net savings, if any, realized by June 30, 2029 in connection with certain legacy lease obligations (the "Lease CVR"). As of June 30, 2025, approximately $1.2 million was recorded as a component of the contingent value rights liability on the Company's condensed consolidated balance sheet consisting of lease commitments that were probable and estimable at the Closing. The commitments relate to Neoleukin's sublease agreement, effective October 31, 2023, for one of its properties with an unrelated third party for the remainder of the lease term.

Intellectual Property CVR

Under the CVR Agreement, each CVR holder is eligible to receive 100% of the net proceeds, if any, derived from any consideration paid as a result of the disposition of Neoleukin's pre-merger legacy assets pursuant any agreements entered into before the Closing, and 80% of net proceeds, if any, derived from any consideration paid as a result of the disposition of Neoleukin's pre-merger legacy assets pursuant any agreements entered into within one year after the Closing (the "Intellectual Property CVR"). Contingent consideration liabilities related to the CVR Agreement will only be recorded if the liabilities are probable and estimable as of the balance sheet date. Refer to the *December 2023 CVR Licensing Agreement and April 2024 CVR Licensing Agreement subsections* below for further detail on the current agreements related to the Company's Intellectual Property CVR.

December 2023 CVR Licensing Agreement

Prior to the Closing, Neoleukin entered into a licensing agreement on December 13, 2023 with an unrelated third party to develop and commercialize certain legacy Neoleukin assets (the "December 2023 CVR Licensing Agreement"). In June 2024, an upfront payment of $0.2 million was received by the Company and was recorded as licensing revenue within the condensed consolidated statements of operations. Since the December 2023 CVR Licensing Agreement was entered into before the Closing, the CVR holders are eligible to receive 100% of the net proceeds derived from the December 2023 CVR Licensing Agreement. The December 2023 CVR Licensing Agreement contains development, regulatory and commercialization milestones totaling up to approximately $13.4 million, as well as royalty payments. However, as of June 30, 2025, no other development and sales milestones were achieved nor deemed probable of achievement under the December 2023 CVR Licensing Agreement.

April 2024 CVR Licensing Agreement

In April 2024, the Company entered into a licensing and intellectual property assignment agreement with another unrelated third party to develop and commercialize certain legacy Neoleukin assets (the "April 2024 CVR Licensing Agreement"). In April 2024, the Company received a one-time upfront payment of approximately $0.8 million and reimbursement of $0.01 million for patent expenses under the April 2024 CVR Licensing Agreement. Accordingly, the Company recorded $0.8 million as licensing revenue within the condensed consolidated statements of operations. Since the April 2024 CVR Licensing Agreement was entered into within one year after the Closing, the CVR holders are eligible to receive 80% of the net proceeds derived from the April 2024 CVR Licensing Agreement. The April 2024 CVR Licensing Agreement contains development, regulatory and commercialization milestones totaling up to approximately $11.0 million, as well as royalty payments. However, as of June 30, 2025, no other development and sales milestones were achieved nor deemed probable of achievement under the April 2024 CVR Licensing Agreement.

The December 2023 CVR Licensing Agreement and April 2024 CVR Licensing Agreement collectively account for the total Intellectual Property CVR. The total amount of $0.9 million due under the Intellectual Property CVR was offset by approximately $0.4 million due to permitted deductions under the Merger Agreement and the remaining $0.5 million was paid to the CVR holders as discussed below. As of June 30, 2025, the Company recorded $0.3 million within the contingent value rights liability on the Company's condensed consolidated balance sheet arising from offsets to permitted deductions to the Intellectual Property CVR that were incurred subsequent to June 30, 2024.

Sales Tax CVR

Prior to the Closing, Neoleukin entered into an agreement with an unrelated third party for refund analysis services of Washington state sales tax. As discussed and defined within Note 3, *Summary of Significant Accounting Policies—Contingent Value Right*s, the terms of the CVR Agreement include that CVR holders are eligible to receive net proceeds derived from an anticipated sales tax refund from Washington state relating to tax returns filed by Neoleukin prior to Closing. As of June 30, 2025, it was deemed probable that the Company will receive proceeds from Washington state for the sales tax refund and will remit the proceeds to the CVR holders. As of June 30, 2025, the Company accrued $0.4 million as a component of the contingent value rights liability arising from the Sales Tax CVR in the condensed consolidated balance sheet.

CVR Payment

In August 2024, the Company made the first CVR payment to CVR holders, net of expenses, of $0.6 million. $0.5 million was applied to the Intellectual Property CVR and $0.1 million was applied to the Lease CVR, reducing the respective liabilities. The second CVR payment to CVR holders is approximately $0.8 million and is due on August 14, 2025.

The following table summarizes the components of the contingent value rights liability in the condensed consolidated balance sheet as of June 30, 2025 and December 31, 2024 (in thousands):

	June 30, 2025		December 31, 2024	
	Current	Non-Current	Current	Non-Current
Lease CVR	$ 443	$ 738	$ 436	$ 718
Intellectual Property CVR	295	—	295	—
Sales Tax CVR	411	—	360	—
Total CVR liability	$ 1,149	$ 738	$ 1,091	$ 718

As per the CVR Agreement, the total amount owed to CVR holders, after deductions permitted under the Merger Agreement, must be at least $0.5 million to trigger a CVR payment prior to the end of the CVR term.

All other payments under the CVR Agreement were not considered probable and estimable as of June 30, 2025 and therefore, no additional contingent consideration liability has been recorded. The Company will evaluate the probable and estimable range of outcomes under the CVR Agreement at each reporting period until the end of the CVR term and adjust the amounts accrued for, as necessary.

Employment Agreements

The Company has employment and consulting agreements with key personnel providing for compensation and severance in certain circumstances, as defined in the respective employment agreements.

Other Research and Development Arrangements

As of June 30, 2025, the Company had standing agreements with consultants, contractors or service providers that generally can be terminated by the Company with 30 to 60 days written notice, unless otherwise indicated.

Litigation and Legal Proceedings

The Company is subject to litigation and other claims that arise in the ordinary course of business. While the ultimate result of outstanding legal matters cannot presently be determined, the Company does not expect that the ultimate disposition will have a material effect on its results of financial condition, results of operations or cash flows. However, legal matters are inherently unpredictable and subject to significant uncertainties, some of which are beyond the Company's control. As such, there can be no assurance that the final outcome of any particular legal matter will not have a material adverse effect on the Company's financial condition, results of operations or cash flows.

10. Licenses

License Agreement with the University of Edinburgh

In December 2020, the University Court of the University of Edinburgh (the "University of Edinburgh") and Neurogene entered into a Master Collaboration Agreement ("MCA"). Under the MCA, Neurogene and the University of Edinburgh agreed to collaborate on certain research and development projects ("Projects") and Neurogene agreed to provide funding for such Projects for a 40-month initial term, which term was extended in November 2023 for an additional 33 months and may be further extended by mutual agreement. In exchange for such funding, the University of Edinburgh granted Neurogene the option to exclusively license any intellectual property arising from such Projects. If Neurogene exercises an exclusive option for a particular Project, Neurogene will enter into a separate exclusive license agreement on its own terms with the University of Edinburgh. Under the MCA, Neurogene is obligated to pay semi-annual installment payments relating to funding of costs for personnel and lab consumables for the 40-month period. Either party may terminate the MCA for convenience upon 90 days' notice. If Neurogene terminates the MCA, it would be responsible for all non-cancellable costs and commitments related to any particular Project and any and all funding costs for any person working on such Project.

In March 2022, Neurogene exercised its option through the collaboration under the MCA and entered into a License Agreement with the University of Edinburgh (the "March 2022 Edinburgh License Agreement"), pursuant to which Neurogene licensed certain patents and know-how related to the EXACT technology and optimized *MECP2* cassettes on an exclusive basis. Under the March 2022 Edinburgh License Agreement, Neurogene obtained an exclusive, worldwide license to the licensed patents to develop, manufacture, supply, sell, and commercialize any products that utilize the licensed patents (the "Licensed Products") in exchange for low single-digit percentage royalties on future commercial net sales of the Licensed Products. Royalties are payable on a Licensed Product-by-Licensed Product and country-by-country basis until the latest of the expiration of the last licensed patent covering such Licensed Product in the country where the Licensed Product is sold, or, if no licensed patent exists or has expired in such country, then 10 years from first commercial sale of such Licensed Product in such country. In connection with the license, Neurogene is also obligated to pay the University of Edinburgh up to $5.3 million in regulatory-related milestones and up to $25.0 million in sales-related milestones based on annual net sales of Licensed Products in excess of defined thresholds.

In November 2023, Neurogene and the University of Edinburgh amended the MCA. Under the amended MCA, Neurogene and the University of Edinburgh agreed to continue collaborating on certain Projects and Neurogene agreed to provide funding for such Projects through December 2026, or an additional 33 months. Neurogene is obligated to pay semi-annual installment payments relating to funding of costs for personnel and lab consumables for the entire period.

For the six months ended June 30, 2025 and 2024, the expense recorded by the Company related to the MCA was $0.8 million and $0.8 million, respectively.

License Agreement with Virovek

In September 2020, Neurogene entered into a Non-Exclusive License Agreement with Virovek, Inc., pursuant to which Neurogene has a license to use certain patents and know-how on a non-exclusive basis related to Neurogene's baculovirus ("baculo") process in exchange for low single-digit percentage royalties on future commercial net sales of each product using the baculo process, development milestone payments of up to $0.2 million in the aggregate, and a nonrefundable annual license fee. During the six months ended June 30, 2025 and 2024, no milestone expense was recorded.

License Agreement with Sigma-Aldrich Co

In January 2023, Neurogene entered into a Non-Exclusive License Agreement with Sigma-Aldrich Co. LLC, pursuant to which Neurogene has a license to certain patents and know-how on a non-exclusive basis related to certain cell lines used in Neurogene's baculo process in exchange for a small annual fee on a product-by-product basis, payable once the first product candidate enters the clinic. In addition, on a product-by-product basis, Neurogene is obligated to pay up to $2.5 million in the aggregate for development-related milestones. The Company recorded a license expense of $0.06 million for the six months ended June 30, 2025 and $0.06 million for the six months ended June 30, 2024.

License Agreement with Stanford

In August 2024, the Company entered into a Nonexclusive License Agreement with the Board of Trustees of Leland Stanford Junior University (the "Stanford License Agreement") to license, on a non-exclusive basis, certain biological materials used by the Company in the manufacturing process of Neurogene's product candidates, including NGN-401. Over the 10-year term of the Stanford License Agreement, the Company is obligated to pay up to $0.5 million in the aggregate for licensing fees. The Company recorded a license expense of $0.05 million in September 2024.

No expenses were recorded related to other in-process license agreements during the six months ended June 30, 2025 and 2024. None will be due under these agreements unless and until certain development milestones are reached.

11. Stockholders' Equity (Deficit)

Common stock and pre-funded warrants

In March 2025, the Company's board of directors approved the Neurogene Inc. 2025 Inducement Plan, which reserves for issuance up to 500,000 shares of the Company's common stock underlying inducement awards.

In April 2025, the Company entered into an exchange agreement with existing stockholders to exchange an aggregate of 667,500 shares of the Company's common stock for pre-funded warrants to purchase an aggregate of 667,563 shares of the Company's common stock at an exercise price of $0.001 per share. The exchange was executed to facilitate the investor's beneficial ownership thresholds. The exchange was accounted for as an equity-for-equity transaction. The Company derecognized the common shares and recognized an equivalent value in pre-funded warrants, with no gain or loss recognized.

The Company has pre-funded warrants outstanding to purchase an aggregate of 6,792,559 shares of the Company's common stock as of June 30, 2025. The pre-funded warrants are exercisable at any time for exercise prices ranging from $0.000001 to $0.001, except that the pre-funded warrants cannot be exercised by a holder if, after giving effect thereto, such holder would beneficially own more than 9.99% of the Company's outstanding common stock, subject to certain exceptions. However, any holder may increase or decrease such percentage to any other percentage (not in excess of 19.99%) upon at least 61 days' prior notice from the holder to the Company. The holders of the pre-funded warrants will not have the right to vote the shares underlying the pre-funded warrants on any matter except to the extent required by Delaware law. These warrants are classified as equity. Information on the outstanding warrants is as follows:

Type	Exercise Price	Amount	Type of Financing
Common stock pre-funded warrant	$ 0.000001	425,987	Legacy pre-funded warrants outstanding
Common stock pre-funded warrant	$ 0.000001	1,708,332	December 2023 Preferred stock conversion
Common stock pre-funded warrant	$ 0.000001	1,825,635	December 2023 Pre-Closing
Common stock pre-funded warrant	$ 0.001	2,165,042	November 2024 private placement
Common stock pre-funded warrant	$ 0.001	667,563	April 2025 Common stock conversion
Total		6,792,559	

The Company has reserved shares of the Company's common stock for future issuance as follows:

	June 30, 2025	December 31, 2024
Unvested restricted stock units	271,923	222,530
Unvested performance stock units	252,124	252,124
Options outstanding	2,125,498	1,387,556
Shares available for future grant under the 2023 Equity Incentive Plan	1,212,648	1,458,188
Shares available for future grant under the 2025 Inducement Plan	458,900	—
Shares available for future issuance under the 2023 Employee Stock Purchase Plan	321,770	173,223
Pre-funded warrants outstanding	6,792,559	6,124,996
Total common stock reserved	11,435,422	9,618,617

12. Stock-Based Compensation

The Company measures stock-based awards at their grant-date fair value and records compensation expense on a straight-line basis over the vesting period of the awards. The Company recorded stock-based compensation expense in the following expense categories in its accompanying condensed consolidated statements of operations (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2025	2024	2025	2024
Research and development	$ 1,575	$ 1,375	$ 3,146	$ 1,940
General and administrative	1,833	939	4,310	1,419
Total expense	$ 3,408	$ 2,314	$ 7,456	$ 3,359

The following table summarizes the option activity:

Options	Number of shares		Weighted average exercise price per share	Weighted average remaining contractual term (in years)
Outstanding at December 31, 2024	1,387,556	$	28.62	7.80
Granted	832,481	$	16.77	
Exercised	(8,881)	$	9.47	
Expired/Forfeited	(85,658)	$	35.32	
Outstanding at June 30, 2025	2,125,498	$	23.79	8.23
Exercisable at June 30, 2025	740,967	$	24.36	6.41

As of June 30, 2025, the aggregate intrinsic value of outstanding options and exercisable options was approximately $1.5 million and $1.5 million, respectively. The aggregate intrinsic value of options exercised was $0.1 million for the six months ended June 30, 2025.

The weighted-average grant date fair value of options granted was $13.18 and $26.22 per share for the six months ended June 30, 2025 and 2024, respectively. The Company recorded stock-based compensation related to stock options of approximately $2.2 million and $1.6 million for the three months ended June 30, 2025 and 2024, respectively. The Company recorded stock-based compensation related to stock options of approximately $4.0 million and $2.5 million for the six months ended June 30, 2025 and 2024, respectively. As of June 30, 2025, the total unrecognized compensation expense related to unvested stock option awards was approximately $23.5 million, which the Company expects to recognize over a weighted-average period of 2.88 years.

The fair value of each option was estimated on the grant date using the weighted-average assumptions in the table below:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2025	2024	2025	2024
Expected volatility	94.60%-96.19%	87.43%-90.84%	93.99%-96.49%	86.39%-90.84%
Risk-free interest rate	3.86%-4.05%	4.17%-4.60%	3.86%-4.42%	3.97% - 4.60%
Expected life (in years)	5.27-6.08	5.50-6.15	5.27-6.96	5.50 - 6.15
Expected dividend yield	—	—	—	—

A summary of the Company's restricted stock unit ("RSU") activity and related information for the six months ended June 30, 2025 is as follows:

RSUs	Number of Shares	Weighted Average Grant Date Fair Value
Unvested at December 31, 2024	222,530	$ 36.06
Restricted stock units granted	135,205	$ 16.14
Restricted stock units vested	(73,158)	$ 36.06
Restricted stock units forfeited	(12,654)	$ 31.14
Unvested at June 30, 2025	271,923	$ 26.38

The Company recorded stock-based compensation expense related to RSUs of approximately $0.8 million and $0.7 million for the three months ended June 30, 2025 and 2024, respectively. The Company recorded stock-based compensation related to RSUs of approximately $1.4 million and $0.8 million for the six months ended June 30, 2025 and 2024, respectively. As of June 30, 2025, there was approximately $6.2 million of unrecognized compensation cost related to unvested RSUs, which is expected to be recognized over a remaining weighted average vesting period of approximately 2.02 years.

A summary of the Company's performance stock unit ("PSU") activity and related information for the six months ended June 30, 2025 is as follows:

PSUs	Number of Shares	Weighted Average Grant Date Fair Value
Unvested at December 31, 2024	252,124	$ 36.06
Performance stock units granted	—	$ —
Performance stock units vested	—	$ —
Performance stock units forfeited	—	$ —
Unvested at June 30, 2025	252,124	$ 36.06

The PSUs were granted with vesting in two equal tranches based on certain performance conditions. Each PSU entitles the holder to receive one share of the Company's common stock when the PSU vests. Stock-based compensation expense for PSUs will be recognized when it is probable that the performance conditions will be achieved. As of June 30, 2025, the performance conditions underlying the first tranche of 126,062 PSUs were achieved for the first milestone and are currently considered probable to vest. The Company recorded stock-based compensation expense related to PSUs of approximately $0.4 million and $2.0 million for the three and six months ended June 30, 2025, respectively. As of June 30, 2025, the second tranche of 126,062 PSUs were not deemed probable of achievement and are not currently considered probable to vest. As of June 30, 2025, there was approximately $7.1 million of unrecognized compensation cost related to PSUs.

13. Segment Information

Operating segments are defined as components of an entity for which separate financial information is available and that is regularly reviewed by the CODMs in deciding how to allocate resources and in assessing performance. The Company's CODMs are (i) the Chief Executive Officer and (ii) the President and Chief Financial Officer. The Company is a clinical stage biotechnology company that operates as a single operating segment and has one reportable segment. In addition to reviewing the expenses in the consolidated statement of operations, the CODMs are provided with research and development costs for Rett syndrome, Batten disease, Early Discovery and Discontinued Programs, as well as categorized general and administrative expenses. The research and development programs are considered significant by the Company. The CODM assesses the financial performance of the segment and decides how to allocate resources based on net loss on a consolidated basis. The measure of segment assets is reported on the condensed consolidated balance sheets as total consolidated assets. The CODMs also assess performance of the segment according to preclinical and clinical data, the stage of development of the research and development programs, along with program specific expenses and market conditions in the pharmaceutical and biotechnology sectors.

As of June 30, 2025 and 2024, the Company did not have any significant long-lived assets located outside of the United States. Information on the segment and reconciliation to net loss is as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2025	2024	2025	2024
Revenue under licensing agreements	$ —	$ 925	$ —	$ 925
Program specific expenses:				
Rett syndrome	$ 7,052	$ 2,798	$ 11,576	$ 4,817
Batten disease	401	1,734	1,246	2,924
Early Discovery	720	1,705	2,007	3,171
Unallocated internal expenses:				
Personnel-related	5,125	4,557	10,529	9,275
Stock-based compensation	1,575	1,375	3,146	1,939
Manufacturing	3,635	2,815	6,742	5,794
Other [(a)]	858	760	1,885	1,365
Total research and development expenses	$ 19,366	$ 15,744	$ 37,131	$ 29,285
General and administrative specific expenses:				
Personnel-related	$ 2,212	$ 1,964	$ 4,696	$ 4,065
Stock-based compensation	1,833	939	4,310	1,419
Professional and consultant fees	970	998	2,247	2,500
Office-related	620	631	1,252	1,235
Other [(b)]	1,080	783	2,364	1,334
Total general and administrative expenses	$ 6,715	$ 5,315	$ 14,869	$ 10,553
Other income[(c)]	4,065	1,642	7,337	3,500
Net loss	$ (22,016)	$ (18,492)	$ (44,663)	$ (35,413)

[(a)] The Other expense segment items category within research and development expense is mainly comprised of: Consultant fees for programs not specified above, IT Software and network support and rent expenses.

[(b)] The Other expense segment items category within general and administrative expense is mainly comprised of: Insurance, IT software and network support, market research, and tax expenses.

[(c)] Other income included in net loss is mainly comprised of: Interest income, interest expense, other income and other expense.

14. Subsequent Events

From July 1, 2025 until the financial statements were issued, the Company granted 4,290 options to employees and 2,652 options were exercised.

On July 4, 2025, the One Big Beautiful Bill ("OBBB") Act, which includes a broad range of tax reform provisions, was signed into law in the United States. Included in this legislation are provisions that allow for the immediate expensing of domestic U.S. research and development expenses, a general requirement to reduce the deduction for research and development expense by any research credit taken, and other changes to the U.S. taxation of profits derived from foreign operations. The Company is currently evaluating the overall impact of the OBBB Act, including its potential effect on the Company's estimated annual effective tax rate for 2025.

On August 11, 2025, the Company entered into an at-the-market ("ATM") equity offering sales agreement with Leerink Partners, LLC ("Leerink"), pursuant to which the Company may offer and sell, from time to time, shares of the Company's common stock with an aggregate offering price up to $150.0 million through Leerink, as sales agent.

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

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with the unaudited interim condensed consolidated financial statements and notes thereto included elsewhere in this report and our audited consolidated financial statements and notes thereto included as part of our Annual Report on Form 10-K for the year ended December 31, 2024, filed with the SEC on March 24, 2025 ("Annual Report"). Some of the information contained in this discussion and analysis or set forth elsewhere in this Quarterly Report on Form 10-Q, including information with respect to our plans and strategy for our business, include forward-looking statements that involve risks, uncertainties, and assumptions. As a result of many factors, including those factors set forth in the section entitled "Risk Factors," our actual results or outcomes, or the timing of our results or outcomes, could differ materially from the results or outcomes described in or implied by these forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section of this report entitled "Risk Factors." You should carefully read the "Cautionary Note About Forward-Looking Statements" and "Risk Factors" sections of the Annual Report on Form 10-K as well as the risk factors included in Part II, Section 1A of this Quarterly Report on Form 10-Q to gain an understanding of the important factors that could cause actual results to differ materially from the results described below.

Forward-looking statements are inherently uncertain and you should not place undue reliance on these statements, which speak only as of the date that they were made. These cautionary statements should be considered in connection with any written or oral forward-looking statements that we may issue in the future. Except as required by law, we do not undertake any obligation to revise or update publicly any forward-looking statements after completion of the filing of this Quarterly Report on Form 10-Q to reflect later events or circumstances or to reflect the occurrence of unanticipated events, or otherwise.

In this section, references to "we," "our," "us," and "the Company" refer to post-merger Neurogene Inc. and our wholly owned subsidiary incorporated in the state of Nevada, also named Neurogene Inc. ("Neurogene OpCo"), unless otherwise indicated.

Overview

Despite recent scientific advances in genetics, most neurological diseases, particularly those with devastating consequences to patients, are left untreated. Conventional gene therapy is an attractive potential treatment approach for only a limited number of monogenic diseases due to the challenges caused by the complex biology of neurological diseases and by inherent variable transgene uptake and expression. We are a clinical-stage biotechnology company committed to overcoming these limitations and turning today's complex devastating neurological diseases into treatable conditions. By harnessing our proprietary transgene regulation technology, EXACT™ (Expression Attenuation via Construct Tuning), we are developing a differentiated product portfolio of genetic medicines for rare neurological diseases with high unmet need not otherwise addressable by conventional gene therapy. Our EXACT approach leverages key scientific breakthroughs, including gene transfer technology, microRNA-based genetic circuits, and adeno-associated virus ("AAV") delivery, and is designed to deliver therapeutic levels of transgene to key areas of the brain that underlie neurological disease pathology.

Our first clinical-stage program to utilize the EXACT platform is NGN-401, which is in development for the treatment of Rett syndrome, a disease with a patient population that has a significant unmet need, and that ultimately progresses to substantial neurological and physical impairment and premature death. We have completed dosing in a Phase 1/2 open-label, multi-center clinical trial of NGN-401 gene therapy for the treatment of female patients with classic Rett syndrome that is assessing the safety, tolerability, and efficacy of NGN-401 at a dose of 1E15 vg. Eight pediatric participants in the ages 4-10 years old cohort and two participants in the ages 11 years and older cohort received the 1E15 vg dose. We have begun trial initiation activities for our registrational trial of NGN-401, Embolden™. Clinical grade NGN-401 is manufactured at our manufacturing facility and was used for dosing in the Phase 1/2 clinical trial and will be used for the Embolden clinical trial. NGN-401 is delivered using a one-time intracerebroventricular ("ICV") procedure, which we believe is the most suitable route of administration to achieve optimal biodistribution in key regions of the brain and other parts of the nervous system that underlie Rett syndrome pathophysiology.

We received clearance of our Investigational New Drug ("IND") application by the U.S. Food and Drug Administration ("FDA") in January 2023. The Phase 1/2 clinical trial was also initiated in the United Kingdom ("UK") and Australia. Participants were dosed in all three regions.

In November 2024, we announced positive interim clinical data in participants receiving the 1E15 vg dose (n=4 for efficacy data; n=5 for safety data) in the Phase 1/2 clinical trial with a data cut-off date of October 17, 2024.

The baseline demographics of the first five participants who received the 1E15 vg dose NGN-401 include:

	1E15 vg				
	Participant 1 (Pt:1)	Participant 2 (Pt:2)	Participant 3 (Pt:3)	Participant 4 (Pt:4)	Participant 5 (Pt:5)
Age at Dosing in Years	7	4	6	7	6
***MECP2* Mutation Severity**	Mild	Severe	Severe	Severe	Severe
Baseline Disease Severity as Indicated by CGI-S Score	4 (moderately ill)	5 (markedly ill)	5 (markedly ill)	5 (markedly ill)	5 (markedly ill)
Time Post Treatment with NGN-401 in Months	~15	~12	~9	<6	~1

*CGI-S = Clinician Global Impression-Severity

Consistent, concordant and durable improvements were observed in the first four participants who received 1E15 vg dose as measured from baseline across multiple Rett syndrome clinical assessments. The four participants collectively achieved 23 developmental milestones/skills in the core clinical domains of Rett syndrome – hand function/fine motor, communication/language, and ambulation/gross motor. These gains of skills and developmental milestones are not expected to occur when compared and contextualized against the natural history of Rett syndrome. Additionally, objective improvements in autonomic function were recorded.

Consistent improvements were observed in the following:

	CGI-I		CGI-S Total Score		RSBQ		Gain of Skills, Developmental Milestones and Symptom Improvement in RTT Clinical Domains				
	Improved?	How many points?*	Improved?	How many points?	Improved?	How many points? (% Change)	Hand Function	Gross Motor	Communi-cation	Autonomic	Attentive-ness
LD:1 15 mos. post-NGN-401	✓	2 pts.			✓	10 pts. (-28%)	✓	✓	✓	✓	✓
LD:2 12 mos. post-NGN-401	✓	2 pts.	✓	1 pt.	✓	32 pts. (-52%)	✓	✓	✓	✓	✓
LD:3 9 mos. post-NGN-401	✓	2 pts.			✓	5 pts. (-29%)	✓	✓		✓	✓
LD:4 3 mos. post-NGN-401	✓	2 pts.			✓	8 pts. (-28%)	✓			✓	✓

CGI-I = Clinician Global Impression-Improvement with Rett syndrome anchors
*Each participant achieved a 2-point improvement or "much improved" from baseline.

We also announced safety and tolerability data from the Phase 1/2 clinical trial as of the data cut-off date of October 17, 2024. We believe that NGN-401 has been generally well-tolerated at the 1E15 vg dose. There continue to be no signs or symptoms indicating MeCP2 overexpression toxicity. In November 2024, we also shared that we had gained alignment with the FDA on our potency assay strategy and chemistry, manufacturing and control ("CMC") scale-up planning for the program.

In June 2025, we announced that five additional participants had been dosed in the Phase 1/2 NGN-401 clinical trial during the first half of 2025. A total of 10 participants have received the 1E15 vg dose and dosing in the Phase 1/2 trial has been completed. We expect to provide an update on safety and efficacy data in the second half of 2025, and therefore we do not plan to share interim data updates from the trial before that time.

In June 2025, we also announced written agreement from the FDA on the key elements of the Embolden registrational trial design. Embolden is a single-arm, open-label, baseline-controlled registrational trial evaluating the 1E15 vg dose of NGN-401 in females ages three years and older with Rett syndrome. The primary endpoint is a responder-based composite endpoint that will assess an improvement in the CGI-I scale with Rett syndrome anchors and the gain of a developmental milestone/skill, compared to the participant's own baseline. Responders are defined as participants who attain a CGI-I score greater than or equal to 3 ("minimally improved") and gain any one developmental milestone/skill from a list of 28, as captured through standardized video recordings and independently verified by blinded central raters at the 12-month endpoint. In further maintaining the rigorous design of the Embolden trial, we are electing to dose the last planned participant from the Phase 1/2 trial as part of the registrational Embolden trial and add one more participant to complete the proposed sample size at 20 patients.

In May 2024, we added a cohort evaluating a 3E15 vg dose of NGN-401 (high-dose) to the Phase 1/2 clinical trial. In November 2024, the third participant receiving the 3E15 vg dose died following complications from a rare hyperinflammatory syndrome associated with systemic exposure to high doses of AAV, and we discontinued use of that dose level. Hyperinflammatory syndromes can include hemophagocytic lymphohistiocytosis ("HLH") and multisystem inflammatory syndrome. Based on research we conducted related to hyperinflammatory syndromes and AAV gene therapy, HLH has only been reported following doses of AAV that are generally in the 1E14 vg/kg range or higher. The 1E15 vg dose level we are moving forward in the trial translates into the E13 vg/kg range, and we are not aware of any case of HLH ever being reported at this dose level.

In December 2024, we updated our Phase 1/2 protocol to remove the 3E15 vg dose from the trial. Despite our research related to hyperinflammatory syndromes and AAV gene therapy showing that HLH has only been reported following doses of systemic AAV that are higher than the 1E15 vg dose level, in an abundance of caution, we have incorporated into our protocol additional monitoring for markers using the HLH diagnostic criteria, such as ferritin, and a treatment algorithm to be used in the event HLH is detected. When administered early, this treatment algorithm has been used successfully to treat cases of HLH both in other AAV gene therapy and other known causes of HLH. There has been no evidence of HLH or hyperinflammatory syndrome in any participant at the 1E15 vg dose level in the NGN-401 clinical trial as of the date of this report.

In June 2024, we announced that NGN-401 was one of four programs selected by the Center for Biologics Evaluation and Research at the FDA to participate in the FDA's Support for clinical Trials Advancing Rare disease Therapeutics ("START") Pilot Program based on potential for clinical benefits and clinical development program readiness. As part of the START Program, we have opportunities for enhanced communications with the FDA, with the aim to further accelerate the pace of NGN-401's development. These opportunities are designed to provide frequent advice and regular ad-hoc conversations to address product-specific development issues, including, but not limited to, clinical study design, choice of control group and fine-tuning the choice of patient population. In August 2024, we announced that NGN-401 also received Regenerative Medicine Advanced Therapy ("RMAT") designation from the FDA. RMAT designation is granted for regenerative medicines intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition, and with preliminary clinical evidence that indicates that the drug has the potential to address unmet medical needs. Benefits of the RMAT designation program include all the benefits of Fast Track and Breakthrough Therapy designation programs, including early and frequent communications with FDA senior managers, intensive guidance on efficient drug development and eligibility for an Accelerated Approval pathway and Priority Review.

We believe that our EXACT platform has broad applicability in complex neurological diseases not otherwise easily addressable by conventional gene therapy. In addition to our Rett syndrome program, we are in the early discovery stage for other potential programs.

In addition to NGN-401, we were pursuing a conventional gene therapy program for the treatment of CLN5 Batten disease. While we have completed enrollment in a Phase 1/2 clinical trial of NGN-101 in patients with CLN5 Batten disease, in November 2024, we announced that we do not expect to move forward with the NGN-101 CLN5 Batten disease gene therapy program at this time. Given the rarity of the disease, continued investment in the program was predicated on alignment on a streamlined registrational pathway with the FDA. To support a streamlined pathway, we submitted an RMAT application to the FDA. Despite our belief that we met the standard of preliminary clinical evidence required to obtain an RMAT designation, the RMAT application was denied. We are currently evaluating options for the program.

We also established a fully operational current good manufacturing practices ("cGMP") facility in Houston, Texas used to manufacture current and future product for research, toxicology and clinical studies. We believe that our in-house manufacturing capabilities better enable control of product quality and development timelines, strategic pipeline and financial flexibility, and clinical-to-commercial continuity.

Background

We were founded in 2018, and have devoted substantially all of our resources to conducting research and development activities (including with respect to the NGN-401 and NGN-101 programs) and undertaking preclinical studies, establishing our manufacturing facility, conducting clinical trials and the manufacturing of product used in our clinical trials and preclinical studies, business planning, developing and maintaining our intellectual property portfolio, hiring personnel, raising capital, and providing general and administrative support for these activities.

Since our inception, we have funded our operations primarily with outside capital (e.g., proceeds from the sale of preferred stock and common stock) and have raised aggregate net proceeds of approximately $521.9 million. However, we have incurred significant recurring losses, including a net loss of $44.7 million and $35.4 million for the six months ended June 30, 2025 and 2024, respectively. In addition, as of June 30, 2025, we had an accumulated deficit of $307.0 million and cash, cash equivalents and short-term investments totaling $274.5 million. In order to continue our operations, we must achieve profitable operations and/or obtain additional equity or debt financing. Until we achieve profitability, management plans to fund our operations and capital expenditures with cash on hand and the sale and issuance of securities. There can be no assurance that we will be successful in raising additional capital or that such capital, if available, will be on terms that are acceptable to us. If we are unable to raise sufficient additional capital, we may be compelled to consider actions such as reducing the scope of our operations and planned capital expenditures or selling certain assets, including intellectual property assets.

Our net losses may fluctuate significantly from quarter-to-quarter and year-to-year, depending on a variety of factors, including the timing, scope and results of our research and development activities. Management expects that our expenses and capital requirements will increase substantially in connection with our ongoing activities as we:

- advance the NGN-401 program through clinical development;
- advance discovery programs from preclinical development into and through clinical development;
- seek regulatory approvals for any product candidates that successfully complete clinical trials;
- establish sales, marketing and distribution infrastructure to commercialize any approved product candidates;
- establish a commercialization infrastructure and scale up internal and external manufacturing and distribution capabilities to commercialize any product candidates for which we may obtain regulatory approval;
- expand clinical, scientific, management and administrative teams;
- maintain, expand, protect and enforce our intellectual property portfolio, including patents, trade secrets and know-how;
- implement operational, financial and management systems; and
- incur additional legal, accounting and other expenses related to operating as a public company.

We do not have any products approved for commercial sale and have not generated any commercial revenue from product sales. Our ability to generate product revenue sufficient to achieve and maintain profitability will depend upon the successful development and eventual commercialization of one or more of our product candidates, which we expect, if it ever occurs, will take many years. We expect to spend a significant amount in development and marketing costs prior to such time. We will therefore require substantial additional capital to develop our product candidates and support our continuing operations. We may never succeed in achieving regulatory and marketing approval for our product candidates. We may obtain unexpected results from our preclinical and clinical trials. In November 2024, we announced that we do not expect to move forward with the NGN-101 CLN5 Batten disease gene therapy program at this time. Given the rarity of the disease, continued investment in the program was predicated on alignment on a streamlined registrational pathway with the FDA. To support a streamlined pathway, we submitted an RMAT application to the FDA. Despite our belief that the application met the standard of preliminary clinical evidence required to obtain an RMAT designation, the RMAT application was denied. We are currently evaluating options for the program. We may in the future elect to discontinue, delay, or modify additional preclinical and clinical trials of our other product candidates. A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. Accordingly, until such time that we can generate a sufficient amount of revenue from product sales or other sources, if ever, management expects to finance our operations through private or public equity or debt financings, loans or other capital sources, which could include income from collaborations, partnerships or other marketing, distribution, licensing or other strategic arrangements with third parties, or from grants. However, we may be unable to raise additional capital from these sources on favorable terms, or at all, which could have a material adverse effect on our business. Our management cannot provide assurance that we will ever generate positive cash flow from operating activities. Please see the section below entitled *Liquidity and Capital Resources* for additional details on our substantial capital requirements.

In December 2020, we entered into a Master Research Collaboration ("MCA") with the University Court of the University of Edinburgh (the "University of Edinburgh") to support our pipeline development and expansion, and to accelerate scientific innovation to continue to improve upon conventional gene therapy. In November 2023, the collaboration agreement was amended and extended through December 2026. The University of Edinburgh has a vibrant community of over 500 neuroscience researchers and is widely recognized as a preeminent center for neuroscience research, especially in areas of neurodegeneration and in neurodevelopmental disorders, such as Rett syndrome. For example, researchers currently in neuroscience centers at the University of Edinburgh conducted the seminal preclinical work for Rett syndrome, including discovery of the MeCP2 protein, its function as a transcriptional repressor, developing the first and most widely adopted animal model of Rett syndrome, demonstrating for the first time the reversibility of phenotypes in any neurodevelopmental disorder as well as the first ever preclinical gene therapy efforts in Rett syndrome. Under the terms of the agreement, we have the option to in-license product candidates from Dr. Stuart Cobb's laboratory. Dr. Cobb is a Professor in Translational Neuroscience at the Patrick Wild Centre and the Centre for Discovery Brain Sciences at the University of Edinburgh and also serves as our Chief Scientific Officer. Due to his position with the University of Edinburgh, he may be entitled to receive in the future a percentage of certain license-related payments from Neurogene to the University of Edinburgh in accordance with the University of Edinburgh's standard policies for professor inventors.

Impact of Global Economic Events

Uncertainty in the global economy presents significant risks to our business. We are subject to continued risks and uncertainties related to the current macroeconomic environment, including high inflation, high interest rates, changes in foreign currency exchange rates, changes in trade policies, including the implementation of tariffs, sanctions, export or import controls and other actions or the threat of such actions that restrict international trade by the United States, China or other countries, changes in domestic and global monetary and fiscal policy, volatility in financial markets, rapid changes in our regulatory landscape in the United States, including significant staffing reductions, unexpected shifts in leadership of certain federal agencies, and an uncertain legislative environment, recent bank failures, proposed or adopted federal U.S. legislation seeking to limit the provision of services in our sector by certain non-U.S. entities, geopolitical factors, including the ongoing conflicts between Russia and Ukraine and in the Middle East and the responses thereto, the impacts of climate change, and supply chain disruptions. While management is closely monitoring the impact of the current macroeconomic conditions on aspects of our business, including the impacts on our participants in our clinical trials, employees, suppliers, vendors and business partners, the ultimate extent of the direct and indirect impacts on our business remains highly uncertain and will depend on future developments and factors that continue to evolve. Most of these developments and factors are outside of our control and could exist for an extended period of time. Management will continue to evaluate the nature and extent of the potential impacts to our business, results of operations, liquidity and capital resources. Please see the section entitled *Risk Factors* for additional risks associated with global economic events.

Components of Results of Operations

Revenue

We have no products approved for sale and have never generated any revenue from product sales. We have generated licensing revenue from the recognition of upfront payments received under agreements with third parties for the disposition of legacy Neoleukin Therapeutics, Inc. ("Neoleukin") assets (the "December 2023 CVR Licensing Agreement" and the "April 2024 CVR Licensing Agreement") that are related to the legacy Neoleukin business as part of the reverse merger. See Note 9, *Commitments and Contingencies*, in the notes to the financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q for additional details regarding these licensing agreements.

Operating Expenses

Research and Development Expenses

Research and development expenses consist primarily of costs incurred in connection with the discovery and development of our product candidates. We expense research and development costs as incurred, including:

- expenses incurred to conduct the necessary discovery-stage laboratory work, preclinical studies and clinical trials required to obtain regulatory approval;
- acquired licenses and intellectual property that are accounted for as asset acquisitions and have no alternative future use;
- personnel expenses, including salaries, benefits and stock-based compensation expense for our employees engaged in research and development functions;
- costs of funding research performed by third parties, including pursuant to agreements with clinical research organizations ("CROs") that conduct our clinical trials, as well as investigative sites, consultants and CROs that conduct our preclinical and nonclinical studies;
- expenses incurred under agreements with our third-party contract development and manufacturing organizations ("CDMOs"), as well as internal manufacturing scale-up expenses, including the cost of acquiring and manufacturing preclinical study and clinical trial materials;
- fees paid to consultants who assist with research and development activities;
- expenses related to regulatory activities, including filing fees paid to regulatory agencies; and
- allocated expenses for facility costs, including rent, utilities, depreciation and maintenance.

Before a product receives regulatory approval, we record upfront and milestone payments to third parties under licensing arrangements as expense, provided that there is no alternative future use of the rights in other research and development projects.

Non-refundable prepayments for research and development costs that are paid in advance of performance are capitalized as a prepaid expense and amortized over the service period as the services are provided. Costs for certain development activities, such as outside research programs funded by us, are recognized based on an evaluation of the progress to completion of specific tasks with respect to their actual costs incurred. Payments for these activities are based on the terms of the individual arrangements, which may differ from the pattern of costs incurred, and are reflected in the financial statements as prepaid or accrued research and development expense as applicable.

We track outsourced development costs and other external research and development costs to specific product candidates on a program-by-program basis, including fees paid to CROs, CDMOs and research laboratories in connection with our preclinical development, process development, and clinical development activities. We also incur personnel and other operating expenses for research and development programs, which are presented in aggregate.

Research and development activities are central to our business model. Product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials. We expect our research and development expenses to increase significantly over the next several years as we increase personnel costs, including stock-based compensation, conduct clinical trials, including later-stage clinical trials for current and future product candidates, and prepare regulatory filings for our product candidates.

General and Administrative Expenses

General and administrative expenses consist primarily of personnel expenses, including salaries, benefits and stock-based compensation expense, for employees and consultants in executive, finance and accounting, legal, operations support, information technology and human resource functions. General and administrative expenses also include corporate facility costs not otherwise included in research and development expense, including rent, utilities, depreciation and maintenance, as well as legal fees related to intellectual property and corporate matters and fees for accounting and consulting services.

We expect that our general and administrative expense will increase in the future to support our continued research and development activities and potential commercialization efforts. These increases will likely include increased costs related to the hiring of additional personnel and fees to outside consultants, legal support and accountants, among other expenses. If any of our current or future product candidates obtains U.S. regulatory approval, we expect that we would incur significantly increased expenses associated with building a sales and marketing team, as well as an expanded regulatory and compliance function.

Interest Income

Interest income consists primarily of interest earned on our cash equivalents and short-term investments. We expect our interest income to fluctuate depending on interest rates and the amount of cash that is invested.

Income Taxes

We assess our income tax positions and record tax benefits based upon management's evaluation of the facts, circumstances, and information available at the reporting date. For those tax positions where it is more likely than not that a tax benefit will be sustained, we record the amount of tax benefit with a greater than 50% likelihood of being realized upon ultimate settlement with a taxing authority having full knowledge of all relevant information. For those income tax positions for which it is not more likely than not that a tax benefit will be sustained, no tax benefit is recognized in the financial statements.

Since inception, we have not recorded any income tax benefits for net operating losses ("NOLs") or for our research and development tax credits, as we believe, based upon the weight of available evidence, that it is more likely than not that all of our NOLs and tax credits will not be realized. Accordingly, we have established a valuation allowance against such deferred tax assets for all periods since inception.

As of December 31, 2024, we had federal and state NOL carryforwards in the amount of $319.8 million and $39.6 million, respectively, which may be available to offset future taxable income. The state NOL carryforwards will begin to expire in 2038, unless previously utilized. Most federal NOL carryforwards were generated subsequent to January 1, 2018, and therefore are able to be carried forward indefinitely. As of December 31, 2024, we also had federal research tax credit and federal orphan drug tax credit carryforwards of $7.9 million and $4.8 million, respectively, which may be used to offset future tax liabilities. These tax and orphan drug credit carryforwards begin to expire in 2039 and 2043, respectively, unless previously utilized.

On July 4, 2025, President Trump signed the OBBB Act. Included in this legislation are provisions that allow for the immediate expensing of domestic U.S. research and development expenses, a general requirement to reduce the deduction for research and development expense by any research credit taken, and other changes to the U.S. taxation of profits derived from foreign operations. We continue to evaluate the impact the new legislation will have on the consolidated financial statements and our estimated annual effective tax rate for 2025.

Results of Operations

Comparison of the Three and Six Months Ended June 30, 2025 and 2024

The following table summarizes our results of operations for the periods indicated (in thousands):

	Three Months Ended June 30,			Six Months Ended June 30,		
	2025	2024	Change	2025	2024	Change
Revenue under licensing agreements	$ —	$ 925	$ (925)	$ —	$ 925	$ (925)
Operating expenses:						
Research and development expenses	19,366	15,744	3,622	37,131	29,285	7,846
General and administrative expenses	6,715	5,315	1,400	14,869	10,553	4,316
Total operating expenses	26,081	21,059	5,022	52,000	39,838	12,162
Loss from operations	(26,081)	(20,134)	(5,947)	(52,000)	(38,913)	(13,087)
Other income (expense):						
Interest income	2,928	2,035	893	6,134	4,355	1,779
Interest expense	(1)	(4)	3	(3)	(7)	4
Other income	1,212	144	1,068	1,360	287	1,073
Other expense	(74)	(533)	459	(154)	(1,135)	981
Net loss	$ (22,016)	$ (18,492)	$ (3,524)	$ (44,663)	$ (35,413)	$ (9,250)

Revenue

For the three months ended June 30, 2025, we did not generate any revenue, as compared to $0.9 million for the three months ended June 30, 2024. For the six months ended June 30, 2025, we did not generate any revenue, as compared to $0.9 million for the six months ended June 30, 2024. We generated licensing revenue from the recognition of upfront payments received under the December 2023 CVR Licensing Agreement and the April 2024 CVR Licensing Agreement. Please see the section below entitled *Other Expenses* for a discussion on the related CVR liabilities.

Research and Development Expenses

The following table summarizes our research and development expenses for the periods indicated (in thousands):

	Three Months Ended June 30,			Six Months Ended June 30,		
	2025	2024	Change	2025	2024	Change
Program specific expenses:						
Rett syndrome	$ 7,052	$ 2,798	$ 4,254	$ 11,576	$ 4,817	$ 6,759
Batten disease	401	1,734	(1,333)	1,246	2,924	(1,678)
Early Discovery	720	1,705	(985)	2,007	3,171	(1,164)
Unallocated internal expenses:						
Personnel-related	5,125	4,557	568	10,529	9,275	1,254
Stock-based compensation	1,575	1,375	200	3,146	1,939	1,207
Manufacturing	3,635	2,815	820	6,742	5,794	948
Other	858	760	98	1,885	1,365	520
Total research and development expenses	$ 19,366	$ 15,744	$ 3,622	$ 37,131	$ 29,285	$ 7,846

Research and development expenses were $19.4 million for the three months ended June 30, 2025, as compared to $15.7 million for the three months ended June 30, 2024.

Expenses related to the Rett syndrome program increased primarily due to a $0.7 million increase in preclinical costs, $2.4 million increase in clinical trial costs related to the Phase 1/2 and pivotal clinical trial of NGN-401, and a $0.7 million increase in CMC costs. The decrease in expenses related to the Batten disease program was primarily driven by a $1.0 million decrease in clinical trial costs for the Phase 1/2 clinical trial of NGN-101 and $0.2 million decrease in clinical development costs, due to the de-prioritization of the program. The decrease in expenses related to the Early Discovery program was primarily driven by a $1.0 million decrease in preclinical costs.

The increase in unallocated internal expenses was driven primarily by higher salaries, benefits, and stock-based compensation costs due to an increase in research and development headcount, as well as an increase in consumables expense related to CMC.

Research and development expenses were $37.1 million for the six months ended June 30, 2025, as compared to $29.3 million for the six months ended June 30, 2024.

Expenses related to the Rett syndrome program increased primarily due to a $1.9 million increase in preclinical costs, $3.0 million increase in clinical trial costs related to the Phase 1/2 and pivotal clinical trial of NGN-401, and a $1.2 million increase in CMC costs. The decrease in expenses related to the Batten disease program was primarily driven by a $1.3 million decrease in clinical trial costs for the Phase 1/2 clinical trial of NGN-101 and $0.3 million decrease in clinical development costs, due to the de-prioritization of the program. The decrease in expenses related to the Early Discovery program was primarily driven by a $1.1 million decrease in preclinical costs.

As noted above, the increase in unallocated internal expenses was driven primarily by higher salaries, benefits, and stock-based compensation costs due to an increase in research and development headcount, as well as an increase in consumables expense related to CMC.

We expect that our research and development expenses will continue to increase for the foreseeable future as we advance our programs and product candidates into and through clinical development and, as we continue to develop additional product candidates, build our manufacturing capabilities and develop our EXACT technology.

General and Administrative Expenses

The following table summarizes our general and administrative expenses for the periods indicated (in thousands):

	Three Months Ended June 30,			Six Months Ended June 30,		
	2025	2024	Change	2025	2024	Change
General and administrative specific expenses:						
Personnel-related	$ 2,212	$ 1,964	$ 248	$ 4,696	$ 4,065	$ 631
Stock-based compensation	1,833	939	894	4,310	1,419	2,891
Professional and consultant fees	970	998	(28)	2,247	2,500	(253)
Office-related	620	631	(11)	1,252	1,235	17
Other	1,080	783	297	2,364	1,334	1,030
Total general and administrative expenses	$ 6,715	$ 5,315	$ 1,400	$ 14,869	$ 10,553	$ 4,316

General and administrative expenses were $6.7 million for the three months ended June 30, 2025, as compared to $5.3 million for the three months ended June 30, 2024. The increase was primarily attributable to: (i) an increase of approximately $0.2 million in personnel-related expenses, driven by an increase in headcount to support business operations, (ii) an increase of approximately $0.9 million in stock-based compensation expense, driven by an increase in headcount as well as by an increase of approximately $0.3 million related to PSUs as the first underlying performance condition was deemed probable of achievement and currently considered probable to vest, and (iii) an increase in other costs of approximately $0.3 million related to corporate related expenses and market research costs, as well as to the recovery of approximately $0.1 million related to a business email compromise attack by a third party in the prior period.

General and administrative expenses were $14.9 million for the six months ended June 30, 2025, as compared to $10.6 million for the six months ended June 30, 2024. The increase was primarily attributable to: (i) approximately $0.6 million in personnel-related expenses, driven by an increase in headcount to support business operations, (ii) an increase of $2.9 million in stock-based compensation expense, driven by an increase in headcount as well as by an increase of approximately $1.6 million related to PSUs as the first underlying performance condition was deemed probable of achievement and currently considered probable to vest, and (iii) an increase in other costs of approximately $1.0 million related to corporate related expenses and market research costs, as well as to the recovery of approximately $0.4 million related to a business email compromise attack by a third party in the prior period. These expenses were partially offset by a decrease of approximately $0.3 million in professional services and consulting fees associated with the transition from a private company to a public company in the prior period.

We anticipate that our general and administrative expenses will increase in the future to support increased research and development activities.

Interest Income

Interest income increased by $0.9 million for the three months ended June 30, 2025, as compared to the three months ended June 30, 2024. The increase was primarily due to a significant increase in the amount of our cash, cash equivalents and short-term investments driven by the November 5, 2024 private placement, which was partially offset by a moderate decrease in interest rates.

Interest income increased by $1.8 million for the six months ended June 30, 2025, as compared to the six months ended June 30, 2024. The increase was primarily due to a significant increase in the amount of our cash, cash equivalents and short-term investments driven by the November 5, 2024 private placement, which was partially offset by a moderate decrease in interest rates.

Other Income

Other income increased by $1.1 million for the three and six months ended June 30, 2025, as compared to the three and six months ended June 30, 2024, respectively. Both of the increases were primarily attributable to: (i) approximately $0.4 million in Washington state sales tax refunds receivable and (ii) approximately $0.7 million of New York state tax refunds received for the prior period amended returns.

Other Expenses

Other expenses decreased by $0.5 million for the three months ended June 30, 2025 as compared to the three months ended June 30, 2024. The decrease was primarily due to (i) approximately $0.2 million of a contingent consideration liability accrual related to the Intellectual Property CVR (as defined in Note 9, Commitments and Contingencies, in the notes to the financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q) in connection with the December 2023 Licensing Agreement in the prior period and (ii) approximately $0.3 million of a contingent consideration liability accrual related to the Sales Tax CVR for an anticipated sales tax refund from Washington state in the prior period.

Other expenses decreased by $1.0 million for the six months ended June 30, 2025 as compared to the six months ended June 30, 2024. The decrease was primarily due to (i) approximately $0.8 million of a contingent consideration liability accrual related to the Intellectual Property CVR in connection with the December 2023 Licensing Agreement and the April 2024 Licensing Agreement in the prior period and (ii) approximately $0.3 million of the accrual of a contingent consideration liability related to the Sales Tax CVR for an anticipated sales tax refund from Washington state in the prior period. This was offset by an approximate $0.1 million adjustment to the sales tax refund from Washington state for the six months ended June 30, 2025.

Liquidity and Capital Resources

Sources of Liquidity

Since inception, we have not generated any revenue from product sales and have incurred significant operating losses and negative cash flows from our operations. We expect to continue to incur significant expenses and operating losses for the foreseeable future as we advance the clinical development of our product candidates. We expect that our research and development and general and administrative costs will continue to increase significantly, including in connection with conducting clinical trials and manufacturing for our product candidates to support commercialization and providing general and administrative support for our operations, including the costs associated with operating as a public company. As a result, we will need additional capital to fund our operations, which we may obtain from additional equity or debt financings, collaborations, licensing arrangements or other sources. We believe that our existing capital resources will be sufficient to fund our operations through at least 12 months following the filing date of this Form 10-Q. See the section entitled "Risk Factors" in this Quarterly Report on Form 10-Q for additional risks associated with our substantial capital requirements.

As of June 30, 2025, we had cash, cash equivalents and short-term investments totaling $274.5 million. Since inception and through the issuance of these financial statements, we have funded our operations primarily through the sales of convertible preferred stock and common stock for net proceeds of approximately $521.9 million.

Future Capital Requirements

In order to complete the development of our product candidates and to build the sales, marketing and distribution infrastructure that management believes will be necessary to commercialize product candidates, if approved, we will require substantial additional capital. Accordingly, until such time as we can generate a sufficient amount of revenue from product sales or other sources, if ever, management expects to seek to raise any necessary additional capital through private or public equity or debt financings, loans or other capital sources, which could include income from collaborations, partnerships or other marketing, distribution, licensing or other strategic arrangements with third parties, or from grants. To the extent that we raise additional capital through equity financings or convertible debt securities, the ownership interest of our stockholders will be or could be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. Debt financing and equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, including restricting our operations and limiting our ability to incur liens, issue additional debt, pay dividends, repurchase our own common stock, make certain investments or engage in merger, consolidation, licensing, or asset sale transactions. If we raise capital through collaborations, partnerships, and other similar arrangements with third parties, we may be required to grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves. We may be unable to raise additional capital from these sources on favorable terms, or at all. Our ability to raise additional capital may be adversely impacted by potential worsening global economic conditions and the recent disruptions to, and volatility in, the credit and financial markets in the United States and worldwide resulting from macroeconomic conditions, geopolitical instability, government regulation and otherwise. The failure to obtain sufficient capital on acceptable terms when needed could have a material adverse effect on our business, results of operations or financial condition, including by requiring us to delay, reduce or curtail our research, product development or future commercialization efforts. We may also be required to license rights to product candidates at an earlier stage of development or on less favorable terms than we would otherwise choose. Management cannot provide assurance that we will ever generate positive cash flow from operating activities.

In order to continue our operations, we must achieve profitable operations and/or obtain additional equity or debt financing. Until we achieve profitability, management plans to fund our operations and capital expenditures with cash on hand and the sale and issuance of securities. We may not be successful in raising additional capital and such capital, if available, may not be on terms that are acceptable to us.

We have incurred, and expect to continue to incur, additional costs associated with operating as a public company. In addition, we anticipate that we will need substantial additional funding in connection with our continuing operations. Management bases its projections of operating capital requirements on our current operating plan, which includes several assumptions that may prove to be incorrect, and we may use all of our available capital resources sooner than management expects.

Because of the numerous risks and uncertainties associated with research, development and commercialization of product candidates, we are unable to estimate the exact amount and timing of our capital requirements. Our future funding requirements will depend on many factors, including:

- the scope, timing, progress, results, and costs of researching and developing genetic medicines, and conducting larger and later-stage clinical trials;
- the scope, timing, progress, results, and costs of researching and developing other product candidates that we may pursue;
- the costs, timing, and outcome of regulatory review of our product candidates;
- the costs of future activities, including product sales, medical affairs, marketing, manufacturing, and distribution, for any of our product candidates for which we receive marketing approval;
- the costs of manufacturing commercial-grade products and sufficient inventory to support commercial launch;
- the revenue, if any, received from commercial sale of our products, should any of our product candidates receive marketing approval;
- the cost and timing of attracting, hiring, and retaining skilled personnel to support our operations and continued growth;
- the costs of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending intellectual property-related claims;
- Our ability to establish, maintain, and derive value from collaborations, partnerships or other marketing, distribution, licensing, or other strategic arrangements with third parties on favorable terms, if at all;
- the extent to which we acquire or in-license other product candidates and technologies, if any; and
- the costs associated with operating as a public company.

A change in the outcome of any of these or other factors with respect to the development of any of our product candidates could significantly change the costs and timing associated with the development of that product candidate. Furthermore, our operating plans may change in the future, and we may need additional capital to meet the capital requirements associated with such operating plans.

Cash Flows

The following table summarizes our cash flows for the periods indicated (in thousands):

	Six Months Ended June 30,	
	2025	**2024**
Net cash used in operating activities	$ (40,236)	$ (37,543)
Net cash (used in) provided by investing activities	(37,595)	6,321
Net cash provided by (used in) financing activities	58	(6,125)
Net decrease in cash, cash equivalents and restricted cash	$ (77,773)	$ (37,347)

Cash Flows from Operating Activities

For the six months ended June 30, 2025, we used $40.2 million of cash in operating activities. Cash used in operating activities reflected our net loss of $44.7 million, a $1.8 million net decrease in our operating assets and liabilities and noncash charges of $6.2 million, which consisted primarily of $7.5 million of stock-based compensation and $1.5 million in depreciation, partially offset by $3.2 million in accretion on the held-to-maturity investments. The primary use of cash was to fund our operations related to the development of our product candidates.

For the six months ended June 30, 2024, we used $37.5 million of cash in operating activities. Cash used in operating activities reflected our net loss of $35.4 million, a $7.6 million net decrease in our operating assets and liabilities, and noncash charges of $5.5 million, which consisted primarily of $1.6 million in depreciation and $3.4 million in stock-based compensation. The primary use of cash was to fund our operations related to the development of our product candidates.

Cash Flows from Investing Activities

For the six months ended June 30, 2025, net cash flows used in investing activities consisted of purchases of investments of $149.4 million and purchases of property and equipment of $0.9 million, partially offset by proceeds from maturities of short-term investments of $112.7 million.

For the six months ended June 30, 2024, net cash flows provided by investing activities consisted of purchases of investments of $42.7 million and purchases of property and equipment of $0.5 million, partially offset by proceeds from maturities of short-term investments of $49.5 million.

Cash Flows from Financing Activities

For the six months ended June 30, 2025, net cash flows provided by financing activities were insignificant.

For the six months ended June 30, 2024, net cash flows used in financing activities consisted of $4.3 million in offering costs paid in connection with the Pre-Closing Financing and $2.9 million in transaction costs related to the Reverse Merger (defined below), partially offset by proceeds of $1.0 million from the exercise of stock options.

Contractual Obligations and Commitments

Lease Obligations

New York Headquarters Lease

We sub-lease approximately 6,000 square feet of office space for our corporate headquarters in New York, New York, with a term expiring in June 2026.

Houston Lease

We lease 42,342 square feet for a manufacturing facility in Houston, Texas. The lease expires in August 2029. We have the option to renew the lease term for two additional five-year terms. The renewal periods were not included in the lease term for purposes of determining the lease liability or right-of-use asset.

Blaine Lease in Seattle

We lease approximately 33,300 square feet of office space in Seattle, Washington that was previously used by Neoleukin for offices, a laboratory for research and development, and related uses. The lease expires on February 1, 2029, with the option to extend the lease for two additional five-year terms. The renewal periods were not included in the lease term for purposes of determining the lease liability.

Eastlake Lease in Seattle

We lease approximately 6,272 square feet of office space in Seattle, Washington, that was previously used by Neoleukin for additional office and laboratory space for research and development and related uses (the "Eastlake Lease"). The lease expires on September 30, 2026. We also assumed the existing agreement to sublease the Eastlake Lease to an unrelated third party ("Eastlake Sublease"). Pursuant to the terms of the Eastlake Sublease, we are entitled to receive a total of approximately $1.6 million in lease payments. The term of the sublease is through September 30, 2026.

Lease CVR

Each contingent value right ("CVR") distributed pursuant to the CVR Agreement, dated December 18, 2023, by and between us and the Rights Agent (the "CVR Agreement") contains the contractual right to receive certain net savings, if any, realized by June 30, 2029 in connection with certain legacy lease obligations related to our business prior to the Reverse Merger (the "Lease CVR"). As of June 30, 2025, approximately $1.2 million was recorded as a component of the contingent value rights liability arising from the Lease CVR on our condensed consolidated balance sheet. The commitment relates to Neoleukin's sublease agreement, effective October 31, 2023, for one of its properties with an unrelated third party for the remainder of the lease term. For more information on the Lease CVR, see Note 9, *Commitments and Contingencies—Lease CVR*, in the notes to the financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

Intellectual Property CVR

The December 2023 CVR Licensing Agreement and April 2024 CVR Agreement collectively account for the total Intellectual Property CVR. As of June 30, 2025, approximately $0.3 million was recorded within the contingent value rights liability as an offset arising from the Intellectual Property CVR on our condensed consolidated balance sheet due to deductions permitted under the Merger Agreement. For more information on the Intellectual Property CVR, see Note 9, *Commitments and Contingencies—Intellectual Property CVR*, in the notes to the financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

Sales Tax CVR

In accordance with the terms of the Sales Tax CVR within the CVR Agreement, we accrued a contingent consideration liability on our condensed consolidated balance sheet. The terms of the CVR Agreement include that CVR holders are eligible to receive certain net proceeds derived from an anticipated sales tax refund from Washington state relating to tax returns filed by Neoleukin prior to Closing. As of June 30, 2025, the liability in the condensed consolidated financial statements arising from the Sales Tax CVR was $0.4 million. For more information on the Sales Tax CVR, see Note 9, *Commitments and Contingencies—Sales Tax CVR*, in the notes to the financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

The following table summarizes the components of the contingent value rights liability as of June 30, 2025 and December 31, 2024 (in thousands):

	June 30, 2025		December 31, 2024	
	Current	Non-Current	Current	Non-Current
Lease CVR	$ 443	$ 738	$ 436	$ 718
Intellectual Property CVR	295	—	295	—
Sales Tax CVR	411	—	360	—
Total CVR liability	$ 1,149	$ 738	$ 1,091	$ 718

Research and Development and Manufacturing Agreements

We enter into agreements with certain vendors for the provision of goods and services, which includes manufacturing services with contract development and manufacturing organizations and development and clinical trial services with CROs. These agreements may include certain provisions for purchase obligations and termination obligations that could require payments for the cancellation of committed purchase obligations or for early termination of the agreements. The amount of the cancellation or termination payments vary and are based on the timing of the cancellation or termination and the specific terms of the agreement. These obligations and commitments are not presented separately.

License and Collaboration Agreements

License Agreement with the University of Edinburgh

In December 2020, we entered into the MCA with the University of Edinburgh. Under the MCA, we and the University of Edinburgh agreed to collaborate on certain research and development projects ("Projects"), and we agreed to provide funding for such Projects for a 40-month initial term, which term was extended in November 2023 for an additional 33 months and may be further extended by mutual agreement. In exchange for such funding, the University of Edinburgh granted us the option to exclusively license any intellectual property arising from such Projects. Under the MCA, we are obligated to pay semi-annual installment payments relating to funding of costs for personnel and lab consumables for the 40-month period. Either party may terminate the MCA for convenience upon 90 days' notice. If we terminate the MCA, we would be responsible for all non-cancellable costs and commitments related to any particular Project and any and all funding costs for any person working on such Project.

In March 2022, we exercised our option through the collaboration under the MCA, and entered into a License Agreement (the "March 2022 Edinburgh License Agreement") with the University of Edinburgh, pursuant to which we licensed certain patents and know-how related to the EXACT technology and optimized *MECP2* cassettes on an exclusive basis. Under the March 2022 Edinburgh License Agreement, we obtained an exclusive, worldwide license to the licensed patents to develop, manufacture, supply, sell, and commercialize any products that utilize the licensed patents (the "Licensed Products") in exchange for low single-digit percentage royalties on future commercial net sales of the Licensed Products. Royalties are payable on a Licensed Product-by-Licensed Product and country-by-country basis until the later of the expiration of the last licensed patent covering such Licensed Product in the country where the Licensed Product is sold, or, if no licensed patent exists or has expired in such country, then ten years from first commercial sale of such Licensed Product in such country (the "Royalty Term"). The term of the March 2022 Edinburgh License Agreement continues until the end of the Royalty Term and the expiration of all of the payment obligation thereunder. We may terminate the March 2022 Edinburgh License Agreement for convenience upon 90 days' notice. In connection with the license, we are also obligated to pay the University of Edinburgh up to $5.3 million in regulatory-related milestones and up to $25.0 million in sales-related milestones based on annual net sales of Licensed Products in excess of defined thresholds.

License Agreement with Virovek

In September 2020, we entered into a Non-Exclusive License Agreement with Virovek, Inc., pursuant to which we have a license to use certain patents and know-how on a non-exclusive basis related to our baculovirus process in exchange for low single-digit percentage royalties on future commercial net sales of each product using the baculovirus process, development milestone payments of up to $0.2 million in the aggregate, and a nonrefundable annual license fee. This agreement continues until the later of (i) the expiration of the last to expire patent right that covers the manufacture, use, offer for sale, sale, importation, export or supply of any licensed product, (ii) ten years after the first commercial sale of any licensed product, or (iii) the expiration of all regulatory or market exclusivities. We may terminate this agreement for convenience upon 60 days' notice.

License Agreement with Sigma-Aldrich Co

In January 2023, we entered into a Non-Exclusive License Agreement with Sigma-Aldrich Co. LLC, pursuant to which we have a license to certain patents and know-how on a non-exclusive basis related to certain cell lines used in our baculovirus process in exchange for a small annual fee on a product-by-product basis, payable once the first product candidate enters the clinic. In addition, on a product-by-product basis, we are obligated to pay up to $2.5 million in the aggregate for development-related milestones. This agreement remains in force for as long as we continue to possess and use the licensed technology. We may terminate this agreement for convenience upon 60 days' notice.

License Agreement with Stanford

In August 2024, we entered into a Nonexclusive License Agreement with the Board of Trustees of Leland Stanford Junior University (the "Stanford License Agreement") to license, on a non-exclusive basis, certain biological materials used in the manufacturing process of our product candidates, including NGN-401. Over the 10-year term of the Stanford License Agreement, we are obligated to pay up to $0.5 million in licensing fees. We may terminate this agreement for convenience upon 30 days' notice.

Off-Balance Sheet Arrangements

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

Critical Accounting Policies and Significant Judgments and Estimates

Our financial statements are prepared in accordance with U.S. GAAP. The preparation of the financial statements and related disclosures requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, costs and expenses, and the disclosure of contingent assets and liabilities in our financial statements. We base our estimates on historical experience, known trends and events and various other factors that management believes are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Management evaluates estimates and assumptions on a periodic basis. Our actual results may differ from these estimates. A summary of our significant accounting policies is presented in Part II, Item 8 of our Annual Report on Form 10-K for the year ended December 31, 2024. There have been no material changes to our significant accounting policies during the six months ended June 30, 2025.

Recent Accounting Pronouncements

See Note 3, *Summary of Significant Accounting Policies—Recently Issued Accounting Standards* in the notes to the condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

As a "smaller reporting company," as defined by Rule 12b-2 of the Exchange Act, and pursuant to Item 305 of Regulation S-K, we are not required to provide quantitative and qualitative disclosures about market risk.

Item 4. Controls and Procedures

Evaluation of disclosure controls and procedures.

Under the supervision and with the participation of our principal executive and our principal financial officer, our management conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, as of the end of the period covered by this report.

In designing and evaluating our disclosure controls and procedures, management recognizes that any disclosure controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Based on management's evaluation, our principal executive and our principal financial officer concluded that our disclosure controls and procedures are designed to, and are effective to, provide assurance at a reasonable level that the information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and that such information is accumulated and communicated to our management, including our principal executive and financial officer, as appropriate, to allow timely decisions regarding required disclosures.

Changes in internal control over financial reporting. There have not been any changes in our internal control over financial reporting during the quarter ended June 30, 2025 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Part II - Other Information

Item 1. Legal Proceedings

We may from time to time be named as a party to legal claims, actions and complaints, including matters involving employment, intellectual property or others. We are not presently a party to any legal proceedings that, in the opinion of our management, would reasonably be expected to have a material adverse effect on our business, financial condition, operating results or cash flows if determined adversely to us. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources, and other factors.

Item 1A. Risk Factors

Investing in shares of our common stock involves a high degree of risk. You should carefully consider the following risks and uncertainties, together with all of the other information contained in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K before making an investment decision. The occurrence of any of the following risks could materially and adversely affect our business, financial condition, reputation, or results of operations. In such case, the trading price of shares of our common stock could decline, and you may lose all or part of your investment. It is not possible to predict or identify all such risks; our operations could also be affected by factors, events or uncertainties that are not presently known to us or that we currently do not consider to present significant risks to our operations. Therefore, you should not consider the following risks to be a complete statement of all the potential risks or uncertainties that we face. Moreover, some of the factors, events and contingencies discussed below may have occurred in the past, but the disclosures below are not representations as to whether or not the factors, events or contingencies have occurred in the past, and instead reflect our beliefs and opinions as to the factors, events or contingencies that could materially and adversely affect us in the future.

Summary of Risk Factors

- We have a limited operating history, have not completed any clinical trials, and have no products approved for commercial sale, and our results may vary from quarter to quarter.
- We will require substantial additional capital to finance our operations in the future. If we are unable to raise such capital when needed, or on acceptable terms, we may be forced to delay, reduce or eliminate clinical trials, product development programs or future commercialization efforts.
- We have incurred significant losses since inception, expect to incur significant losses for the foreseeable future and may not be able to achieve or sustain profitability in the future. We have no products for sale, have not generated any product revenue and may never generate product revenue or become profitable.
- NGN-401 and our other programs are in early stages of development and may fail in development or suffer delays that materially and adversely affect their commercial viability. If we or our current or future collaborators are unable to complete development of, or commercialize, our product candidates, or experience significant delays in doing so, our business will be materially harmed.
- We are substantially dependent on the success of our most advanced product candidate, NGN-401, and our ongoing and anticipated clinical trials of NGN-401 may not be successful.
- Delays in developing our manufacturing capabilities or failure to achieve operating efficiencies from such capabilities may require us to devote additional resources and management time to manufacturing operations and may delay our product development timelines.
- We have a number of academic collaborations, and currently rely on our collaboration with the University Court of the University of Edinburgh for certain aspects of our preclinical research and development programs, including working in collaboration to discover and preclinically develop potential product candidates for our near-term future pipeline. Failure or delay of the University of Edinburgh or any other collaborator to fulfil all or part of its obligations under our agreements, a breakdown in collaboration between the parties or a complete or partial loss of the relationship would materially harm our business.
- In order to successfully implement our plans and strategies, we will need to grow the size of our organization and we may experience difficulties in managing this growth.
- The regulatory approval processes of the U.S. Food and Drug Administration (“FDA”) and other comparable foreign regulatory authorities are lengthy, time-consuming and inherently unpredictable. If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals for our product candidates, we will not be able to commercialize, or will be delayed in commercializing, such product candidates, and our ability to generate revenue will be materially impaired.

- Because gene therapy is novel and the regulatory landscape that governs any product candidates we may develop is rigorous, complex, uncertain and subject to change, we cannot predict the time and cost of obtaining regulatory approval, if received at all, for any product candidates we may develop.
- The market price of our common stock may continue to be volatile.
- We may be required to allocate resources to fulfilling the requirements of the CVR Agreement entered into in connection with the Reverse Merger (as defined below) related to certain legacy lease obligations which may take away from our core programs and create a distraction for our management and employees.
- Future sales of a substantial number of shares of our stock could cause our stock price to decline.
- Our executive officers, directors and principal stockholders have the ability to control or significantly influence all matters submitted to our stockholders for approval.

Risks Related to Our Limited Operating History, Financial Position and Capital Requirements

We have a limited operating history, have not completed any clinical trials, and have no products approved for commercial sale, and our results may vary from quarter to quarter.

We are a clinical-stage biotechnology company with limited operating history. Since our inception in 2018, we have incurred significant operating losses and have used substantially all of our resources to conduct research and development activities, preclinical studies and Phase 1/2 clinical trials of our most advanced product candidates, establish in-house manufacturing capabilities, including analytical and process development operations to support ongoing manufacturing operations, manufacture product candidates, conduct business planning, develop and maintain our intellectual property portfolio, hire personnel, raise capital, and provide general and administrative support for these activities. We have limited experience as a company in initiating, conducting or completing clinical trials. In part because of this lack of experience, we cannot be certain that our current and planned clinical trials will begin on time, meet our anticipated timelines for enrollment and data analysis, or be completed on time, if at all. In addition, while we have completed enrollment in the Phase 1/2 clinical trial of NGN-401 in patients with Rett syndrome and have begun trial initiation activities for our Embolden™ registrational trial for NGN-401 and have completed enrollment in a Phase 1/2 clinical trial of NGN-101 in patients with CLN5 Batten disease, we have not yet demonstrated our ability to successfully complete clinical trials (including Phase 3 or other pivotal clinical trials), obtain regulatory or marketing approvals, manufacture a commercial-scale product or arrange for a third party to do so on our behalf, or conduct sales, marketing and distribution activities necessary for successful product commercialization. Additionally, we expect our financial condition and operating results to continue to fluctuate significantly from period to period due to a variety of factors, many of which are beyond our control. Consequently, any predictions made about our future success or viability may not be as accurate as they could be if we had a longer operating history.

In addition, as our business grows, we may encounter unforeseen expenses, restrictions, difficulties, complications, delays and other known and unknown factors. We will need to transition at some point from a company with an early research and development focus to a company capable of supporting larger pivotal clinical trials and eventually commercial activities, including the manufacture of commercial scale product. We may not be successful in such a transition.

We will require substantial additional capital to finance our operations in the future. If we are unable to raise such capital when needed, or on acceptable terms, we may be forced to delay, reduce or eliminate clinical trials, product development programs or future commercialization efforts.

Developing biotechnology products is a long, time-consuming, expensive and uncertain process that takes years to complete. Since our inception, we have funded our operations primarily through private financings and have incurred significant recurring losses, including a cumulative net loss from inception through June 30, 2025 of $307.0 million. We expect our expenses to increase in connection with our ongoing activities, particularly as we commence trial initiation activities for our Embolden registrational clinical trial of NGN-401 in patients with Rett syndrome, with the expectation that we will also initiate additional clinical trials in the future, and continue to research, develop and conduct preclinical studies of our other potential product candidates. We also anticipate that we may have near term expenses related to NGN-101 as we continue to evaluate options for the program following the denial by the FDA of a Regenerative Medicine Advanced Therapy (“RMAT”) designation, which precludes our ability to use a streamlined registrational pathway necessary for further investment in the program.

In addition, if we obtain regulatory approval for any product candidate for commercial sale, including NGN-401, we anticipate incurring significant commercialization expenses related to product manufacturing, marketing, sales and distribution activities to launch any such product. Our expenses could increase beyond expectations if we are required by the FDA or other regulatory agencies to perform preclinical studies or clinical trials in addition to those that we currently anticipate. Because the design and outcome of our current, planned and anticipated clinical trials are highly uncertain, we cannot reasonably estimate the actual amount of funding that will be necessary to successfully complete the development and commercialization of any product candidate we develop. Our future capital requirements depend on many factors, including factors that are not within our control.

We have incurred and expect to continue to incur additional costs associated with operating as a public company, and we do not anticipate achieving any significant revenue in the near term given the development stage of our product candidates. Accordingly, we will require substantial additional funding to continue our operations. Based on our current operating plan, we believe that our existing cash, cash equivalents and short-term investments should be sufficient to fund our operations into early 2028. This estimate is based on assumptions that may prove to be materially wrong, and we could deplete our available capital resources sooner than we currently expect. Our future capital requirements will depend on many factors, including:

- the timing and progress of preclinical and clinical development activities, including any impact to our NGN-401 clinical trial activities relating to our participation in the FDA's Support for clinical Trials Advancing Rare disease Therapeutics ("START") program and the RMAT program;
- the number and scope of preclinical and clinical programs we pursue to develop our gene therapy candidate pipeline and EXACT (Expression Attenuation via Construct Timing) platform;
- our ability to secure appropriate animal models for the conduct of investigational new drug ("IND")-enabling studies in a timely and financially feasible manner, especially large animal models, such as non-human primates ("NHPs") needed for toxicology studies;
- our ability to establish an acceptable safety profile with IND-enabling toxicology studies to enable clinical trials;
- successful patient enrollment in, and the initiation and completion of, larger and later-stage clinical trials;
- the number of subjects that participate in clinical trials and per subject trial costs;
- the number and extent of trials required for regulatory approval;
- the countries in which the trials are conducted;
- the length of time required to enroll eligible subjects in clinical trials;
- the drop-out and discontinuation rate of subjects;
- potential additional safety monitoring requested by regulatory agencies;
- the duration of subject participation in the trials and follow-up;
- the extent to which we encounter any serious adverse events in our clinical trials;
- the timing of receipt of regulatory approvals from applicable regulatory authorities, including those required to initiate clinical trials;
- the timing, receipt and terms of any marketing approvals and post-marketing approval commitments from applicable regulatory authorities;
- the extent to which we establish collaborations, strategic partnerships, or other strategic arrangements with third parties, if any, and the performance of any such third party;
- the scale up of our clinical and regulatory capabilities, including establishing our current good manufacturing practices ("cGMP") manufacturing capabilities to support expansion of our pipeline and future registration-enabling clinical trials, and obtaining cGMP material for clinical trials or potential commercial sales;
- hiring and retaining research, clinical, regulatory, manufacturing (including quality control and quality assurance) and administrative personnel;
- our arrangements with third-party contract development and manufacturing organizations ("CDMOs") and contract research organizations ("CROs");
- the outfitting and validation of our cGMP manufacturing facility;
- the impact of any business interruptions to our operations or to those of the third parties with whom we work; and
- obtaining, maintaining, defending and enforcing patent claims and other intellectual property rights.

We do not have any committed external sources of funds. We have filed an S-3 Registration Statement for the sale of up to $300.0 million in of any combination of our common stock, preferred stock, debt securities, warrants, or units, and may conduct one or more sales of securities pursuant to such registration statement from time to time. We have also entered into an at the market ("ATM") Sales Agreement (the "Sales Agreement") with Leerink Partners LLC ("Leerink"), pursuant to which, from time to time, we may offer and sell through Leerink up to $150.0 million of the common stock registered under the shelf registration statement pursuant to one or more "at the market" offerings. However, sales of our common stock under the Sales Agreement with Leerink are subject to business, economic or competitive uncertainties and contingencies, and adequate additional financing may not be available to us on acceptable terms, or at all. We may be required to or choose to seek additional funds sooner than planned through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources. Such financings may dilute our stockholders or the failure to obtain such financing may restrict our operating activities. Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our business. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences and anti-dilution protections that adversely affect your rights as a stockholder. Debt financing may result in imposition of debt covenants, increased fixed payment obligations or other restrictions that may affect our business. If we raise additional funds through upfront payments or milestone payments pursuant to future collaborations with third parties, we may have to relinquish valuable rights to product development programs, or grant licenses on terms that are not favorable to us. Additional capital may not be available in sufficient amounts or on reasonable terms, if at all. Our ability to raise additional capital may be adversely impacted by global macroeconomic conditions, including rising interest rates, escalating trade tensions and restrictions, including tariffs, geopolitical instability, changes in government regulations and significant volatility in the credit and financial markets in the United States and worldwide, particularly in the biotechnology and biopharmaceutical industries, over which we may have no or little control. Our failure to raise capital as and when needed or on acceptable terms would have a negative impact on our financial condition and our ability to pursue our business strategy, and we may have to delay, reduce the scope of, suspend or eliminate clinical trials, product development programs or future commercialization efforts.

We have incurred significant losses since inception, expect to incur significant losses for the foreseeable future and may not be able to achieve or sustain profitability in the future. We have no products for sale, have not generated any product revenue and may never generate product revenue or become profitable.

Investment in biotechnology product development is a highly speculative undertaking and entails substantial upfront expenditures and significant risks that any program will fail to demonstrate adequate efficacy or potency or an acceptable safety profile, gain regulatory approval and become commercially viable. We have no products approved for commercial sale, have not generated any revenue from product sales to date, and continue to incur significant research and development and other expenses related to our ongoing operations. We do not expect to generate product revenue unless or until we successfully complete clinical development and obtain regulatory approval of, and then successfully commercialize, at least one product candidate. We may never succeed in these activities and, even if we do, we may never generate product revenue or revenues that are significant or large enough to achieve profitability. If we are unable to generate sufficient revenue through the sale of any approved products, we may be unable to continue operations without additional funding.

We have incurred significant net losses in each period since we commenced operations in 2018. Our net loss was $44.7 million for the six months ended June 30, 2025 and our cumulative net loss from inception as of June 30, 2025 was $307.0 million. We expect to continue to incur significant losses for the foreseeable future. Our operating expenses and net losses may fluctuate significantly from quarter to quarter and year to year. We anticipate that our expenses will increase substantially if and as we:

- advance our existing and future programs through preclinical and clinical development, including expansion into additional indications;
- seek to identify additional programs and additional product candidates;
- continue to develop our gene therapy product candidate pipeline and our EXACT platform;
- maintain, expand, enforce, defend and protect our intellectual property portfolio;
- seek regulatory and marketing approvals for product candidates;
- seek to identify, establish and maintain additional collaborations and license agreements, including those which may enhance the biodistribution and delivery of our product candidates;
- ultimately establish a sales, marketing and distribution infrastructure to commercialize any biological products for which we may obtain marketing approval, either by ourselves or in collaboration with others;
- generate revenue from commercial sales of products for which we receive marketing approval;
- hire additional personnel, including research and development, clinical and commercial;
- add operational, financial and management information systems and personnel to support further expansion and operation as a public company;
- acquire or in-license products, intellectual property and technologies which may enhance our current technology; and
- establish commercial-scale cGMP capabilities through our own or third-party manufacturing facilities.

In addition, our expenses will increase if, among other things, we are required by the FDA or other regulatory authorities to perform trials or studies in addition to, or different than, those that we currently anticipate, there are any delays in completing our clinical trials or the development of any product candidates, or there are any third-party challenges to our intellectual property or we need to defend against any intellectual property-related claim.

Even if we obtain marketing approval for, and are successful in commercializing, one or more product candidates, we expect to incur substantial additional research and development and other expenditures to develop and market additional programs and/or to expand the approved indications of any marketed product. We may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenue.

Our failure to become profitable would decrease our value and could impair our ability to raise capital, maintain our research and development efforts, expand our business and/or continue our operations. A decline in our value could also cause you to lose all or part of your investment.

Risks Related to Discovery, Development and Commercialization

We face competition from entities that have developed or may develop programs for the diseases we plan to address with NGN-401 and other product candidates in development.

The development and commercialization of biological products is highly competitive. If approved, NGN-401 or any other product candidates we may develop will face significant competition and our failure to effectively compete may prevent us from achieving significant market penetration. We compete with a variety of multinational biopharmaceutical companies, specialized biotechnology companies and emerging biotechnology companies, as well as academic institutions, governmental agencies, and public and private research institutions, among others. Many of the companies with which we are currently competing or will compete against in the future have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals, and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical and biotechnology industry may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, NGN-401 and any other product candidates we may develop.

As described in *Business—Competition* in our Annual Report on Form 10-K, our competitors have developed, are developing or may develop programs or clinical stage products competitive with NGN-401 or our other earlier stage product candidates. Competitive therapeutic treatments include those that have already been approved and accepted by the medical community for Rett syndrome and any new treatments for Rett syndrome. Our success will depend partially on our ability to develop and commercialize products that have a competitive safety, efficacy or potency, dosing and/or presentation profile. Our commercial opportunity and success will be reduced or eliminated if competing products are safer, more effective or potent, have a more attractive or less invasive dosing profile or presentation or are less expensive than any products we may develop, or if competitors develop competing products that enter the market more quickly than we are able to, if we are able to at all, and are able to gain market acceptance.

NGN-401 and our preclinical programs are in early stages of development and may fail in development or suffer delays that materially and adversely affect their commercial viability. If we or our current or future collaborators are unable to complete development of, or commercialize, our product candidates, or experience significant delays in doing so, our business will be materially harmed.

We have no products on the market and while we have completed enrollment in our Phase 1/2 clinical trial of NGN-401 and begun trial initiation activities for our Embolden registrational trial, NGN-401 is still in the early stages of clinical development. In addition, we announced that unless we are able to find an alternative pathway for advancement, we will need to discontinue our NGN-101 program following the denial of RMAT designation for NGN-101 by the FDA, which would preclude a streamlined path to regulatory approval.

Our other programs are in early stages of preclinical development and we expect to expand the majority of our resources on our Rett program for the near future, which may delay the development plans for our pipeline. As a result, we expect it will be many years before we commercialize our product candidates and ultimately may not be successful in commercializing any of our product candidates. Our ability to achieve and sustain profitability depends on obtaining regulatory approvals for, and successfully commercializing, our lead product candidate NGN-401 or other product candidates, either alone or with third parties, and we cannot guarantee that we will ever obtain regulatory approval for any product candidates we may develop.

We have limited experience as a company in conducting and managing the clinical trials necessary to obtain regulatory approvals, including approval by the FDA or comparable foreign regulatory authorities. We have not yet demonstrated our ability to obtain regulatory approvals, manufacture a commercial scale product or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization. Before obtaining regulatory approval for the commercial distribution of product candidates, we or an existing or future collaborator must conduct extensive preclinical tests and clinical trials to demonstrate the safety, purity and efficacy or potency in humans of such product candidates.

Following denial by the FDA of our RMAT application for NGN-101 for CLN5 Batten disease in November 2024, we disclosed that we do not expect to move forward with that program at this time. Given the rarity of the disease, continued investment in the program was predicated on alignment on a streamlined registrational pathway with the FDA. Therefore, we submitted an RMAT application to the FDA. Despite our belief that we met the standard of preliminary clinical evidence required to obtain an RMAT designation, the RMAT application was denied. Similar challenges may prevent our success with or increase the cost of other current, planned or future clinical trials. We or our collaborators may experience delays in initiating or completing clinical trials, and also may experience unforeseen events during, or as a result of, any current or future clinical trials that could delay or prevent our ability to receive marketing approval or commercialize NGN-401 or any other product candidates, including:

- regulators or institutional review boards (“IRBs”), the FDA or ethics committees may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- we may experience delays in reaching, or may fail to reach, agreement on acceptable terms with prospective trial sites and prospective CROs, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- the observation of an actual or suspected unexpected serious adverse reaction, serious adverse events, or adverse events of special interest could result in a partial or complete clinical hold for an unpredictable length of time, delay or halt future enrollment, require increased staggering between patient dosing, require dose reductions that could adversely affect the anticipated efficacy or potency product profile, or require a program discontinuation;
- clinical trial sites may fail to meet enrollment targets, may deviate from trial protocol, or may experience patients dropping out of a trial;

- clinical trials of any product candidates may fail to show safety or efficacy or potency, or produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional preclinical studies or clinical trials or we may decide to abandon product development programs;
- the number of subjects required for clinical trials of any of our product candidates may be larger than we anticipate, especially if the effect size observed in future clinical data from a Phase 1/2 clinical trial is small or is difficult to ascertain relative to natural history as a comparator, or if regulatory authorities require completion of a sham-controlled clinical trial;
- enrollment in clinical trials may be slower than we anticipate or subjects may drop out of clinical trials or fail to return for post-treatment follow-up at a higher rate than we anticipate;
- our third-party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all, or may deviate from the clinical trial protocol or drop out of the trial, which may require that we add new clinical trial sites or investigators;
- we may elect to, or regulators, independent data and safety monitoring boards ("DSMBs"), IRBs or ethics committees may require that we or our investigators suspend or terminate clinical research or trials, or delay further recruitment, enrollment or dosing of subjects in clinical trials or specific trial sites, for various reasons, including noncompliance with regulatory requirements, internal processes or protocols of the relevant review body, a finding that the participants in our trials are being exposed to unacceptable health risks, or any other development that may impact the benefit-risk assessment of our product candidates;
- the cost of clinical trials of any of our product candidates may be greater than we anticipate;
- the quality of our product candidates or other materials necessary to conduct clinical trials of our product candidates may be inadequate to initiate or complete a given clinical trial;
- we may be unable to manufacture sufficient quantities at adequate scales of our product candidates for use in clinical trials;
- reports from clinical testing of other therapies may raise safety, efficacy or potency concerns about our product candidates;
- we may fail to establish an appropriate safety profile for a product candidate based on clinical or preclinical data for such product candidate and data emerging from other therapies in the same class as our product candidates; and
- the FDA or other regulatory authorities may require us to submit additional data, such as long-term toxicology studies, or impose other requirements before permitting us to initiate a clinical trial.

If safety concerns develop with respect to our product candidates or clinical trial designs, we may be delayed in our development plans as we may need to pause our enrollment in a clinical trial, revise our trial designs, investigate potential safety developments, or take other measures that may increase the amount of time and resources required to bring our product candidates forward. For example, on November 11, 2024, we were advised of a severe adverse event ("SAE") experienced by a participant in the 3E15 vg dose of our Phase 1/2 clinical trial of NGN-401 for the treatment of Rett syndrome. The participant subsequently died following complications from a rare and life-threatening hyperinflammatory syndrome associated with systemic exposure to high doses of adeno-associated virus ("AAV"). The FDA completed a review of the safety data for NGN-401 and allowed us to continue with the Phase 1/2 trial using the 1E15 vg dose and the same immunosupression regime. We paused further use of the 3E15 vg dose upon initial notification of the SAE and made the determination to remove that dose level from the trial protocol as we do not plan to enroll any further participants at the 3E15 vg dose level.

Commencing clinical trials in the United States is subject to acceptance by the FDA of an IND or, if commenced in other jurisdictions, acceptance by the comparable foreign regulatory agency of a similar application, as well as finalizing the trial design. In the event that the FDA or applicable foreign regulatory agency requires us to complete additional preclinical studies, or we are required to satisfy other regulatory requests prior to commencing clinical trials, the start of our clinical trials may be delayed. Even after we receive and incorporate guidance from these regulatory authorities, the FDA or other regulatory authorities could disagree that we have satisfied their requirements to commence any clinical trial or change their position on the acceptability of our trial design or the clinical endpoints selected, which may require us to complete additional preclinical studies or clinical trials, delay the enrollment of our clinical trials or impose stricter approval conditions than we currently expect. There are equivalent processes and risks applicable to clinical trial applications in other jurisdictions, including the United Kingdom ("UK"), Australia and the European Union ("EU").

We may not have the financial resources to continue development of, or to modify existing collaborations or enter into new collaborations for, a product candidate if we experience any issues that delay or prevent regulatory approval of, or our ability to commercialize, NGN-401 or any other product candidates we are developing or may develop in the future. We or our current or future collaborators' inability to complete development of, or commercialize, NGN-401 or any other product candidates or significant delays in doing so, could have a material and adverse effect on our business, financial condition, results of operations and prospects.

We currently utilize adeno-associated virus serotype 9 ("AAV9") capsid for delivery of therapeutic transgenes to deliver our product candidates, which may limit the safety, purity, and efficacy or potency of such product candidates.

Our current approach is to identify, develop and commercialize gene therapy product candidates using an AAV9 capsid for delivery of therapeutic transgenes to certain kinds of cells.

Although AAV9 has been tested in numerous clinical trials and is an approved serotype for at least one gene therapy product, we cannot be certain that our AAV9 product candidates will successfully advance through preclinical studies and clinical trials, or that they will not cause significant adverse events or toxicities. For more information, please refer to the risk factor below titled "*Participants in our clinical trials may experience undesirable side effects, which could cause delays or prevent regulatory approval of our product candidates, limit the commercial potential or create significant negative consequences to our development plans, even if such side effects are ultimately determined not to be attributable or possibly attributable to our product candidates*".

In November 2024, a participant who had been recently dosed at the 3E15 vg dose of NGN-401 in our Phase 1/2 clinical trial for the treatment of Rett syndrome experienced an SAE consistent with known risks of AAV gene therapy and ultimately died from this complication. While this reaction was very rare, we cannot ensure that other SAEs related to the use of AAV9 will not occur, or that we will not experience delays or other negative impacts to our clinical trial related to this or other AAV-related SAEs. We also cannot be certain that we will be able to avoid triggering toxicities in our future preclinical studies or clinical trials or that our chosen routes of administration to deliver such therapies will not cause unforeseen side effects or other challenges. Although AAV9 has been shown to facilitate biodistribution and cell transduction to the central nervous system ("CNS"), the potentially limited levels of AAV9 transduction of cells in the CNS may also limit the potential efficacy or potency of any of our product candidates, including NGN-401.

Participants in our clinical trials may experience undesirable side effects, which could cause delays or prevent regulatory approval of our product candidates, limit the commercial potential or create significant negative consequences to our development plans, even if such side effects are ultimately determined not to be attributable or possibly attributable to our product candidates.

Our primary product candidates, including NGN-401 for the treatment of Rett syndrome, are AAV-based gene therapies. AAV-based gene therapies in development or approved for use carry a risk of certain adverse side effects, known and unknown, including the potential for inflammatory events such as heightened innate or adaptive immune reactions in response to the presence of the AAV vector, including the development of a T-cell and/or B-cell immune response, complement system activation, thrombotic microangiopathy, thrombocytopenia, toxicity due to damage of the dorsal root ganglia, loss of nerve conductivity with or without the diminishment or loss of reflexes and sensory symptoms, increased liver enzymes and liver toxicity, organ damage to kidneys or the heart, or in rare cases, death. In addition, some participants in our AAV-based gene therapy clinical trials may have pre-existing conditions, such as diminished lean muscle mass, impaired function of biological systems or vital organs, or recent viral infections, or complications relating to their genetic makeup, and, as such, those participants may present a different risk profile and may have an increased potential for serious adverse events such as a heightened immune response, the re-activation of a viral infection due to immunosuppression measures that are taken in conjunction with administration of AAV-based gene therapy, or a diminished capacity to withstand treatment-related side effects that might be mild if they were to present in another participant. Because of the novel nature of gene therapy in general and specifically AAV-based gene therapy, not all side effects may have been discovered, and we may not be able to identify all of the increased risk factors for our participants, and additional unexpected serious adverse events may occur as a result. In addition, due to components of our product candidates used to carry the genetic materials, it is possible that some participants could develop delayed side effects from treatment. There can also be significant variability in how patients respond to gene therapy, especially in a mosaic disease presentation like Rett syndrome in females where some of the cells carry a correct copy of the DNA sequence for the impacted gene while other cells have a mutated variant. As a result, some patients may not respond as well to gene therapy as others.

Serious adverse events related to our trial or to other clinical trials using AAV-based gene therapy, even if those other trials are not related to our product candidates or targeted disease states, and even if such adverse events are not ultimately attributable to the relevant product candidates or products, may result in unfavorable public sentiment about our clinical trial and our product candidates, increased government regulation, potential regulatory delays for approval of our product candidates, stricter labeling requirements, the imposition of additional monitoring of our products if they are approved, challenges in enrolling patients in our clinical trials and a decrease in demand for our product candidates.

If our product candidates are believed to be or shown to be associated with side effects that significantly alter the benefit-risk determination of any of our product candidates, we may not be able to continue development of that product candidate. Some product candidates that have shown positive safety results in early clinical testing have later been found to cause side effects that required the abandonment of further development of that product candidate. We may also be required to delay or slow the development of a particular product candidate if there are side effects whose cause is unclear or uncertain in order to further understand the nature of such side effects, which could materially impact our plans for development and financial position.

We intend to identify and develop novel gene therapy product candidates, which makes it difficult to predict the time, cost and potential success of product candidate development.

We have invested in early-stage research and development with the goal of identifying and developing additional product candidates. Our future success may depend in part on the successful development of novel therapeutic approaches, including new therapies that may be able to use our EXACT technology or other transgene regulation technology. However, while our preclinical research and clinical trials may initially show promise in identifying potential product candidates, they may ultimately fail to yield product candidates for a number of reasons. For example, although EXACT is designed to deliver therapeutic levels of transgene while avoiding overexpression toxicity and off-target effects, there can be no assurance that any EXACT transgene regulation will result in product candidates that are shown in clinical trials to be safe, pure, and effective or potent.

To date, very few products that utilize gene transfer have been approved in the United States, Europe or other markets, and no products have been approved using our EXACT technology or technology similar to it. There have been a limited number of clinical trials of gene transfer technologies, with only very few product candidates ever approved by the FDA or comparable foreign regulatory authorities.

As a result, it is difficult for us to predict the time and cost of product candidate development, and we cannot predict whether the application of our approach to gene therapy will result in the identification, development, and regulatory approval of any product candidates, or that other gene therapy programs will not be considered better or more attractive. There can be no assurance that any development problems we experience in the future related to our current gene therapy approaches or product candidates or any of our research programs will not cause significant delays or unanticipated costs, or that such development problems can be solved. Research programs to identify new product candidates require substantial technical, financial, and human resources. If we are unable to identify suitable gene therapy product candidates for preclinical and clinical development in a cost-effective manner, we may not be able to successfully implement this portion of our business strategy, and may have to delay, reduce the scope of, suspend or eliminate one or more of our current or future product candidates, clinical trials or future commercialization efforts, which would negatively impact our financial condition.

The disorders we seek to treat have low prevalence and it may be difficult to identify and enroll patients with these disorders. If we experience delays or difficulties in the enrollment and/or maintenance of patients in clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

Successful and timely completion of clinical trials will require that we enroll and maintain a sufficient number of patients. Patient enrollment is affected by many factors, including the size and nature of the patient population and competition for patients with other trials. Genetic diseases generally, and especially the rare diseases for which some of our current product candidates are targeted, have low incidence and prevalence. For example, we estimate global incidence of Rett syndrome to be approximately one in 10,000 live female births. Accordingly, it may be difficult for us to identify and timely recruit a sufficient number of eligible patients to conduct our clinical trials. Further, any natural history studies that we or our collaborators may conduct may fail to provide us with patients for our clinical trials because patients enrolled in the natural history studies may not be good candidates for our clinical trials, or may choose to not enroll in our clinical trials.

Trials may be subject to delays as a result of patient enrollment taking longer than anticipated or patient withdrawal. We may not be able to initiate or continue clinical trials for our product candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA, the Medicines and Healthcare products Regulatory Agency ("MHRA") in the United Kingdom, the Therapeutic Goods Association ("TGA") in Australia, the European Medicines Agency ("EMA") or other foreign regulatory authorities. We cannot predict how successful we will be at enrolling subjects in future clinical trials. Subject enrollment is affected by other factors including:

- the eligibility criteria for the trial in question;
- the timely diagnosis of disease to meet such eligibility criteria;
- the size of the patient population and process for identifying patients;
- the perceived risks and benefits of the product candidate in the trial, especially by clinician experts and patient advocacy organizations, including relating to AAV9-based gene therapy, which may evolve over time as more AAV-based gene therapy trials are conducted, and intracerebral spinal fluid delivery system;
- the availability of competing commercially available therapies and other competing therapeutic candidates' clinical trials;
- the willingness of caregivers to enroll their children in our clinical trials;
- the efforts to facilitate timely enrollment in clinical trials;
- potential disruptions caused by pandemics or other public health crises, including difficulties in initiating clinical sites, enrolling and retaining participants, diversion of healthcare resources away from clinical trials, travel or quarantine policies that may be implemented, and other factors;
- the patient referral practices of physicians;
- the ability to monitor patients adequately during and after treatment; and
- the proximity and availability of clinical trial sites for prospective patients.

Even if we are able to enroll a sufficient number of patients in our clinical trials, we may have difficulty maintaining enrollment of such patients. Our inability to enroll or maintain a sufficient number of patients would result in significant delays in completing clinical trials or receipt of marketing approvals and increased development costs, or may require us to abandon one or more clinical trials altogether.

We are substantially dependent on the success of our most advanced product candidate, NGN-401, and our ongoing and anticipated clinical trials of NGN-401 may not be successful.

Our future success is substantially dependent on our ability to timely obtain marketing approval for, and then successfully commercialize, our most advanced product candidate, NGN-401. We are investing a majority of our efforts and financial resources into the research and development of this product candidate, as we are currently conducting a Phase 1/2 clinical trial of NGN-401 in patients with Rett syndrome. Based on the initial interim positive clinical trial data from our 1E15 vg dose of NGN-401 in our Phase 1/2 clinical trial for the treatment of Rett syndrome and regulatory concurrence on key elements of our proposed trial design, we have begun trial initiation activities for our Embolden registrational trial for NGN-401.

NGN-401 will require additional clinical development, evaluation of clinical, preclinical and manufacturing activities, marketing approval in multiple jurisdictions, substantial investment and significant marketing efforts before we generate revenues from product sales, if any. We are not permitted to market or promote this product candidate, or any other product candidates we may develop, before we receive marketing approval from the FDA and/or comparable foreign regulatory authorities, and we may never receive such marketing approvals.

The success of NGN-401 will depend on a variety of factors. We do not have complete control over many of these factors, including certain aspects of clinical development and the regulatory submission process, potential threats to our intellectual property rights and the manufacturing, marketing, distribution and sales efforts of any future collaborator. Accordingly, we cannot guarantee that we will ever be able to generate revenue through the sale of this product candidate, even if approved. If we are not successful in commercializing NGN-401, or are significantly delayed in doing so, our business will be materially harmed.

We may not be successful in identifying and advancing a strategy to continue the development of NGN-101 for CLN5 Batten disease, and in the meantime, may incur additional costs as we continue the post-dosing phases of our clinical trial for NGN-101.

In November 2024, we announced that we do not expect to move forward with the NGN-101 CLN5 Batten disease gene therapy program at the present time because of an inability to align on a streamlined registrational pathway with the FDA for that product candidate, but that we would continue to evaluate options for that program. We may consider a range of potential alternatives for the program, which could include continuing to discuss possibilities for a streamlined pathway to registration with the FDA, looking for a partner or out-licensing the product candidate entirely, but there can be no assurance that we will find any alternative to move the program forward.

In addition, while we have completed dosing in the Phase 1/2 clinical trial of NGN-101 for CLN5 Batten disease, we do intend to continue to follow the patients who received treatment in the clinical trial and therefore may continue to incur certain incremental costs related to the continued observations in that clinical trial, even if we are not able to find a future path to commercialization for this product candidate.

Our programs are focused on the development of therapeutics for patients with neurological diseases, which is a rapidly evolving area of science, and the approach we are taking to discover and develop product candidates is novel and may never lead to approved or marketable products.

The discovery and development of therapeutics for patients with neurological diseases is an emerging field, and the scientific discoveries that form the basis for our efforts to discover and develop product candidates are relatively new. The scientific evidence to support the feasibility of developing product candidates based on these discoveries is both preliminary and limited. Although we believe, based on our preclinical work, that our programs have the potential to be disease-modifying therapies, clinical results may not confirm this hypothesis or may only confirm it for certain alterations or certain indications. The patient populations for our product candidates are limited to those with specific neurological diseases. We cannot be certain that the patient populations for each specific disease will be large enough to allow us to successfully obtain approval and commercialize our product candidates and achieve profitability. Further, our Phase 1/2 clinical trial of NGN-401 involves, and our Embolden registrational trial will involve, a small patient population. Because of the small sample sizes, the expansion of our clinical trial to an adolescent/adult cohort and the heterogeneity of the disease state, the results of this trial may not be indicative of results of future clinical trials.

If we do not achieve our projected development goals in the timeframes we announce and expect, the commercialization of NGN-401 or any other product candidates may be delayed and, as a result, our stock price may decline.

From time to time, we estimate the timing of the anticipated accomplishment of various scientific, clinical, regulatory and other product development goals, which we sometimes refer to as milestones. These milestones may include the commencement or completion of scientific studies and clinical trials and the submission of regulatory filings. From time to time, we may publicly announce the expected timing of some of these milestones. All of these milestones are and will be based on numerous assumptions. The actual timing of these milestones can vary dramatically compared to our estimates, in some cases for reasons beyond our control. If we do not meet these milestones as publicly announced, or at all, the commercialization of NGN-401 or any other product candidates may be delayed or never achieved and, as a result, our stock price may decline.

Preclinical and clinical development involves a lengthy and expensive process that is subject to delays and uncertain outcomes, and results of earlier studies and trials may not be predictive of future clinical trial results. If our preclinical studies and clinical trials are not sufficient to support regulatory approval of any of our product candidates, we may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development of such product candidate.

Before obtaining marketing approval from regulatory authorities for the sale of any product candidate, we must complete preclinical studies, which are a lengthy, time-consuming and expensive process with a high risk of failure. The length of time of such testing may vary substantially according to the type, complexity and novelty of the program, and often can be several years or more per program. Delays associated with programs for which we are conducting preclinical testing and studies may cause us to incur additional operating expenses. For example, we depend on the availability of NHPs to conduct certain preclinical studies that we are required to complete prior to submitting an IND and initiating clinical development. A sustained global shortage of NHPs available for biological product development could cause the cost of obtaining NHPs for our future preclinical studies to increase significantly and result in delays to our development timelines. However, after conducting preclinical studies, we must then conduct extensive clinical trials to demonstrate the safety, purity, and efficacy or potency of our product candidate in humans. Our clinical trials may not be conducted as planned or completed on schedule, if at all.

Furthermore, failure can occur at any time during the preclinical study or clinical trial process, and the outcome of preclinical studies and early-stage clinical trials may not be predictive of the success of later clinical trials, especially as our initial clinical trials do not contain a control arm. In addition, we have designed our initial clinical trials with relatively small cohorts before expanding in size and dosing in subsequent cohorts. If safety issues arise in an early cohort, we may be delayed or prevented from dose escalating or subsequently expanding into larger trial cohorts. For example, on November 11, 2024, we were advised of an SAE experienced by a recently dosed participant at the 3E15 vg dose in our Phase 1/2 clinical trial of NGN-401 for the treatment of Rett syndrome. The participant subsequently died following complications from a rare and life threatening hyperinflammatory syndrome associated with systemic exposure to high doses of AAV. The FDA completed a review of the safety data for NGN-401 and allowed us to proceed with the Phase 1/2 trial using the 1E15 vg dose, although we decided to revise our trial protocol before resuming dosing, and have removed the 3E15 vg dose level from the trial protocol as we do not plan to enroll any further participants at the that dose level.

Moreover, preclinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that have believed their product candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain marketing approval of their product candidates. Earlier gene therapy clinical trials conducted by others also utilized AAV vectors. However, these studies should not be relied upon as evidence that our planned clinical trials will succeed. In addition, we expect to rely on patients, caregivers and clinicians to provide feedback on measures, which are subjective and inherently difficult to evaluate. These measures can be influenced by factors outside of our control, and can vary widely from day to day for a particular patient, and from patient to patient or caregiver to caregiver and from site to site within a clinical trial.

We cannot be sure that the FDA or comparable foreign regulatory authorities will agree with our clinical development plan. We have completed enrollment in our Phase 1/2 clinical trial of NGN-401 in patients with Rett syndrome and have commenced trial initiation activities in our Embolden registrational trial for NGN-401 based on substantial alignment with the FDA on trial design. However, if the FDA or any comparable regulatory authorities require us to conduct additional trials or enroll additional patients, our development timelines may be delayed, or we may not be able to pursue further development due to such delays. For example, in November 2024, we announced that the Company does not expect to move forward with the NGN-101 for CLN5 Batten disease gene therapy program at this time. Given the rarity of the disease, continued investment in the program was predicated on alignment on a streamlined registrational pathway with the FDA. To support a streamlined pathway, we submitted an RMAT application to the FDA. Despite our belief that we met the standard of preliminary clinical evidence required to obtain an RMAT designation, the RMAT application was denied.

We cannot be sure that submission of an IND application, clinical trial application ("CTA") or similar application will result in the FDA or comparable foreign regulatory authorities, as applicable, allowing clinical trials to begin in a timely manner, if at all. Moreover, even if these trials begin, issues may arise that could cause regulatory authorities to require us to suspend or terminate such clinical trials. Events that may prevent successful or timely initiation or completion of clinical trials include: inability to generate sufficient preclinical, toxicology or other *in vivo* or *in vitro* data to support the initiation or continuation of clinical trials; delays in reaching a consensus with regulatory authorities on study design or implementation of the clinical trials; delays or failure in obtaining regulatory authorization to commence a trial; delays in reaching agreement on acceptable terms with prospective CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and clinical trial sites; delays in identifying, recruiting and training suitable clinical investigators; delays in obtaining required IRB approval at each clinical trial site; difficulties in patient enrollment in our clinical trials for a variety of reasons; delays related to safety concerns; delays in manufacturing, testing, releasing, validating or importing/exporting sufficient stable quantities of our product candidates for use in clinical trials or the inability to do any of the foregoing; failure by our CROs, other third parties or us to adhere to clinical trial protocols; failure to perform in accordance with the FDA's or any other regulatory authority's good clinical practices ("GCPs") or applicable regulatory guidelines in other countries; changes to the clinical trial protocols; clinical sites deviating from trial protocol or dropping out of a trial; changes in regulatory requirements and guidance that require amending or submitting new clinical protocols; selection of clinical endpoints that require prolonged periods of observation or analyses of resulting data; transfer of manufacturing processes to larger-scale facilities operated by a CDMO and delays or failure by our CDMOs or us to make any necessary changes to such manufacturing process and demonstrate comparability to materials used in earlier clinical phases; and third parties being unwilling or unable to satisfy their contractual obligations to us.

We could also encounter delays if a clinical trial is placed on clinical hold, suspended or terminated by us, the IRBs of the institutions in which such trials are being conducted, or the FDA, the competent authorities and/or ethics committees of the UK, Australia, EU Member States or other regulatory authorities, if a clinical trial is recommended for suspension or termination by the DSMB or equivalent body for such trial, or on account of changes to federal, state, or local laws. If we are required to conduct additional clinical trials or other testing of NGN-401 or any other product candidates beyond those that we contemplate, if we are unable to successfully complete clinical trials of NGN-401 or any other product candidates, if the results of such trials are not positive or are only moderately positive or if there are safety concerns, our business and results of operations may be adversely affected and we may incur significant additional costs.

In addition, even if we are able to successfully complete the clinical trial for NGN-401, we cannot guarantee that the FDA or foreign regulatory authorities will interpret the results as we do, and more trials could be required before we submit our product candidates for approval. This is particularly true for clinical trials in very rare diseases, such as with our Embolden registrational trial of NGN-401 for the treatment of Rett syndrome, where the very small patient population makes it difficult to conduct two traditional, adequate and well-controlled studies. In such cases, the FDA or comparable foreign regulatory authorities are often required or permitted to exercise flexibility in approving therapies for such diseases, but obtaining flexibility is uncertain and may never occur. Moreover, results acceptable to support approval in one jurisdiction may be deemed inadequate by another regulatory authority to support regulatory approval in the other jurisdiction. To the extent that the results of the trials are not satisfactory to the FDA or applicable regulatory authorities for support of a marketing application, we may be required to expend significant resources, which may not be available to us, to conduct additional trials in support of potential approval of our product candidates.

Preliminary, "topline" or interim data from our preclinical studies and clinical trials that we announce or publish from time to time may change as more patient data becomes available and are subject to audit and verification procedures.

From time to time, we may publicly disclose preliminary, interim or topline data from our preclinical studies and clinical trials, which are based on a preliminary analysis of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data. We also make assumptions, estimations, calculations and conclusions as part of our analyses of these data without the opportunity to fully and carefully evaluate complete data. Preliminary, interim or topline results also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data previously disclosed. These preliminary, interim or topline data are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available or as patients from our clinical trials continue other treatments. For example, in June 2024, we announced initial safety data related to the dosing of our first four participants at the 1E15 vg dose in our Phase 1/2 clinical trial of NGN-401 for the treatment of Rett syndrome which suggested a favorable safety profile for the 1E15 vg dose. In November 2024, an SAE was reported in a participant who received the 3E15 vg dose, which caused us to revise our assumptions regarding the safety profile of the 3E15 vg dose. Because of this potential for change, preliminary, interim and topline data should be viewed with caution until final data are available. Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular product candidate, the approvability or commercialization of a particular product candidate and our company in general. In addition, the information we choose to publicly disclose regarding a particular preclinical study or clinical trial is based on what is typically extensive information, and you or others may not agree with what we determine is material or otherwise appropriate information to include in our disclosure. If the preliminary, interim or topline data that we report differ from actual results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, NGN-401 or any other product candidate may be harmed, which could harm our business, operating results, prospects or financial condition. In addition, differences between preliminary, interim or topline data and final data could significantly harm our business prospects and may cause the trading price of our common stock to fluctuate significantly.

Our current or future clinical trials may reveal significant adverse events or undesirable side effects not seen in our preclinical studies and may result in a safety profile that could halt clinical development, inhibit regulatory approval or limit commercial potential or market acceptance of NGN-401 or any other product candidates or result in potential product liability claims.

Results of our clinical trials could reveal a high and unacceptable severity and prevalence of side effects, adverse events or unexpected characteristics. We believe NGN-401 has been generally well-tolerated at the 1E15 vg dose; however, we have not yet completed this clinical trial and the benefit-risk assessments of our product candidates remains ongoing. In November 2024, a participant who had recently received the 3E15 vg dose of NGN-401 experienced an SAE consistent with the known risks of AAV gene therapy and subsequently died following complications from a rare and life-threatening hyperinflammatory syndrome associated with systemic exposure to high doses of AAV. Participants at the 1E15 vg dose level have also experienced adverse events, and may experience adverse events in the future. If additional SAEs or other adverse events or other side effects are observed in any of our current or future clinical trials, we may have difficulty recruiting patients to such trials, patients may drop out of our trials, patients may be harmed, or we may be required to delay enrollment or abandon one or more cohorts of a trial or delay or abandon the trials or our development efforts of one or more product candidates altogether, including NGN-401. We, the FDA, MHRA, or other applicable regulatory authorities, or an IRB, may require suspension of any clinical trials of NGN-401 or any other product candidates at any time for various reasons, including a finding that subjects or patients in such trials are being exposed to unacceptable health risks or adverse side effects. Some potential products developed in the biotechnology industry that initially showed therapeutic promise in early-stage trials have later been found to cause side effects that prevented their further development. Even if the side effects do not preclude a product candidate from obtaining or maintaining marketing approval, undesirable side effects may inhibit market acceptance of an approved product due to its tolerability versus other therapies. In addition, as gene replacement has a potentially life-long activity, with no ability to withdraw the product as with other treatment modalities, this profile could prolong the duration of undesirable side effects, which could also inhibit market acceptance. Treatment-emergent adverse events could also affect patient recruitment or the ability of enrolled subjects to complete our clinical trials or could result in potential product liability claims. Potential side effects associated with NGN-401 or any other product candidates may not be appropriately recognized or managed by the treating medical staff, as toxicities resulting from NGN-401 or any other product candidates may not be normally encountered in the general patient population and by medical personnel. Any of these occurrences could harm our business, financial condition, results of operations and prospects significantly.

In addition, even if we successfully advance NGN-401 or any other product candidates through clinical trials, such trials will only include a limited number of patients and limited duration of follow up to such product candidates. As a result, we cannot be assured that adverse effects of NGN-401 or any other product candidates will not be uncovered when a significantly larger number of patients are exposed to such product candidate after approval, or a significantly longer follow up post-dosing is obtained as part of regulators' recommendations for long-term follow up of clinical study subjects treated with gene therapy. For example, product candidates tested in clinical-stage gene therapy trials by commercial-stage companies have later been involved in well-publicized adverse events after approval and commercialization, including death, and/or have failed to demonstrate the expected efficacy. Lack of efficacy or serious adverse events, even if such adverse events are not ultimately attributable to the relevant product candidates, may result in increased government regulation, unfavorable public perception of gene therapies, potential regulatory delays in the testing or approval of our product candidates, stricter labeling requirements for those product candidates that are approved and a decrease in demand for any such product candidates. Further, any clinical trials may not be sufficient to determine the effect and safety consequences of using our product candidates over a multi-year period.

We have expended substantial efforts and costs testing our EXACT technology in preclinical studies of NGN-401, including completing toxicology studies prior to the FDA providing clearance of the IND for NGN-401. However, we cannot guarantee that significant adverse effects will not be seen in clinical trials for NGN-401, which could result in clinical holds, delays, suspension or withdrawal of our IND. If any of the foregoing events occur or if NGN-401, NGN-101 or any other product candidates prove to be unsafe, our entire pipeline could be affected, which would have a material adverse effect on our business, financial condition, results of operations and prospects.

We may expend our limited resources to pursue a particular product candidate, such as NGN-401, and fail to capitalize on candidates that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we intend to focus our research and development efforts on certain selected product candidates. For example, to date we have allocated significant resources to our most advanced product candidates, NGN-401 and NGN-101. As a result, we may forgo or delay pursuit of opportunities with other potential candidates that may later prove to have greater commercial potential. For example, in November 2024, we announced that we do not expect to move forward with the NGN-101 for CLN5 Batten disease gene therapy program at this time. Given the rarity of the disease, continued investment in the program was predicated on a streamlined registrational pathway with the FDA. To support a streamlined pathway, we submitted an RMAT application to the FDA. Despite our belief that we met the standard of preliminary clinical evidence required to obtain an RMAT designation, the RMAT designation was denied. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs for specific indications may not yield any commercially viable product candidates. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such candidate.

Even if regulatory approval is obtained, any approved products resulting from NGN-401 or any other product candidate may not achieve adequate market acceptance among clinicians, patients, healthcare third-party payors and others in the medical community necessary for commercial success and we may not generate any future revenue from the sale or licensing of such products.

Even if regulatory approval is obtained for NGN-401 or any other product candidates, our product candidates may not gain market acceptance among physicians, patients, healthcare payors or the medical community. We may not generate or sustain revenue from sales of the product due to factors such as whether the product can be sold at a competitive cost and whether it will otherwise be accepted in the market. There is currently one FDA-approved product and multiple other product candidates in various stages of development for the treatment of Rett syndrome. Market participants with significant influence over acceptance of new treatments, such as clinicians and third-party payors, may not adopt a gene therapy replacement with a target product profile such as that of NGN-401 or for its targeted indications, and we may not be able to convince the medical community and third-party payors to accept and use, or to provide favorable reimbursement for, any product candidates developed by us or our existing or future collaborators. Market acceptance of NGN-401 or any other product candidates will depend on many factors, including factors that are not within our control.

Sales of biological products also depend on the willingness of clinicians to prescribe the treatment. We cannot predict whether clinicians, clinicians' organizations, hospitals, other healthcare providers, government agencies or private insurers will determine that any of our approved products are safe, therapeutically effective or potent, cost effective or less burdensome as compared with competing treatments. If NGN-401 or any other product candidate is approved but does not achieve an adequate level of acceptance by such parties, we may not generate or derive sufficient revenue from that product and may not become or remain profitable.

We have never commercialized a product candidate and may lack the necessary expertise, personnel and resources to successfully commercialize a product candidate on our own or together with suitable collaborators.

We have never commercialized a product candidate and currently have no sales force, marketing or distribution capabilities. To achieve commercial success for a product candidate, we may opt to license such product candidate to others, in which case we may rely on the assistance and guidance of our collaborators on that license arrangement. For a product candidate for which we retain commercialization rights and marketing approval, we will have to develop our own sales, marketing and supply organization or outsource these activities to a third party. Factors that may affect our ability to commercialize a product candidate, if approved, on our own include recruiting and retaining adequate numbers of effective sales and marketing personnel, developing adequate educational and marketing programs to increase public acceptance of our approved product candidate, ensuring regulatory compliance of our company, employees and third parties under applicable healthcare laws and other unforeseen costs associated with creating an independent sales and marketing organization. Developing a sales and marketing organization will be expensive and time-consuming and could delay the launch of a product candidate upon approval. Moreover, we may not be able to build an effective sales and marketing organization. If we are unable to build our own distribution and marketing capabilities or to find suitable partners for the commercialization of an approved product candidate, we may not generate revenues from them or be able to reach or sustain profitability.

We have never completed any late-stage clinical trials and may not be able to file an IND application or other applications for regulatory approval to commence additional clinical trials on the timelines we expect. Even if we are able to complete such trials, the FDA or comparable foreign regulatory authorities may not permit us to proceed or could suspend or terminate any such trial after it has been initiated.

We are early in our development efforts and will need to successfully complete later-stage and pivotal clinical trials in order to obtain FDA or comparable foreign regulatory approval to market our product candidates. Carrying out clinical trials and the submission of a successful IND or CTA is a complicated process. Even though our product candidate NGN-401 for Rett syndrome has been accepted into the FDA's START program and RMAT program, the combination of which is expected to allow access to frequent advice from FDA staff, intensive guidance on efficient drug development and eligibility for an Accelerated Approval pathway and Priority Review, our lack of experience with FDA submissions may still slow our progress towards FDA approval. While we have completed enrollment in both our Phase 1/2 trial of NGN-101 for the treatment of CLN5 Batten disease and our Phase 1/2 clinical trial for NGN-401 for treatment of Rett syndrome and have begun trial initiation activities for the Embolden registrational trial for NGN-401, we have not yet completed a Phase 1/2 clinical trial and have limited experience as a company in preparing, submitting and prosecuting regulatory filings. We have reached written agreement with the FDA on key elements of our registrational clinical trial design for NGN-401, and expect to engage with comparable foreign regulators to determine the requirements to support initiation of a pivotal clinical trial; however some elements of the registrational trial design may still be subject to recommended changes from the FDA. In addition, foreign regulatory authorities may recommend changes to the study design for NGN-401, including the number and size of registrational clinical trials required to be conducted in that program. Regulatory authorities could also require manufacturing changes or have us implement additional analytical processes prior to initiation of a future clinical trial. Consequently, we may be unable to successfully and efficiently execute and complete necessary clinical trials in a way that leads to regulatory submission and approval of our product candidates or we may determine that the regulatory requirements for submission are too burdensome to support continued development of one or more of our product candidates, as we did with our NGN-101 product candidate for CLN5 Batten disease, which we do not plan to move forward with due to a lack of alignment with the FDA on a streamlined pathway to registration. Additionally, even if regulatory authorities agree with the design and implementation of the clinical trials set forth in a regulatory meeting, such regulatory authorities may change their requirements in the future. The FDA or comparable foreign regulatory authorities may require the analysis of data from trials assessing different doses of the product candidate alone or in combination with other therapies to justify the selected dose prior to the initiation of large trials in a specific indication. Any delays or failure to initiate clinical trials or obtain regulatory approvals for our trials may prevent us from completing our clinical trials or commercializing our products on a timely basis, if at all. We are subject to similar risks related to the review and authorization of our protocols and amendments by comparable foreign regulatory authorities.

For our preclinical pipeline, if the IND-enabling studies support a decision to advance into clinical development, we would plan to submit an IND or CTA with a foreign regulatory authority. We may not be able to file the IND or CTA in accordance with our desired timelines for future product candidates. For example, we may experience manufacturing delays or other delays with IND-enabling studies, including with suppliers, study sites, or third-party contractors and vendors on which we depend. Moreover, we cannot be sure that submission of an IND application will result in the FDA or comparable foreign regulatory authorities allowing further clinical trials to begin, or that, once begun, issues will not arise that lead us to suspend or terminate such clinical trials.

Risks Related to Manufacturing

Gene therapies are novel, complex and difficult to manufacture. We could experience manufacturing problems that result in delays in the development or commercialization of our product candidates or otherwise harm our business.

The manufacture of gene therapy products is technically complex and necessitates substantial expertise and capital investment. Production difficulties caused by unforeseen events may delay the availability of material for our clinical studies. While we have established our own manufacturing facility to provide clinical and commercial supply of our product candidates, we expect to rely on contract manufacturers for certain portions of our manufacturing needs for the foreseeable future, such as those related to research grade material for our early preclinical studies.

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

Biological products are inherently difficult to manufacture. Although we believe that the manufacture of our product candidates may be simplified due to their shared raw materials and other similarities, we cannot be certain that this will be the case and we may be required to develop manufacturing methods that ultimately differ significantly between product candidates, which would require that we invest substantial time and capital to develop suitable manufacturing methods. Our program materials are manufactured using technically complex processes requiring specialized equipment and facilities, highly specific raw materials, cells, and reagents, and other production constraints. Our production process requires a number of highly specific raw materials, cells and reagents with limited suppliers. Even though we aim to have backup supplies of raw materials, cells and reagents whenever possible, we cannot be certain those supplies will be sufficient if our primary sources are unavailable. One or more of our suppliers is the sole source of certain materials used by us in our manufacturing process, and a disruption of the supply of those materials could also negatively impact our ability to manufacture clinical supply as we would have to suspend or revise our operations to accommodate for any disruption in the supply of those materials. A shortage of a critical raw material, cell line, or reagent, or a technical issue during manufacturing, may lead to delays in clinical development or commercialization plans. We are particularly susceptible to any shortages, delays or inability to obtain suitable raw materials, given that all of our current and planned product candidates require this starting material. Any changes in the manufacturing of components of the raw materials we use could result in unanticipated or unfavorable effects in our manufacturing processes, resulting in delays.

Once the biological products are manufactured, the product must be analyzed utilizing assays and meet pre-determined specifications in order to be used in certain preclinical studies, in any clinical trial, and, if approval is obtained, for commercial distribution. This testing is performed in-house and at third-party contract manufacturers. Delays or other unexpected obstacles in developing analytical methods or in performing the tests and obtaining the results in-house or at a third-party contractor could result in unanticipated impact to our ability to supply material as needed for preclinical, clinical, or commercial needs.

We and our contract manufacturers for AAV9 are subject to significant regulation with respect to manufacturing of our products. The third-party manufacturing facilities on which we rely, our in-house manufacturing facility, and any manufacturing facility that we may have in the future, may have limited capacity or fail to meet the applicable stringent regulatory requirements.

We currently have relationships with a limited number of suppliers for the raw materials, including plasmids and virus banks, required by the manufacturing processes of our product candidates. Virus intended for use in our early preclinical studies has been and can be externally supplied; however, if we experience slowdowns or problems with our in-house manufacturing facility and are unable to establish or scale our internal manufacturing capabilities, we will need to continue to contract with manufacturers to produce the preclinical, clinical and commercial supply and such supply will be more uncertain and subject to delays. In addition, each supplier may require licenses to manufacture certain components of the supply if such processes are not owned by the supplier or in the public domain and we may be unable to license such intellectual property rights on reasonable commercial terms or to transfer or sublicense the intellectual property rights we may have with respect to such activities.

All entities involved in the preparation of therapeutics for clinical trials or commercial sale, including our existing contract manufacturers for components of our product candidates, are subject to extensive regulation. Components of a finished therapeutic product approved for commercial sale or used in late-stage clinical trials must be manufactured in accordance with cGMP. These regulations govern manufacturing processes and procedures (including recordkeeping) and the implementation and operation of quality systems to control and assure the quality of investigational products and products approved for sale. Poor control of production processes can lead to the introduction of adventitious agents or other contaminants, or to inadvertent changes in the properties or stability of our product candidates that may not be detectable in final product testing. We or our contract manufacturers must supply all necessary documentation in support of a biologics license application ("BLA") or marketing authorization application ("MAA") on a timely basis. Our facilities and quality systems and the facilities and quality systems of some or all of our third-party contractors must pass a pre-approval inspection for compliance with the applicable regulations as a condition of regulatory approval of our current or future product candidates. In addition, regulatory authorities may, at any time, audit or inspect a manufacturing facility involved with the preparation of our current or future product candidates or the associated quality systems for compliance with the regulations applicable to the activities being conducted, and they could put a hold on one or more of our clinical trials if the facilities of our CDMOs do not pass such audit or inspections. If these facilities do not pass a pre-approval plant inspection, the FDA or other foreign regulatory agency approval of the products will not be granted.

Regulatory authorities also may, at any time following approval of a product for sale, inspect or audit our manufacturing facilities or those of our third-party contractors. If any such inspection or audit identifies a failure to comply with applicable regulations or if a violation of our product specifications or applicable regulations occurs independent of such an inspection or audit, we or the relevant regulatory authority may require remedial measures that may be costly and/or time-consuming for us or a third party to implement, and that may include the temporary or permanent suspension of a clinical trial or commercial sales or the temporary or permanent closure of a facility. Any such remedial measures imposed upon us or third parties with whom we contract could harm our business. If we or any of our third-party manufacturers fail to maintain regulatory compliance, the FDA or other foreign regulatory agencies can impose regulatory sanctions including, among other things, refusal to approve a pending application for a new drug product or biologic product, or revocation of a pre-existing approval. As a result, our business, financial condition and results of operations may be harmed.

Additionally, if supply from one approved manufacturer is interrupted, there could be a significant disruption in commercial supply. An alternative manufacturer would need to be qualified through a BLA and/or MAA supplement, which could result in further delay. The regulatory agencies may also require additional studies if a new manufacturer is relied upon for commercial production. Switching manufacturers may involve substantial costs and is likely to result in a delay in our desired clinical and commercial timelines.

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

We depend on third-party suppliers for materials used in the manufacture of our product candidates, and the loss of these third-party suppliers or their inability to supply us with adequate materials could harm our business.

We rely on third-party suppliers for certain materials and components required for the production of our product candidates. Our dependence on these third-party suppliers and the challenges we may face in obtaining adequate supplies of materials involve several risks, including limited control over pricing, availability and quality of supplies and delivery schedules. There is substantial demand and limited supply for certain of the raw materials used to manufacture gene therapy products. As a small company, our negotiation leverage is limited and we are likely to get lower priority than our larger competitors. We cannot be certain that our suppliers will continue to provide us with the quantities of raw materials that we require or satisfy our anticipated specifications and quality requirements. One or more of our suppliers is the sole source of certain materials used by us in our manufacturing process, and a disruption of the supply of those materials could also negatively impact our ability to manufacture clinical supply as we would have to suspend or revise our operations to accommodate for any disruption in the supply of those materials. Any supply interruption in limited or sole sourced raw materials could materially harm our ability to manufacture our product candidates until a new source of supply, if any, could be identified and qualified. We may be unable to find a sufficient alternative supply channel in a reasonable time or on commercially reasonable terms. Any performance failure on the part of our suppliers could delay the development and potential commercialization of our product candidates, including limiting supplies necessary for clinical trials and regulatory approvals, which would have a material adverse effect on our business.

Delays in developing our manufacturing capabilities or failure to achieve operating efficiencies from such capabilities may require us to devote additional resources and management time to manufacturing operations and may delay our product development timelines.

We have a GMP manufacturing facility located in Houston, Texas that includes process, analytical and bioanalytical development labs with experienced teams. NGN-401 was manufactured at our Houston facility and clinical-grade product was used for dosing in the Phase 1/2 clinical trial of NGN-401. However, we will need to conduct additional NGN-401 manufacturing campaigns to generate additional clinical supply, as well as supply for our preclinical studies for our discovery programs, and we may not be able to satisfy such supply through production at our own facility and may need to outsource some or all of our production work.

Other risks relating to the manufacture of biologics and drug products include: production interruptions, delays in quality/release testing, equipment malfunctions, facility contamination, labor problems, natural disasters, disruption in utility services, terrorist activities, war, cases of force majeure, weather-related events, acts of god (such as public health crises) or other events beyond our control and, in each case, could result in delays in our production or difficulties in maintaining compliance with applicable regulatory requirements.

Any contamination or interruption in our manufacturing process, shortages of raw materials or failure of our suppliers to deliver necessary components could result in delays in our clinical development or marketing schedules.

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

We may not be able to successfully manufacture our product candidates in sufficient quality and quantity, which would delay or prevent us from developing our product candidates and commercializing resulting approved products, if any.

To date, we have manufactured NGN-401 in quantities and quality adequate for preclinical, toxicology and clinical studies. In order to conduct clinical trials for a product candidate and for commercialization of the resulting product if that product candidate is approved for sale, we will need to manufacture product candidates in additional cGMP campaigns or in larger batch sizes. We may not be able to successfully repeat or increase the manufacturing capacity for any of our product candidates in a timely or cost-effective manner or at all. Significant changes or scale-up of manufacturing may require additional validation studies and/or analytical comparability studies, which are costly and which regulatory authorities must review and approve. In addition, quality issues may arise during those changes or scale-up activities. If we are unable to successfully manufacture any of our product candidates in sufficient quality and quantity, the development of that product candidate and regulatory approval or commercial launch for any resulting products may be delayed or there may be a shortage in supply, which could significantly harm our business.

Changes in methods of product candidate manufacturing or formulation may result in additional costs or delay.

As product candidates proceed through preclinical studies to late-stage clinical trials towards potential approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods and formulation, are altered along the way in an effort to optimize processes and product characteristics. Such changes carry the risk that they will not achieve our intended objectives. Any such changes could cause our product candidates to perform differently and affect the results of planned clinical trials or other future clinical trials conducted with the materials manufactured using altered processes. Such changes may also require additional testing, FDA notification or approval from the FDA or foreign regulatory agencies. This could delay completion of clinical trials, require the conduct of bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of our product candidates and jeopardize our ability to commence sales and generate revenue. In addition, we may be required to make significant changes to our upstream and downstream processes across our pipeline, which could delay the development of our future product candidates.

Risks Related to Our Reliance on Third Parties

We have a number of academic collaborations, and currently rely on our collaboration with the University of Edinburgh for certain aspects of our preclinical research and development programs, including working in collaboration to discover and preclinically develop our potential product candidates for our near-term future pipeline. Failure or delay of the University of Edinburgh or any other collaborator to fulfil all or part of its obligations under our agreements, a breakdown in collaboration between the parties or a complete or partial loss of the relationship would materially harm our business.

Our discovery engine is supplemented by academic collaborations to expand our platform, which we rely upon to advance discovery and development of product candidates. For example, our collaboration with the University of Edinburgh is critical to our business. In December 2020, we entered into a Master Collaboration Agreement (the "MCA") with the University of Edinburgh, which we rely on to conduct certain aspects of the preclinical development of our pipeline candidates, including NGN-401 and all of our early-stage pipeline product candidates. Further, in March 2022, we entered into an exclusive license agreement with the University of Edinburgh for, with respect to certain University of Edinburgh-owned technology, a worldwide, exclusive, sublicensable license to develop, have developed, use, manufacture, have manufactured, supply, have supplied, sell, have sold, offer for sale, commercialize, import, export, register, reproduce, dispose of or otherwise exploit any products, processes, components, services and/or technologies incorporating the technology for the prevention or treatment of disease or medical or genetic conditions in humans. We also currently rely on the University of Edinburgh for portions of preclinical research capabilities under the direction of Dr. Stuart Cobb, Professor in Translational Neuroscience at the University of Edinburgh and our Chief Scientific Officer. Pursuant to the MCA, we and the University of Edinburgh agreed to collaborate on certain research and development Projects, and we agreed to provide funding for such Projects. In exchange for such funding, the University of Edinburgh grants us an option to exclusively license any intellectual property arising from such Projects. Either party has the right in certain circumstances to terminate the collaboration pursuant to the terms of the MCA. If the MCA is not renewed or is terminated, our pipeline of product candidates would be significantly adversely affected, and our business would be materially harmed.

Following an amendment to the MCA in November 2023, the term of the research funding portion of the MCA, under which we have the ability to acquire exclusive rights to additional technology and gene therapy products, now expires in December 2026. If we need to extend the term of this provision beyond that date, we will need to negotiate an additional extension with the University of Edinburgh, and we may not be able to agree on such an extension on terms that are acceptable to us, or at all. We may have disagreements with the University of Edinburgh with respect to the interpretation of the MCA, use of resources or otherwise that could cause our relationship to deteriorate. As a result, the University of Edinburgh may reduce focus on, and resources allocated to, our programs, potentially delaying or terminating our ability to advance product candidates through preclinical studies. Additionally, if Dr. Cobb were to leave the University of Edinburgh or to otherwise no longer be meaningfully involved with us, our preclinical research and development capabilities may be substantially reduced.

Further, under the MCA, the University of Edinburgh is primarily responsible for prosecuting and maintaining our licensed intellectual property, and it may fail to properly prosecute, maintain or defend such intellectual property. In such event, if we are unable to otherwise maintain or defend such intellectual property, we could face the potential invalidation of the intellectual property or be subjected to litigation or arbitration, any of which would be time-consuming and expensive. To enforce the licensed intellectual property rights under the MCA, we will need to coordinate with the University of Edinburgh, which could slow down or hamper our ability to enforce our licensed intellectual property rights. If this happens, we could face increased competition that could materially and adversely affect our business. For a further description of the MCA, see Part I Item 2 of this Quarterly Report on Form 10-Q titled *Management's Discussion and Analysis of Financial Condition and Results of Operations—License and Collaboration Agreements*.

We also currently have or may in the future engage in other academic collaborations to supplement our internal discovery and product development program. While these academic institutions have contractual obligations to us, they are independent entities and are not under our control or the control of our officers or directors. Our research and licensing agreements with academic collaborators generally provide academic collaborators with license maintenance fees, development and regulatory milestone payments, royalties on net sales of products and a portion of sublicense income that we receive. Upon the scheduled expiration of any academic collaboration, we may not be able to renew the related agreement, or any renewal could be on terms less favorable to us than those contained in the existing agreement. Furthermore, either we or the academic institution generally may terminate the sponsored research agreement for convenience following a specified notice period. If any of these academic institutions decides to not renew or to terminate the related agreement or decides to devote fewer resources to such activities, our discovery efforts would be diminished, while our royalty obligations, if any, would continue unmodified.

We currently rely, and intend in the future to rely, on third parties to conduct a significant portion of our preclinical studies and existing clinical trials and potential future clinical trials for product candidates, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials.

We have engaged CROs or other third parties to conduct preclinical and IND enabling studies and our clinical trials, including our Phase 1/2 clinical trial and our planned Embolden registrational trial of NGN-401.

We expect to continue to rely on third parties, including CROs, medical institutions and clinical investigators, to conduct those clinical trials. Any of these third parties may terminate their engagements with us, some in the event of an uncured material breach and some at any time for convenience. If any of our relationships with these third parties terminate, we may not be able to timely enter into arrangements with alternative third parties or do so on commercially reasonable terms, if at all. Switching or adding CROs involves substantial cost and requires management time and focus. In addition, there is a natural transition period when a new CRO commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines. Though we intend to carefully manage our relationships with CROs, there can be no assurance that we will not encounter challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business and financial condition.

In addition, any third parties conducting our clinical trials will not be our employees, and except for remedies available to us under our agreements with such third parties, we cannot control whether or not such third parties devote sufficient time and resources to our clinical programs. If these third parties 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 the failure to adhere to our clinical protocols, regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated, we may incur additional and unexpected costs related to such failures, and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates. Consequently, our results of operations and the commercial prospects for our product candidates would be harmed, our costs could increase substantially and our ability to generate revenue could be delayed significantly.

Further, while our reliance on these third parties for research and development activities will reduce our control over these activities, we will not be relieved of our responsibilities for ensuring that each of our studies and trials is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards. For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA requires us to comply with GCPs for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. We also are required to register ongoing clinical trials and post the results of completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within specified timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions. If we or any of our CROs or other third parties, including trial sites, fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA, MHRA, EMA 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 by a given regulatory authority, such regulatory authority will determine that any of our clinical trials complies with GCP regulations. In addition, our clinical trials must be conducted with products produced under cGMP conditions. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process.

In addition, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and receive compensation in connection with such services. Under certain circumstances, we may be required to report some of these relationships to the FDA. The FDA may conclude that a financial relationship between us and a principal investigator has created a conflict of interest or otherwise affected interpretation of the trial. The FDA may therefore question the integrity of the data generated at the applicable clinical trial site and the utility of the clinical trial itself may be jeopardized. This could result in a delay in approval, or rejection, of our marketing applications by the FDA and may ultimately lead to the denial of marketing approval of NGN-401 or any other product candidates.

We currently store drug product for clinical trial sites in the United States, and currently rely on and expect in the future to rely on third parties to distribute product supplies for our clinical trials, as well as to store and distribute supply for clinical trial sites outside of the United States. Any performance failure on the part of us or our distributors could result in an unexpected increase in costs to us, delay clinical development or marketing approval of our product candidates or commercialization of our products, if approved, producing additional losses and depriving us of potential revenue.

Our operations and financial condition also may be negatively impacted as a result of any delays or increased costs arising from the trade restrictions, tariffs or other extraordinary taxes, and other foreign regulatory requirements affecting our collaborators. We currently rely to some degree on foreign CROs in the UK and Australia, and may need to rely on foreign CROs and CDMOs in the future. We or the foreign CROs or CDMOs we may work with may be subject to U.S. legislation, including the potential passing of an act similar to the previously proposed BIOSECURE Act, sanctions, trade restrictions, increased taxes or tariffs and other foreign regulatory requirements which could increase the cost or reduce the supply of certain material we use, delay the procurement or supply of such material or disrupt our supply chain for certain raw materials or medical devices necessary for our clinical trial. For example, in April 2025, the United States government imposed significant tariffs on imports from China and other countries and may impose more restrictions on goods, including biologically derived substances, manufactured in or imported from China or impose other restrictions on companies' ability to work with Chinese biotechnology companies or other foreign counterparties. To the extent these or future tariffs are applicable to the material we may import from China and other countries or if we are not able to secure supply of our product candidates as a result of applicable legislation, our business and financial condition could be adversely affected.

Risks Related to Our Business and Operations

In order to successfully implement our plans and strategies, we will need to grow the size of our organization and we may experience difficulties in managing this growth.

Over time, we expect to experience significant growth in the number of our employees and the scope of our operations, particularly in the areas of preclinical and clinical biological product development, technical operations, clinical operations, regulatory affairs, manufacturing and, potentially, sales, marketing and distribution. To manage our anticipated future growth, we must continue to implement and improve our managerial, operational and financial personnel and systems, expand our facilities and recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team working together in managing a company with such anticipated growth, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. The expansion of our operations may lead to significant costs and may divert our management and business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

We are highly dependent on our key personnel and anticipate hiring new key personnel. If we are not successful in attracting and retaining highly qualified personnel, we may not be able to successfully implement our business strategy.

Our ability to compete in the highly competitive biotechnology and pharmaceutical industries depends upon our ability to attract and retain highly qualified managerial, scientific and medical personnel. We are highly dependent on our managerial, scientific and medical personnel, including our Founder and Chief Executive Officer, President and Chief Financial Officer, and Chief Scientific Officer, as well as other key members of our leadership team. Our executive officers may terminate their employment with us at any time. We do not maintain "key person" insurance for any of our executives or other employees. The loss of the services of our executive officers or other key employees could impede the achievement of our research, development and commercialization objectives and seriously harm our ability to successfully implement our business strategy. Furthermore, replacing executive officers and key personnel may be difficult and may take an extended period of time. Failure to attracting and retaining qualified personnel could materially and adversely affect our business, financial condition and results of operations. We could in the future have difficulty attracting and retaining experienced personnel and may be required to expend significant financial resources on our employee recruitment and retention efforts.

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

Our future growth may depend, in part, on our ability to develop and commercialize NGN-401 or other product candidates in foreign markets for which we may rely on collaborations with third parties. We are not permitted to market or promote any product candidates before we receive regulatory approval from the applicable foreign regulatory authority, and may never receive such regulatory approval for any product candidates. To obtain separate regulatory approval in many other countries, we must comply with numerous and varying regulatory requirements of such countries regarding safety and efficacy and governing, among other things, clinical trials and commercial sales, pricing and distribution of NGN-401 or other product candidates, and we cannot predict success in these jurisdictions. If we fail to comply with the regulatory requirements in international markets or to receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of NGN-401 or other product candidates will be harmed and our business will be adversely affected. Moreover, even if we obtain approval of NGN-401 or other product candidates and ultimately commercialize such product candidates in foreign markets, we would be subject to the risks and uncertainties of operating in such foreign markets, including the burden of complying with complex and changing foreign regulatory, tax, accounting and legal requirements and reduced protection of intellectual property rights in some foreign countries.

Our employees, independent contractors, consultants, commercial collaborators, principal investigators, CROs, CDMOs, suppliers and vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.

We are exposed to the risk that our employees, independent contractors, consultants, commercial collaborators, principal investigators, CROs, CDMOs, suppliers and vendors acting for or on our behalf may engage in misconduct or other improper activities. It is not always possible to identify and deter misconduct by these parties and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations.

Our systems, or those of any of our CROs, manufacturers, other contractors, third party service providers or consultants or potential future collaborators, may fail or suffer security or data privacy breaches or other unauthorized or improper access to, use of, or destruction of our proprietary or confidential data, employee data or personal data, which could result in additional costs, loss of revenue, significant liabilities, harm to our brand and material disruption of our operations.

Despite the implementation of security measures in an effort to protect systems that store our information, given the size and complexity of such systems and the increasing amounts of information maintained on our internal information technology systems and those of our third-party CROs, other contractors (including sites performing our clinical trials), third-party service providers and supply chain companies, consultants and other partners, these systems are potentially vulnerable to breakdown or other damage or interruption from service interruptions, system malfunction, natural disasters, terrorism, war, and telecommunication and electrical failures, as well as security breaches from inadvertent or intentional actions by our employees, contractors, consultants, business partners and/or other third parties, or from cyber-attacks by malicious third parties, which may compromise our system infrastructure or lead to the loss, destruction, alteration or dissemination of, or damage to, our data. From time to time, we are subject to business email compromise attack attempts. In August 2023, we discovered a business email compromise attack that resulted in the misappropriation of approximately $0.9 million. While we have implemented remedial measures in response to this incident and recovered $0.8 million of those losses through insurance claims, we cannot guarantee that such measures will prevent additional related, as well as unrelated incidents, or that we will be able to defend against or successfully remediate any such attacks that may occur in the future. If a material system failure, accident or security breach were to occur and cause interruptions in our operations or the operations of third-party collaborators, service providers, contractors and consultants, it could result in a material disruption of our development programs and significant reputational, financial, legal, regulatory, business or operational harm.

Further, since we sponsor clinical trials, any breach that compromises patient data and identities causing a breach of privacy could have significant adverse consequences on our business. For example, the loss of clinical trial data from completed or future clinical trials could affect trust in us, negatively impacting our ability to recruit for future clinical trials, result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss, destruction, unavailability, alteration or dissemination of, or damage to, our data or applications, or inappropriate disclosure of confidential proprietary information, or for it to be believed or reported that any of these occurred, we could incur liability and reputational damage and the development and commercialization of NGN-401 or other product candidates could be delayed.

As our employees work remotely and use network connections, computers, and devices outside of our premises or network, including working at home, while in transit and in public locations, there are risks to our information technology systems and data. Additionally, business transactions (such as acquisitions or integrations) could expose us to additional cybersecurity risks and vulnerabilities, as our systems could be negatively affected by vulnerabilities present in acquired or integrated entities' systems and technologies.

While we have implemented security measures designed to protect against security incidents, there can be no assurance that these measures will be effective. We may be unable in the future to detect vulnerabilities in our information technology systems because such threats and techniques change frequently, are often sophisticated in nature, and may not be detected until after a security incident has occurred. Further, we may experience delays in developing and deploying remedial measures designed to address any such identified vulnerabilities. Applicable data privacy and security obligations may require us to notify relevant stakeholders, patients or other individuals, regulators or, in certain circumstances, the media of security incidents. Such disclosures are costly, and the disclosure or the failure to comply with such requirements could lead to adverse consequences, including damage to our reputation.

We rely on third-party service providers and technologies to operate critical business systems, including to process sensitive information in a variety of contexts. Our ability to monitor these third parties' information security practices is limited, and these third parties may not have adequate information security measures in place. If our third-party service providers experience a security incident or other interruption, we could experience adverse consequences as a result. While we may be entitled to damages if our third-party service providers fail to satisfy their privacy or security-related obligations to us, any award may be insufficient to cover our monetary, reputational and other damages, or we may be unable to recover such award. In addition, supply-chain attacks have increased in frequency and severity, and we cannot guarantee that third parties' infrastructure in our supply chain or our third-party partners' supply chains have not been and will not be compromised.

If we (or a third party upon whom we rely) experiences a security incident or is perceived to have experienced a security incident, we may experience adverse consequences, such as government enforcement actions (for example, investigations, fines, penalties, audits, and inspections); additional reporting requirements and/or oversight; restrictions on processing personal information (including sensitive data); litigation (including class claims); indemnification obligations; negative publicity; reputational harm; monetary fund diversions; interruptions in our operations (including availability of data); increased investigation and compliance costs; financial loss; and other similar harms. Security incidents and attendant consequences may cause our stakeholders (including investors and potential customers) to stop supporting our business, deter new customers from our products, deter patients from participating in clinical trials and negatively impact our ability to grow and operate our business.

Our contracts may not contain limitations of liability, and even where they do, there can be no assurance that limitations of liability in our contracts are sufficient to protect us from liabilities, damages, or claims related to our data privacy and security obligations. We cannot be sure that our insurance coverage will be adequate or sufficient to protect us from or to mitigate liabilities arising out of our privacy and security practices or from disruptions in, or failure or security breach of, our systems or third-party systems where information important to our business operations or commercial development is stored, or that such coverage will continue to be available on commercially reasonable terms or at all, or that such coverage will pay future claims.

We are subject to stringent and changing laws, regulations and standards, and contractual obligations relating to privacy, data protection, and data security. The actual or perceived failure to comply with such obligations could lead to government enforcement actions (which could include civil or criminal penalties), fines and sanctions, private litigation, injunctive restrictions on data processing and/or adverse publicity and could negatively affect our operating results and business.

We, and third parties with whom we work, are or may become subject to numerous domestic and foreign laws, regulations, and standards relating to privacy, data protection, and data security, the scope of which are changing, subject to differing applications and interpretations, and may be inconsistent among countries, or conflict with other rules. In addition, there is proposed legislation in the U.S. Congress that could restrict working with certain biotech providers who are deemed "companies of concern" which may impact the ability of certain third parties with whom we work to meet their performance obligations. We are or may become subject to the terms of contractual obligations related to privacy, data protection, and data security. Our obligations may also change or expand as our business grows. The actual or perceived failure by us or third parties related to us to comply with such laws, regulations and obligations could increase our compliance and operational costs, expose us to regulatory scrutiny, actions, fines and penalties, result in reputational harm, lead to a loss of customers, result in litigation and liability, subject us to injunctive restrictions on data processing, adversely impact our ability to appropriately manage third parties with whom we work and otherwise cause a material adverse effect on our business, financial condition, and results of operations. See *Business—Government Regulation—Data Privacy and Security and —Other Regulatory Matters* in our Annual Report on Form 10-K for a more detailed description of the laws that may affect our ability to operate.

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 may involve the use of hazardous and flammable materials, including chemicals and biological and radioactive materials. In addition, we may incur substantial costs in order 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 commercialization efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Our ability to utilize our net operating loss carryforwards and certain other tax attributes may be limited.

As of December 31, 2024, we had net operating loss ("NOL") carryforwards for federal and state income tax purposes of $319.8 million and $39.6 million, respectively. The federal NOLs will not be subject to expiration and can be carried forward indefinitely; however, they are limited to a deduction to 80% of annual taxable income. The state NOLs begin to expire in 2038. To the extent that our taxable income exceeds any current year operating losses, we plan to use our carryforwards to offset income that would otherwise be taxable. Also, for state income tax purposes, the extent to which states will conform to the federal laws is uncertain and there may be periods during which the use of NOL carryforwards are suspended or otherwise limited, which could accelerate or permanently increase state taxes owed. In addition, under Section 382 of the Code, changes in our ownership may limit the amount of our NOL carryforwards and tax credit 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 more than 50% (as measured by value) among a stockholder or one or more groups of stockholders who own at least 5% of our stock within a three-year period. We have not performed an analysis to determine whether there has been an ownership change pursuant to Section 382. Any such limitation may significantly reduce our ability to utilize our NOL carryforwards and tax credit carryforwards before they expire. Any such limitation, whether as the result of a public offering, 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 may be subject to adverse legislative or regulatory tax changes that could negatively impact our financial condition.

The rules governing U.S. federal, state and local income taxation are constantly under review and modification by persons involved in the legislative process and by the Internal Revenue Service ("IRS") and the U.S. Treasury Department. Changes to tax laws (which changes may have retroactive application) could adversely affect us or our stockholders. We assess the potential impact of various tax reform proposals and modifications to existing tax treaties in all jurisdictions where we have operations and employees to determine the potential effect on our business and any assumptions we have made and make about our future taxable income. We cannot predict whether any specific proposals will be enacted, the terms of any such proposals or what effect, if any, such proposals would have on our business if they were to be enacted.

For example, the United States enacted the Inflation Reduction Act of 2022 (the "IRA"), which implements, among other changes, a 1% excise tax on certain stock buybacks. In addition, beginning in 2022, the Tax Cuts and Jobs Act eliminated the option to deduct research and development expenditures and requires taxpayers to amortize them generally over five years for research activities conducted in the United States and over 15 years for research activities conducted outside the United States. On July 4, 2025, the U.S. Congress enacted the One Big Beautiful Bill Act, which includes a provision restoring the immediate deductibility of domestic research and development expenditures. The impact of this newly enacted law on our tax position will depend on how the provision is implemented and interpreted by the IRS and other regulatory authorities. In addition, we have no assurance as to whether, when and how this provision may be subject to further amendment or repeal. Such changes, among others, may adversely affect our effective tax rate, results of operation and financial condition.

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

We may acquire additional businesses or products, 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 or products resulting from a strategic alliance or acquisition that delay or prevent us from realizing their expected benefits or enhancing our business. There is no assurance that, following any such acquisition, we will achieve the synergies expected in order to justify the transaction, which could result in a material adverse effect on our business and prospects.

We maintain our cash at financial institutions, at times in balances that exceed federally-insured limits. The failure of financial institutions could adversely affect our ability to pay our operational expenses or make other payments.

Our cash held in non-interest-bearing and interest-bearing accounts at financial institutions can at times exceed the Federal Deposit Insurance Corporation ("FDIC") insurance limits. If such banking institutions were to fail, we could lose all or a portion of those amounts held in excess of such insurance limitations. For example, the FDIC took control of Silicon Valley Bank on March 10, 2023. The Federal Reserve subsequently announced that account holders would be made whole. However, the FDIC may not make all account holders whole in the event of future bank failures. In addition, even if account holders are ultimately made whole with respect to a future bank failure, account holders' access to their accounts and assets held in their accounts may be substantially delayed. Any material loss that we may experience in the future or inability for a material time period to access our cash and cash equivalents could have an adverse effect on our ability to pay our operational expenses or make other payments, which could adversely affect our business.

At the end of August 2023, we identified a material weakness in our internal control over financial reporting and may identify additional material weaknesses in the future that may cause us to fail to meet our reporting obligations or result in material misstatements of our financial statements. If our internal control over financial reporting or our disclosure controls and procedures are not effective, we may not be able to accurately report our financial results, prevent fraud or file our periodic reports in a timely manner, which may cause investors to lose confidence in our reported financial information and may lead to a decline in our share price.

Our internal controls related to the cash disbursements process were not adequately designed to identify unauthorized payment requests, resulting in the identification of a material weakness. Specifically, at the end of August 2023, we discovered that we were subject to a business email compromise attack by a third party. This deficiency in our controls resulted in the diversion of payments to fraudulent bank accounts.

We determined that certain internal controls required for safeguarding our cash assets were not properly designed due to insufficient specificity regarding our policies and procedures surrounding supplier banking information changes, not identifying segregation of duties, and insufficient training on exercising professional skepticism. We therefore implemented steps to remediate this control deficiency, including increasing communication of and training around our controls relating to changes made to information, emphasizing security awareness and the importance of professional skepticism and designing a process to review supplier information changes prior to release of payments. While our management determined based on the assessment of internal control over financial reporting that as of December 31, 2023, this material weakness had been remediated, there can be no assurance that the remediation plans we implemented relating to this business email compromise attack will be successful in preventing a repeat of that attack or that we will be able to avoid potential future material weaknesses. If we are unable to successfully remediate existing or any future material weakness in our internal control over financial reporting, or if we identify any additional material weaknesses, the accuracy and timing of our financial reporting may be adversely affected, we may be unable to maintain compliance with securities law and applicable stock exchange listing requirements regarding timely filing of periodic reports, investors may lose confidence in our financial reporting, and our stock price may decline as a result. We also could become subject to investigations by Nasdaq, the SEC or other regulatory authorities.

Risks Related to Intellectual Property

Our ability to protect our patents and other proprietary rights is uncertain, exposing us to the possible loss of competitive advantage.

We rely and expect to continue to rely upon a combination of patents, trademarks, trade secret protection and confidentiality agreements to protect the intellectual property related to our product candidates and technologies and to prevent third parties from unfairly competing with us. Our success depends in large part on our ability to obtain and maintain patent protection for platform technologies, including our EXACT transgene regulation platform, product candidates and their uses, as well as the ability to operate without infringing on or violating the proprietary rights of others. As of June 30, 2025, we license 30 patent applications, including U.S. patent applications, international patent applications under the Patent Cooperation Treaty or otherwise, and expect to continue to file patent applications in the United States and abroad related to discoveries and technologies that are important to our business. However, we may not be able to protect our intellectual property rights throughout the world and the legal systems in certain countries may not favor enforcement or protection of patents, trade secrets and other intellectual property. Filing, prosecuting and defending patents on product candidates worldwide would be prohibitively expensive and our intellectual property rights in some foreign jurisdictions may be less extensive than those in the United States. As such, we do not have patents in all countries or all major markets and may not be able to obtain patents in all jurisdictions even if we apply for them. Competitors may operate in countries where we do not have patent protection and could then freely use our technologies and discoveries in such countries to the extent such technologies and discoveries are publicly known or disclosed in countries where patent protection has not been requested. In addition, competitors may be able to design around our patents to create technologies that directly compete with ours without infringing our intellectual property.

Our intellectual property portfolio is at an early stage. As of June 30, 2025, we do not own or in-license any issued patents. Our pending and future patent applications may not result in patents being issued. Any issued patents may not afford sufficient protection of our product candidates or their intended uses against competitors, nor can there be any assurance that the patents issued will not be infringed, designed around, invalidated by third parties, or effectively prevent others from commercializing competitive technologies, products or product candidates. Even if these patents are granted, they may be difficult to enforce. Further, any issued patents that may be licensed or owned covering our product candidates could be narrowed or found invalid or unenforceable if challenged in court or before administrative bodies in the United States or abroad, including the United States Patent and Trademark Office (“USPTO”). Further, if we encounter delays in any clinical trials or delays in obtaining regulatory approval, the period of time during which we could market product candidates under patent protection would be reduced. Thus, the patents that we may own or license may not afford any meaningful competitive advantage.

In addition to seeking patents for some of our technology and product candidates, we may also rely on trade secrets, including unpatented know-how, technology and other proprietary information, to maintain our competitive position. Any disclosure, either intentional or unintentional, by our employees, the employees of third parties with whom we share facilities or third-party consultants and vendors that we engage to perform researches, clinical trials or manufacturing activities, or misappropriation by third parties (such as through a cybersecurity breach) of our trade secrets or proprietary information could enable competitors to duplicate or surpass our technological achievements, thus eroding our competitive position in the market. In order to protect our proprietary technology and processes, we rely in part on confidentiality agreements with collaborators, employees, consultants, outside scientific collaborators and sponsored researchers and other advisors. These agreements may not effectively prevent disclosure of confidential information and may not provide an adequate remedy in the event of unauthorized disclosure of confidential information. We may need to share our proprietary information, including trade secrets, with future business partners, collaborators, contractors and others located in countries at heightened risk of theft of trade secrets, including through direct intrusion by private parties or foreign actors and those affiliated with or controlled by state actors. In addition, while we undertake efforts to protect our trade secrets and other confidential information from disclosure, others may independently discover trade secrets and proprietary information, and in such cases, we may not be able to assert any trade secret rights against such party. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights and failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

Lastly, if our trademarks and trade names are not registered or adequately protected, then we may not be able to build name recognition in markets of interest and our business may be adversely affected.

We may not be successful in obtaining or maintaining necessary rights to product candidates through acquisitions and in-licenses.

Because our development programs require and may in the future require the use of proprietary rights held by third parties, the growth of our business may depend in part on our ability to acquire, in-license, or use these third-party proprietary rights. We may be unable to acquire or in-license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify as necessary for product candidates. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of more established companies may pursue strategies to license or acquire third-party intellectual property rights that we may consider attractive or necessary. These established companies may have a competitive advantage over us due to their size, capital resources and greater clinical development and commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. We also may be unable to license or acquire third-party intellectual property rights on terms that would allow us to make an appropriate return on investment or at all. If we are unable to successfully obtain rights to required third-party intellectual property rights or maintain the existing intellectual property rights we have, we may have to abandon development of the relevant product candidate, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

While we will normally seek to obtain the right to control prosecution, maintenance and enforcement of the patents relating to a product candidate, there may be times when the filing and prosecution activities for patents and patent applications relating to a product candidate are controlled by future licensors or collaboration partners. For example, we currently license several patent families from the University of Edinburgh covering the EXACT transgene regulation platform, as well as the NGN-401 product candidate and its uses. If any of such licensors or collaboration partners fail to prosecute, maintain and enforce such patents and patent applications in a manner consistent with the best interests of our business, including by payment of all applicable fees for patents covering a product candidate, we could lose rights to the intellectual property or exclusivity with respect to those rights, our ability to develop and commercialize such candidates may be adversely affected and we may not be able to prevent competitors from making, using and selling competing products. In addition, even where we have the right to control patent prosecution of patents and patent applications which may be licensed to and from third parties, we may still be adversely affected or prejudiced by actions or inactions of licensees, future licensors and their counsel that took place prior to the date upon which we assumed control over patent prosecution.

Our future licensors may rely on third-party consultants or collaborators or on funds from third parties such that future licensors are not the sole and exclusive owners of the patents we in-license. If other third parties have ownership rights to future in-licensed patents, they may be able to license such patents to our competitors, and the competitors could market competing products and technology. This could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

It is possible that we may be unable to obtain licenses at a reasonable cost or on reasonable terms, if at all. Even if we are able to obtain a license, it may be non-exclusive, thereby giving competitors access to the same technologies licensed to us. In that event, we may be required to expend significant time and resources to redesign our technology, product candidates, or the methods for manufacturing the same, or to develop or license replacement technology, all of which may not be feasible on a technical or commercial basis. If we are unable to do so, we may be unable to develop or commercialize the affected product candidates, which could harm our business, financial condition, results of operations, and prospects significantly. We cannot provide any assurances that third-party patents do not exist which might be enforced against our current technology or manufacturing methods, our product candidates, or future methods or product candidates, resulting in either an injunction prohibiting manufacture or future sales, or, with respect to future sales, an obligation on our part to pay royalties and/or other forms of compensation to third parties, which could be significant.

Disputes may arise between us and our future 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 to what 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 patents and other rights to third parties; our right to transfer or assign the license; the inventorship and ownership of inventions and know-how resulting from the joint creations or use of intellectual property by future licensors and us and/or our partners; and the priority date of an invention of patented technology.

Certain of our current product candidates and research programs are licensed from or based upon licenses from a third party and are field limited to certain indications. If these license agreements are terminated or interpreted to narrow our rights, our ability to advance our current product candidates or develop new product candidates based on these technologies will be materially adversely affected.

We depend on, and will continue to depend on, our current licenses with the University of Edinburgh, Virovek, Inc. ("Virovek"), Sigma-Aldrich Co. LLC ("Sigma"), and Leland Stanford Junior University ("Stanford"), and on licenses and sublicenses from other third parties, as well as potentially on other strategic relationships with third parties, for the research, development, manufacturing and commercialization of our current product candidates. If any of our licenses or relationships or any in-licenses on which our licenses are based are terminated or breached, we may:

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

Additionally, even if not terminated or breached, our intellectual property licenses or sublicenses may be subject to disagreements over contract interpretation, which could narrow the scope of our rights to the relevant intellectual property or technology or increase our financial or other obligations.

If we experience any of the foregoing, it could have a materially adverse effect on our business and could force us to cease operations.

If we fail to comply with our obligations in any agreements under which we may license intellectual property rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.

We are party to license agreements with the University of Edinburgh, Virovek, Sigma and Stanford and may from time to time in the future be party to other license and collaboration agreements with third parties to advance our research or allow commercialization of current or future product candidates. Such agreements may impose numerous obligations, such as development, diligence, payment, commercialization, funding, milestone, royalty, sublicensing, insurance, patent prosecution, enforcement and other obligations on us and may require us to meet development timelines, or to exercise commercially reasonable efforts to develop and commercialize licensed products, in order to maintain the licenses. Despite our best efforts, our licensors might conclude that we have materially breached our license agreements and might therefore terminate the license agreements, thereby removing or limiting our ability to develop and commercialize products and technologies covered by these license agreements.

If these licenses are terminated for any reason, or if the underlying patents fail to provide the intended exclusivity, we could lose significant rights and our ability to commercialize our current or future product candidates may be harmed, and competitors or other third parties would have the freedom to seek regulatory approval of, and to market, products identical to ours and we may be required to cease our development and commercialization of certain of our current or future product candidates. Any of the foregoing could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

Disputes may also 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, misappropriate or otherwise violate intellectual property rights 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 the development and commercialization of our current or future product candidates, and what activities satisfy those diligence obligations;
- the priority of invention of any patented technology; and
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our current or future licensors and by us and our other partners.

In addition, the agreements under which we may license intellectual property or technology from third parties are likely to be complex, and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects. Moreover, if disputes over intellectual property that we may license prevent or impair our ability to maintain future licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected current or future product candidates, which could have a material adverse effect on our business, financial conditions, results of operations and prospects.

We may be subject to patent infringement claims or may need to file claims to protect our intellectual property, which could result in substantial costs, liability and diversion of resources, and prevent or delay us from commercializing potential products.

Because the intellectual property landscape in the biotechnology industry is rapidly evolving and interdisciplinary, it is difficult to conclusively assess our freedom to operate and guarantee that we can operate without infringing on or violating third party rights. If certain of our product candidates are ultimately granted regulatory approval, patent rights held by third parties, if found to be valid and enforceable, could be alleged to render one or more of such product candidates infringing. We cannot be certain that patents owned or licensed by us will not be challenged by others in the course of litigation. If a third party successfully brings a claim against us, we may be required to pay substantial damages, be forced to abandon any affected product candidate and/or seek a license from the patent holder. In addition, any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our business.

Competitors may infringe or otherwise violate our patents, trademarks, copyrights or other intellectual property. To counter infringement or other violations, we may be required to file claims, which can be expensive and time-consuming. Any such claims could provoke these parties to assert counterclaims against us, including claims alleging that our intellectual property, methods or products infringes their patents or other intellectual property rights. In addition, in a patent infringement proceeding, a court or administrative body may decide that one or more of the patents we assert is invalid or unenforceable, in whole or in part, construe the patent's claims narrowly or refuse to prevent the other party from using the technology at issue on the grounds that our patents do not cover the technology. Similarly, if we assert trademark infringement claims, a court or administrative body may determine that the marks asserted are invalid or unenforceable or that the party against whom we have asserted trademark infringement has superior rights to the marks in question. In such a case, we could ultimately be forced to cease use of such marks. In any intellectual property litigation, even if we are successful, any award of monetary damages or other remedy received may not be commercially valuable.

Further, we may be required to protect our patents through procedures created to attack the validity of a patent at the USPTO. An adverse determination in any such submission or proceeding could reduce the scope or enforceability of, or invalidate, our patent rights, which could adversely affect our competitive position. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in U.S. federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action.

If we are required to defend intellectual property actions brought by third parties, or if we sue to protect our own intellectual property rights or otherwise to protect our proprietary information and to prevent its disclosure, or if we are involved in other litigation, whether as a plaintiff or defendant, and whether or not successful, we may incur substantial legal expenses and the attention of our management and key personnel may be diverted from business operations. Further, some of our competitors may be able to sustain the costs of complex intellectual property litigation more effectively than we can because they have substantially greater resources.

In addition, if our product candidates are found to infringe the intellectual property rights of third parties, these third parties may assert infringement claims against our future licensees and other parties with whom we have business relationships and we may be required to indemnify those parties for any damages they suffer as a result of these claims, which may require us to initiate or defend protracted and costly litigation on behalf of licensees and other parties regardless of the merits of such claims. If any of these claims succeed, we may be forced to pay damages on behalf of those parties or may be required to obtain licenses for the products they use, and may not be able to obtain such licenses on terms acceptable to us, if at all.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or other legal proceedings relating to our intellectual property rights, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation or other proceedings.

We may be subject to claims that we have wrongfully hired an employee from a competitor or that employees, consultants or independent contractors have wrongfully used or disclosed confidential information of third parties.

As is common in the biotechnology industry, in addition to employees, we engage consultants to assist in the development of our product candidates. Many of these consultants, and many of our employees, were or may have been previously employed at, or may have previously provided or may be currently providing consulting services to, other biotechnology or pharmaceutical companies including our competitors or potential competitors. We could in the future be subject to claims that we or our employees or consultants working on our behalf have inadvertently or otherwise used or disclosed alleged trade secrets or other confidential information of former employers or competitors. Although we try to ensure that our employees and consultants do not use the intellectual property, proprietary information, know-how or trade secrets of others in their work for us, we may become subject to claims that we caused an employee to breach the terms of his or her non-competition or non-solicitation agreement, or that we or these individuals have, inadvertently or otherwise, used or disclosed the alleged trade secrets or other proprietary information of a former employer or competitor.

We may litigate to defend ourselves against these claims, and even if we are successful, litigation could result in substantial costs and could be a distraction to management. If our defenses to these claims fail, in addition to requiring us to pay monetary damages, a court could prohibit us from using technologies or features that are essential to our product candidates, if such technologies or features are found to incorporate or be derived from the trade secrets or other proprietary information of the former employers. Moreover, any such litigation or the threat thereof may adversely affect our reputation, our ability to form strategic alliances or sublicense our rights to collaborators, engage with scientific advisors or hire employees or consultants, each of which would have an adverse effect on our business, operations and financial condition.

Changes to patent laws in the United States and other jurisdictions could diminish the value of patents in general, thereby impairing our ability to protect our products.

Changes in either the patent laws or interpretation of patent laws in the United States, including patent reform legislation such as the Leahy-Smith America Invents Act (the "Leahy-Smith Act"), could increase the uncertainties and costs surrounding the prosecution of our owned and any future in-licensed patent applications and the maintenance, enforcement or defense of our owned and any future in-licensed issued patents. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These changes include provisions that affect the way patent applications are prosecuted, redefine prior art, provide more efficient and cost-effective avenues for competitors to challenge the validity of patents, and enable third-party submission of prior art to the USPTO during patent prosecution along with additional procedures to attack the validity of a patent at USPTO-administered post-grant proceedings, including post-grant review, inter partes review, and derivation proceedings. Assuming that other requirements for patentability are met, prior to March 16, 2013, in the United States, the first to invent the claimed invention was entitled to the patent, while outside the United States, the first to file a patent application was entitled to the patent. After March 16, 2013, under the Leahy-Smith Act, the United States transitioned to a first-to-file system in which, assuming that the other statutory requirements for patentability are met, the first inventor to file a patent application will be entitled to the patent on an invention regardless of whether a third party was the first to invent the claimed invention. As such, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition, our operations and prospects.

In addition, the patent positions of companies in the development and commercialization of biologics and pharmaceuticals are particularly uncertain. U.S. Supreme Court and U.S. Court of Appeals for the Federal Circuit rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations, including in the antibody arts. This combination of events has created uncertainty with respect to the validity and enforceability of patents once obtained. Depending on future actions by the U.S. Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that could have a material adverse effect on our patent rights and our ability to protect, defend and enforce our patent rights in the future.

Geopolitical actions in the United States and in foreign countries could increase the uncertainties and costs surrounding the prosecution or maintenance of patent applications and the maintenance, enforcement or defense of issued patents. Accordingly, our competitive position may be impaired, and our business, financial condition, operations and prospects may be adversely affected.

In addition, a European Unified Patent Court ("UPC") came into force in June 2023. The UPC is a common patent court to hear patent infringement and revocation proceedings effective for member states of the EU. This could enable third parties to seek revocation of a European patent in a single proceeding at the UPC rather than through multiple proceedings in each of the jurisdictions in which the European patent is validated. We currently have three pending European applications, and if we obtain such patents and applications in the future, any such revocation and loss of patent protection could have a material adverse impact on our business and our ability to commercialize or license our technology and products. Moreover, the controlling laws and regulations of the UPC will develop over time, and may adversely affect our ability to enforce or defend the validity of any European patents obtained. We may decide to opt out from the UPC for any future European patent applications that we may file and any patents we may obtain. If certain formalities and requirements are not met, however, such European patents and patent applications could be challenged for non-compliance and brought under the jurisdiction of the UPC. We cannot be certain that future European patents and patent applications will avoid falling under the jurisdiction of the UPC, if we decide to opt out of the UPC.

Obtaining and maintaining patent protection depends on compliance with various procedural, document submissions, 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.

Periodic maintenance fees, renewal fees, annuities fees and various other governmental fees on patents and/or patent applications are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of the patent and/or patent application. The USPTO and various foreign governmental patent agencies also require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in abandonment or lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. If we fail to maintain the patents and patent applications covering our product candidates, our competitive position would be adversely affected.

We may not identify relevant third-party patents or may incorrectly interpret the relevance, scope or expiration of a third-party patent, which might adversely affect our ability to develop and market our products.

We cannot guarantee that any of our patent searches or analyses, including the identification of relevant patents, the scope of patent claims or the expiration of relevant patents, are complete or thorough, nor can we be certain that we have identified each and every third-party patent and pending application in the United States and abroad that is relevant to or necessary for the commercialization of our product candidates in any jurisdiction. The scope of a patent claim is determined by an interpretation of the law, the written disclosure in a patent and the patent's prosecution history. Our interpretation of the relevance or the scope of a patent or a pending application may be incorrect. For example, we may incorrectly determine that our products are not covered by a third-party patent or may incorrectly predict whether a third party's pending application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect. Our failure to identify and correctly interpret relevant patents may negatively impact our ability to develop and market our products.

In addition, because some patent applications in the United States may be maintained in secrecy until the patents are issued, patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, and publications in the scientific literature often lag behind actual discoveries, we cannot be certain that others have not filed patent applications for technology covered by our pending applications or any future issued patents, or that we were the first to invent the technology. Our competitors may have filed, and may in the future file, patent applications covering our products or technology similar to ours. Any such patent application may have priority over our patent applications or patents, which could require us to obtain rights to issued patents covering such technologies.

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

We may be subject to claims that former employees, collaborators or other third parties have an interest in our patents or other intellectual property as an inventor or co-inventor. The failure to name the proper inventors on a patent application can result in the patents issuing thereon being unenforceable. Inventorship disputes may arise from conflicting views regarding the contributions of different individuals named as inventors, the effects of foreign laws where foreign nationals are involved in the development of the subject matter of the patent, conflicting obligations of third parties involved in developing our product candidates or as a result of questions regarding co-ownership of potential joint inventions. Litigation may be necessary to resolve these and other claims challenging inventorship and/or ownership. Alternatively, or additionally, we may enter into agreements to clarify the scope of our rights in such intellectual property. 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.

Our current or future licensors may have relied on third-party consultants or collaborators or on funds from third parties, such as the U.S. government or academic institutions, such that our licensors are not the sole and exclusive owners of the patents we in-licensed. If other third parties have ownership rights or other rights to our in-licensed patents, they may be able to license such patents to our competitors, and our competitors could market competing products and technology. This could have a material adverse effect on our competitive position, business, financial conditions, operations, and prospects.

Patent terms may be inadequate to protect our competitive position on our product candidates for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the natural expiration of a patent is generally 20 years from its earliest U.S. non-provisional filing date. Various extensions may be available, but the life of a patent, and the protection it affords, is limited. Even if patents covering our product candidates are obtained, once the patent life has expired, we may be open to competition from competitive products, including generics or biosimilars. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such product candidates might expire before or shortly after such product candidates are commercialized. As a result, our owned and future licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

Some intellectual property that we have in-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.-based companies. Compliance with such regulations may limit our exclusive rights, and limit our ability to contract with non-U.S. manufacturers.

Certain of the intellectual property rights we have licensed are generated through the use of U.S. government funding and are therefore 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 (the "Bayh-Dole Act") and implementing regulations. 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 our or our licensors' 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 fails to file an application to register the intellectual property within specified time limits. These time limits have recently been changed by regulation, and may change in the future. Intellectual property generated under a government funded program is also 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 United States. 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 United States 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. To the extent any of our current or future intellectual property is generated through the use of U.S. government funding, the provisions of the Bayh-Dole Act may similarly apply.

Risks Related to Government Regulation

The regulatory approval processes of the FDA and other comparable foreign regulatory authorities are lengthy, time-consuming and inherently unpredictable. If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals for our product candidates, or if we determine that we are not willing or able to complete the regulatory approval process given the resources required to do so, we will not be able to commercialize, or will be delayed in commercializing, such product candidates, and our ability to generate revenue will be materially impaired.

The process of obtaining regulatory approvals, both in the United States and abroad, is unpredictable, expensive and typically takes many years following commencement of clinical trials, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. While our product candidate NGN-401 for Rett syndrome has been accepted into the FDA's START program and the RMAT program, which we expect together will allow us to have access to more frequent advice from FDA staff, intensive guidance on efficient drug development and eligibility for an Accelerated Approval pathway and Priority Review, participation in these programs is not a guarantee that our approval process with the FDA will be faster or that we will ultimately achieve approval of a pivotal trial design or approval of NGN-401 as an accepted therapy for Rett syndrome. We cannot commercialize product candidates in the United States without first obtaining regulatory approval from the FDA. In addition, we may determine that the resources required to complete the regulatory approval process are in excess of what we are able or willing to expend on a particular program. For example, in November 2024, we announced that we do not expect to move forward with the NGN-101 gene therapy program for CLN5 Batten disease. Given the rarity of the disease, continued investment in the program was predicated on an alignment on a streamlined registrational pathway with the FDA. To support a streamlined pathway, we submitted an RMAT application to the FDA. Despite our belief that we met the standard of preliminary clinical evidence required to obtain an RMAT designation, the RMAT application was denied. We are currently evaluating options for the program.

Similarly, we cannot commercialize product candidates outside of the United States without obtaining regulatory approval from comparable foreign regulatory authorities. Before obtaining regulatory approvals for the commercial sale of our product candidates, including our most advanced product candidate, NGN-401, we must demonstrate through lengthy, complex and expensive preclinical and clinical trials that such product candidates are safe, pure and effective or potent for each targeted indication.

Securing regulatory approval also requires the submission of information about the biological product manufacturing process to, and inspection of manufacturing facilities by, the relevant regulatory authority. Further, a product candidate may not be effective or potent, may be only moderately effective or potent or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude its obtaining marketing approval. The FDA and comparable foreign regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional preclinical, clinical or other data. A product candidate could be delayed in receiving, or fail to receive, regulatory approval for many reasons, including: the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials; we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that a product candidate is safe, pure, and effective or potent for its proposed indication; the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval; serious and unexpected product-related side effects may be experienced by participants in our clinical trials or by individuals using drugs or biological products similar to a product candidate; we may be unable to demonstrate that a candidate's clinical and other benefits outweigh its safety risks; the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical studies or clinical trials; the data collected from clinical trials of a product candidate may not be acceptable or sufficient to support the submission of a BLA or other submission or to obtain regulatory approval in the United States or elsewhere, and we may be required to conduct additional clinical trials; the FDA or the applicable foreign regulatory authority may disagree regarding the formulation, labeling and/or the specifications of a product candidate; the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; and the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

Of the large number of products in development, only a small percentage successfully complete the FDA or foreign regulatory approval processes and are commercialized. The lengthy approval process as well as the unpredictability of future clinical trial results may result in us failing to obtain regulatory approval to market NGN-401 or other product candidates, which would significantly harm our business, results of operations and prospects.

If we were to obtain approval, regulatory authorities may approve any such product candidate for fewer or more limited indications than we request, including failing to approve the most commercially promising indications, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals for a product candidate, we will not be able to commercialize, or will be delayed in commercializing, such product candidate and our ability to generate revenue may be materially impaired. In addition, the FDA and foreign regulatory authorities may undergo leadership changes, change their policies, issue additional regulations or revise existing regulations, or take other actions, such as those implemented by the recently established Department of Government Efficiency ("DOGE"), which may impact our clinical development plans or prevent or delay approval of our product candidates under development on a timely basis. Such policy or regulatory changes could impose additional requirements upon us that could delay our ability to obtain approvals and increase the costs of compliance. Since the start of President Trump's administration in 2025 (the "Trump Administration"), U.S. policy changes have been implemented at a rapid pace and additional changes are likely. It is difficult to predict how executive actions that may be taken under the current administration may affect the FDA's ability to exercise its regulatory authority. If any actions impose constraints on the FDA's ability to engage in routine oversight and product review activities in the normal course, our business may be negatively impacted. Additionally, the new administration and federal government could adopt legislation, regulations or policies that adversely affect our business or create a more challenging and costly environment to pursue the development, approval and commercialization of our product candidates.

Because gene therapy is novel and the regulatory landscape that governs any product candidates we may develop is rigorous, complex, uncertain and subject to change, we cannot predict the time and cost of obtaining regulatory approval, if received at all, for any product candidates we may develop.

The regulatory requirements that will govern any novel gene therapy product candidates we develop are not entirely clear and are subject to change. Within the broader genetic medicine field, very few therapeutic products have received marketing authorization from the FDA or the EMA. Even with respect to more established products that fit into the categories of gene therapies or cell therapies, the regulatory landscape is still developing. Regulatory requirements governing gene therapy products and cell therapy products have changed frequently and will likely continue to change in the future. Moreover, there is substantial overlap in those responsible for review and regulation of existing gene therapy products and cell therapy products. For example, in the United States, the FDA has established the Office of Therapeutic Products within its Center for Biologics Evaluation and Research ("CBER"), as part of its reorganization of the Office of Tissues and Advanced Therapies, to consolidate the review of gene therapy and related products. In addition, the Cellular, Tissue and Gene Therapies Advisory Committee advises CBER on its review.

Our product candidates will need to meet safety, purity and efficacy or potency standards applicable to any new biologic under the regulatory framework administered by the FDA. In addition to FDA oversight and oversight by IRBs under guidelines promulgated by the National Institutes of Health ("NIH"), gene therapy clinical trials are also subject to review and oversight by an institutional biosafety committee ("IBC"), a local institutional committee that reviews and oversees research utilizing recombinant or synthetic nucleic acid molecules at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment. While the NIH guidelines are not mandatory unless the research in question is being conducted at or sponsored by institutions receiving NIH funding of recombinant or synthetic nucleic acid molecule research, many companies and other institutions not otherwise subject to the NIH guidelines voluntarily follow them. Although the FDA decides whether individual gene therapy protocols may proceed, the review process and determinations of other reviewing bodies can impede or delay the initiation of a clinical trial, even if the FDA has reviewed the trial and approved its initiation.

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

Adverse developments in preclinical studies or clinical trials conducted by others in the field of gene therapy and gene regulation products may cause the FDA, the EMA, and other regulatory authorities to revise the requirements for approval of any product candidates we may develop or limit the use of products utilizing gene regulation technologies, either of which could harm our business. In addition, the clinical trial requirements of the FDA, the EMA, and other regulatory authorities and the criteria these regulators use to determine the safety, purity and efficacy or potency of a product candidate vary substantially according to the type, complexity, novelty, and intended use and market of the potential products. Because of this complexity, even though our product candidate NGN-401 for Rett syndrome has been accepted into the FDA's START program and the RMAT program, which we expect together will allow us to have access to more frequent advice from FDA staff, intensive guidance on efficient drug development and eligibility for an Accelerated Approval pathway and Priority Review, the regulatory approval process for product candidates such as those being developed by us can be more expensive and take longer than for other, better known, or more extensively studied pharmaceutical or other product candidates. Further, as we are developing novel potential treatments for diseases in which, in some cases, there is little clinical experience with potential new endpoints and methodologies, heightened risk that the FDA, the EMA or other regulatory authorities may not consider the clinical trial endpoints to provide clinically meaningful results, and the resulting clinical data and results may be more difficult to analyze. In addition, we may not be able to identify or develop appropriate animal disease models to enable or support planned clinical development. Any natural history studies that we may conduct or rely upon in our clinical development may not be accepted by the FDA, EMA or other regulatory authorities. Regulatory agencies administering existing or future regulations or legislation may not allow production and marketing of products utilizing gene regulation technology in a timely manner or under technically or commercially feasible conditions. In addition, regulatory action or private litigation could result in expenses, delays, or other impediments to our research programs or the commercialization of resulting products. Further, approvals by one regulatory agency may not be indicative of what other regulatory agencies may require for approval.

The regulatory review committees and advisory groups described above and the new guidelines they promulgate may lengthen the regulatory review process, require us to perform additional preclinical studies or clinical trials, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of these treatment candidates, or lead to significant post-approval limitations or restrictions. As we advance our research programs and develop future product candidates, we will be required to consult with these regulatory and advisory groups and to comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of any product candidates we identify and develop. These additional processes may result in a review and approval process that is longer than we otherwise would have expected. Delays as a result of an increased or lengthier regulatory approval process or further restrictions on the development of our product candidates can be costly and could negatively impact our ability to complete clinical trials and commercialize our current and future product candidates in a timely manner, if at all.

Disruptions at the FDA and other government agencies and regulatory authorities could negatively affect the review of our regulatory submissions or impact our ability to access the public markets, which could negatively impact our business.

The ability of the FDA and other regulatory authorities to review and approve regulatory submissions can be affected by a variety of factors, including statutory, regulatory and policy changes, inadequate government budget funding levels or a reduction in the FDA's workforce and its ability to hire and retain key personnel, disruptions caused by government shutdowns and public health crises. There have been mass layoffs of federal government employees since the start of the Trump Administration in January 2025, the full impact of which is unclear at this time. Average review times at the agency have fluctuated as a result. In addition, government funding of the SEC and other government agencies on which our operations may rely, including those that fund research and development activities, is subject to the political process, which is inherently fluid and unpredictable. In addition, the Trump Administration has made and is expected to continue to make changes in the leadership of various U.S. federal regulatory agencies and changes to U.S. federal government policy that have led to, in some cases, legal challenges and uncertainty around the funding, functioning and policy priorities of the U.S. federal regulatory agencies, including the FDA.

We are unable to predict the extent to which the current U.S. federal administration may impose or seek to impose leadership or policy changes at the U.S. federal regulatory agencies responsible for regulating our business or changes to rules and policies impacting our operations. It is unclear how these executive actions or other potential actions by the Trump Administration or other parts of the federal government will impact the FDA or other regulatory authorities that oversee our business. Government proposals to reduce or eliminate budgetary deficits or limit federal agency personnel may include reduced allocations to the FDA and other related government agencies. These budgetary pressures may reduce the FDA's ability to perform its responsibilities, potentially affecting our ability to progress development of our product candidates or obtain regulatory approval for our product candidates and could result in delays in our clinical trial timelines. Disruptions at the FDA and other agencies or comparable foreign regulatory authorities may also slow the time necessary for the review and approval of CTAs or MAAs, which would adversely affect our business. If a significant reduction in the FDA's workforce occurs, the FDA's budget is significantly reduced or a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions or take other actions critical to the development, manufacturing or marketing of our most advanced product candidate, NGN-401, or other product candidates, if approved, which could have a material adverse effect on our business.

If a prolonged government shutdown occurs, or if global health concerns prevent the FDA or other regulatory authorities from conducting their regular inspections, reviews, or other regulatory activities, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have a material adverse effect on our business. Further, future government shutdowns could impact our ability to access the public markets and obtain necessary capital in order to properly capitalize and continue our operations.

We may not be able to meet requirements for the chemistry, manufacturing and control of our product candidates.

In order to receive approval of our products by the FDA and comparable foreign regulatory authorities, we must show that we and our contract manufacturing partners are able to characterize, control and manufacture our biological products safely and in accordance with regulatory requirements. This includes manufacturing the drug substance, developing an acceptable formulation, performing tests to adequately characterize the formulated product, documenting a repeatable manufacturing process, and demonstrating that our biological products meet stability requirements. Meeting these chemistry, manufacturing and control ("CMC") requirements is a complex task that requires specialized expertise. If we are not able to meet the CMC requirements, we may not be successful in getting our products approved.

We intend to deliver our product candidates via a drug delivery device that will have its own regulatory, development, supply and other risks.

We intend to deliver our product candidates via a drug delivery device, such as a catheter or other delivery system. There may be unforeseen technical complications related to the development activities required to bring such a product to market, including primary container compatibility and/or dose volume requirements. We expect to use drug delivery devices authorized for marketing under clearances or approvals held by third parties. Our product candidates may not be approved or may be substantially delayed in receiving approval if the devices do not gain and/or maintain their own regulatory approvals or clearances. Where approval of the drug product and device is sought under a single application, the increased complexity of the review process may delay approval. In addition, some drug delivery devices are provided by single-source unaffiliated third-party companies. We may be dependent on the sustained cooperation and effort of those third-party companies both to supply the devices and, in some cases, to conduct the studies required for approval or other regulatory clearance of the devices. Even if approval is obtained, we may also be dependent on those third-party companies continuing to maintain such approvals or clearances once they have been received. Failure of third-party companies to supply the devices, to successfully complete studies on the devices in a timely manner, or to obtain or maintain required approvals or clearances of the devices could result in increased development costs, delays in or failure to obtain regulatory approval and delays in product candidates reaching the market or in gaining approval or clearance for expanded labels for new indications.

We currently and may in the future conduct clinical trials for our product candidates at sites outside the United States, and the FDA may not accept data from trials conducted in such locations.

We plan to conduct clinical trials outside the United States, including in Australia, the UK, Europe or other foreign jurisdictions. For example, we enrolled patients in our Phase 1/2 clinical trials for NGN-401 in the United States, the UK and Australia. In cases where data from clinical trials conducted outside the United States are intended to serve as the sole basis for marketing approval in the United States, the FDA will generally not approve the application on the basis of foreign data alone unless (i) the data are applicable to the United States population and United States medical practice; (ii) the trials were performed by clinical investigators of recognized competence and (iii) the data may be considered valid without the need for an on-site inspection by the FDA or, if the FDA considers such an inspection to be necessary, the FDA is able to validate the data through an on-site inspection or other appropriate means. Additionally, the FDA's clinical trial requirements, including sufficient size of patient populations and statistical powering, must be met. Many foreign regulatory authorities have similar approval requirements. In addition, such foreign trials would be subject to the applicable local laws of the foreign jurisdictions where the trials are conducted. There can be no assurance that the FDA or any similar foreign regulatory authority will accept data from trials conducted outside of the United States or the applicable jurisdiction. If the FDA or any similar foreign regulatory authority does not accept such data, it would result in the need for additional trials, which would be costly and time-consuming and delay aspects of our business plan, and which may result in our product candidates not receiving approval or clearance for commercialization in the applicable jurisdiction. Even if the FDA accepts such data, it could require us to modify our planned clinical trials to receive clearance to initiate such trials in the United States or to continue such trials once initiated.

Other risks inherent in conducting international clinical trials include: foreign regulatory requirements, differences in healthcare services, and differences in cultural customs that could restrict or limit our ability to conduct our clinical trials; administrative burdens of conducting clinical trials under multiple sets of foreign regulations; foreign exchange fluctuations; diminished protection of intellectual property in some countries; and political and economic risks relevant to foreign countries.

Our product candidates for which we intend to seek approval as biologics may face competition sooner than anticipated.

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (collectively, the "ACA"), includes a subtitle called the Biologics Price Competition and Innovation Act of 2009 ("BPCIA"), which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-licensed reference biological product. Under the BPCIA, an application for a highly similar or "biosimilar" product may not be submitted to the FDA until four years following the date that the reference product was first approved by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first approved. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of its product.

Our investigational biological products, if approved, could be considered reference products entitled to 12-year exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider a product candidate to be reference products for competing products, potentially creating the opportunity for competition sooner than anticipated. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. Moreover, the extent to which a biosimilar, once approved, will be substituted for any reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

Even if we receive regulatory approval of NGN-401 or other product candidates, we will be subject to extensive ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our product candidates.

Any regulatory approvals that we may receive for NGN-401 or other product candidates will require the submission of reports to regulatory authorities and surveillance to monitor the safety, purity and efficacy or potency of such product candidates, may contain significant limitations related to use restrictions for specified age groups, warnings, precautions or contraindications, and may include burdensome post-approval study or risk management requirements. For example, the FDA may require a risk evaluation and mitigation strategy in order to approve a product candidate, which could entail requirements for a medication guide, physician training and communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or comparable foreign regulatory authorities approve a product candidate, the products and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, purity, efficacy or potency, recordkeeping, labeling, storage, approval, advertising, promotion, sale, distribution, import and export will be subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by comparable foreign regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as on-going compliance with current cGMPs and GCPs for any clinical trials that we conduct following approval. In addition, manufacturers of drug products and their facilities are subject to continual review and periodic, unannounced inspections by the FDA and other regulatory authorities for compliance with cGMPs.

If we or a regulatory authority discovers previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facilities where the product is manufactured, a regulatory authority may impose restrictions on that product, the manufacturing facility or us, including requiring recall or withdrawal of the product from the market or suspension of manufacturing, requiring the addition of labeling statements, such as a "black box" warning or a contraindication, requiring creation of a medication guide outlining the risk of such side effects for distribution to patients, withdrawal or suspension of existing approvals or licenses, refusal to approve pending applications or supplements, restrictions on our ability to conduct clinical trials, including full or partial clinical holds on ongoing or planned trials, restrictions on the manufacturing process, warning or untitled letters, civil and criminal penalties, injunctions, product seizures, detentions or import bans, voluntary or mandatory publicity requirements and imposition of restrictions on operations, including costly new manufacturing requirements. The occurrence of any event or penalty described above may inhibit our ability to commercialize NGN-401 or other product candidates and generate revenue and could require us to expend significant time and resources in response and could generate negative publicity.

We may face difficulties from healthcare legislative reform measures.

Existing regulatory policies may change, and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of NGN-401 or other product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability. See *Business—Government Regulation—Healthcare Reform* in our Annual Report on Form 10-K for a more detailed description of healthcare reforms measures that may prevent us from being able to generate revenue, attain profitability, or commercialize product candidates.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers will be subject to applicable healthcare regulatory laws, which could expose us to penalties.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers may expose us to broadly-applicable fraud and abuse and other healthcare laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute our product candidates, if approved. See *Business—Government Regulation—Other Healthcare Laws and Compliance Requirements* in our Annual Report on Form 10-K for a more detailed description of the laws that may affect our ability to operate.

Ensuring that our internal operations and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. If our operations are found to be in violation of any of these laws or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, integrity oversight and reporting obligations to resolve allegations of non-compliance, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations. Further, defending against any such actions can be costly and time-consuming and may require significant personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

Even if we are able to commercialize NGN-401 or other product candidates, due to unfavorable pricing regulations and/or third-party coverage and reimbursement policies, we may not be able to offer such products at competitive prices which would seriously harm our business.

We intend to seek approval to market NGN-401 and other product candidates in both the United States and in selected foreign jurisdictions. If we obtain approval in one or more foreign jurisdictions for such product candidates, we will be subject to rules and regulations in those jurisdictions. Our ability to successfully commercialize any product candidates that we may develop will depend in part on the extent to which reimbursement for these products and related treatments will be available from government health administration authorities, private health insurers and other organizations. Government authorities and other third-party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. Government authorities and other third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. These entities may create preferential access policies for a competitor's product, including a branded or generic/biosimilar product, over our products in an attempt to reduce their costs, which may reduce our commercial opportunity. Additionally, if any of our product candidates are approved and we are found to have improperly promoted off-label uses of those programs, we may become subject to significant liability, which would materially adversely affect our business and financial condition. See *Business—Government Regulation—Coverage and Reimbursement and —Regulation in the European Union* in our Annual Report on Form 10-K for a more detailed description of the government regulations and third-party payor practices that may affect our ability to commercialize product candidates.

We are subject to U.S. and certain foreign export and import controls, sanctions, embargoes, anti-corruption laws, and anti-money laundering laws and regulations. We can face criminal liability and other serious consequences for violations, which can harm our business.

We are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations, various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Controls, the U.S. Foreign Corrupt Practices Act of 1977, as amended, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act, and other state and national anti-bribery and anti-money laundering laws in the countries in which we conduct activities. In addition, the U.S. Congress is currently contemplating legislation that could have the impact of limiting the ability of us and certain of our vendors to work with certain designated biotech companies from China and other nations.

Anti-corruption laws are interpreted broadly and prohibit companies and their employees, agents, contractors, and other collaborators from authorizing, promising, offering, or providing, directly or indirectly, improper payments or anything else of value to or from recipients in the public or private sector. We may engage third parties to sell products outside the United States, to conduct clinical trials, and/or to obtain necessary permits, licenses, patent registrations, and other regulatory approvals. We have direct or indirect interactions with officials and employees of government agencies or government-affiliated hospitals, universities, and other organizations. We can be held liable for the corrupt or other illegal activities of our employees, agents, contractors, and other collaborators, even if we do not explicitly authorize or have actual knowledge of such activities. Any violations of the laws and regulations described above may result in substantial civil and criminal fines and penalties, imprisonment, the loss of export or import privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm, and other consequences.

Healthcare legislative, regulatory or policy reform measures may have a negative impact on our business and results of operations, and could prevent commercial success of our product candidates.

The federal government and individual states continue to pursue healthcare reform, including promoting changes in healthcare systems with the stated goals of containing healthcare costs, lowering the cost of prescription drugs and biologics, improving quality and expanding access. The pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives. The U.S. government and state legislatures have shown interest in implementing cost-containment programs to limit the growth of government-paid and private insurance healthcare costs, including proposed or implemented reforms involving price controls, restrictions on reimbursement and requirements for substitution of generic products for branded prescription drugs and implementing new requirements for, or eliminating caps on, rebates paid on products under government healthcare programs.

For example, the ACA substantially changed the way healthcare is financed by both the government and private insurers, with significant impacts to the U.S. pharmaceutical industry. There have been judicial, congressional and executive branch challenges to certain aspects of the ACA, including efforts to repeal or replace certain aspects of the ACA. For example, the IRA, among other things, extends enhanced subsidies for individuals purchasing health insurance coverage in ACA marketplaces through plan year 2025. The IRA also eliminates the “donut hole” under the Medicare Part D program beginning in 2025 by significantly lowering the beneficiary maximum out-of-pocket cost and creating a new manufacturer discount program. It is possible that the ACA will be subject to judicial or Congressional challenges in the future. It is also unclear how any additional healthcare reform measures of the Trump Administration will impact the ACA and our business.

Additionally, in the United States, there have been, and continue to be, several legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of product candidates, restrict or regulate post-approval activities, and affect our ability to profitably sell any product candidates for which we obtain marketing approval. We are unable to predict what additional legislation, regulations or policies, if any, relating to the healthcare industry or third-party coverage and reimbursement may be enacted in the future or what effect such legislation, regulations or policies would have on our business. Any cost containment measures or other healthcare system reforms that are adopted could significantly decrease the available coverage and the price we might establish for our product candidates and their commercial success, which would have an adverse effect on our business and results of operations.

Governments outside the United States may impose strict price controls, which may adversely affect our revenue, if any.

In some countries, particularly member states of the EU, the pricing of prescription drugs is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after receipt of marketing approval for a therapeutic. In addition, there can be considerable pressure by governments and other stakeholders on prices and reimbursement levels, including as part of cost containment measures. Political, economic and regulatory developments may further complicate pricing negotiations, and pricing negotiations may continue after reimbursement has been obtained. Reference pricing used by various EU member states and parallel distribution, or arbitrage between low-priced and high-priced member states, can further reduce prices. To obtain coverage and reimbursement or pricing approvals in some countries, we or current or future collaborators of ours may be required to conduct a clinical trial or other studies that compare the cost-effectiveness of a product to other available therapies in order to obtain or maintain reimbursement or pricing approval. Publication of discounts by third-party payors or authorities may lead to further pressure on the prices or reimbursement levels within the country of publication and other countries. If reimbursement of any product approved for marketing is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business, financial condition, results of operations or prospects could be materially and adversely affected. Brexit could lead to legal uncertainty and potentially divergent national laws and regulations, including those related to the pricing of prescription pharmaceuticals, as the UK determines which EU laws to replicate or replace. If the UK were to significantly alter its regulations affecting the pricing of prescription pharmaceuticals, we could face significant new costs.

While we have received Fast Track designation for NGN-401 for the treatment of Rett syndrome and NGN-401 has been accepted into the FDA's START Pilot Program and RMAT program and has received PRIME designation from the EMA, such designations may not lead to a faster development or regulatory review or approval process.

In 2024, the FDA began accepting applications from sponsors for the START pilot program with the purpose of further accelerating the pace of development of novel drug and biological products that are intended to address an unmet medical need as a treatment for rare disease. The pilot is designed to be milestone-driven (i.e. to facilitate the progression of a development program to pivotal clinical study stage or the pre-BLA meeting stage) where product development programs selected would benefit from enhanced communication with the FDA. The START pilot program is intended to provide a mechanism for addressing clinical development issues that otherwise would delay or prevent a promising novel drug or biological product from progressing to the pivotal clinical trial stage or pre-BLA meeting stage. Participants in the START Pilot Program will receive enhanced communications with the FDA review staff. These enhanced communications will include at a minimum an initial meeting to review features of the pilot, discuss a pathway intended to support a marketing application, and to discuss specific issues for which a sponsor requests enhanced communications with the FDA. Additional communications will include ongoing interactions via email or teleconference that take place on a scheduled and/or as needed basis as agreed upon by the sponsor information on how best to facilitate more efficient development of potentially life-saving therapies for rare diseases and help sponsors generate high-quality, actionable data to support future new drug or biologics license applications. In June 2024, we announced that our product candidate NGN-401 had been accepted into the FDA's START Pilot Program, which we expect will allow us to have access to more frequent advice from FDA staff to address product-specific development issues, possibly including clinical study design, choice of control group, patient population choices and other early development issues. As part of the START program, in June 2025, we announced written agreement from the FDA on key aspects of the registrational trial's design for Embolden, our registrational clinical trial designed to evaluate NGN-401 gene therapy in patients with Rett syndrome. Despite the registrational trial and even though our product candidate NGN-401 for Rett syndrome has been accepted into the START Pilot Program, this may not result in a faster approval process for NGN-401 as a product candidate.

The FDA's RMAT designation program is intended to fulfill the requirement of the 21st Century Cures Act that the FDA facilitate an efficient development program for, and expedite review of, any product that meets the following criteria: (1) it qualifies as an RMAT, which is defined as a cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products, with limited exceptions; (2) it is intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition; and (3) preliminary clinical evidence indicates that the product has the potential to address unmet medical needs for such a disease or condition. In 2024, the FDA granted an RMAT designation for NGN-401 for the treatment of Rett syndrome. RMAT designation provides potential benefits that include more frequent meetings with FDA to discuss the development plan for the product candidate, and eligibility for rolling review and priority review. Products granted RMAT designation may also be eligible for accelerated approval on the basis of a surrogate or intermediate endpoint reasonably likely to predict long-term clinical benefit, or may be able to rely upon data obtained from a meaningful number of sites, including through expansion to additional sites. RMAT designation does not change the standards for product approval, and there is no assurance that such designation will result in expedited review or approval or that the approved indication will not be narrower than the indication covered by the RMAT designation. Additionally, RMAT designation can be revoked if the criteria for eligibility cease to be met as clinical data emerges.

The FDA may also designate a product for Fast Track review if it is intended, whether alone or in combination with one or more other products, for the treatment of a serious or life-threatening disease or condition, and it demonstrates the potential to address unmet medical needs for such a disease or condition. For Fast Track products, sponsors may have greater interactions with the FDA and the FDA may initiate review of sections of a Fast Track product's application before the application is complete. This rolling review may be available if the FDA determines, after preliminary evaluation of clinical data submitted by the sponsor, that a Fast Track product may be effective. We have received Fast Track designation in the United States for NGN-401 for the treatment of Rett syndrome and we may seek additional designations for one or more of our other product candidates that could expedite review and approval by the FDA.

Participation in the START Pilot Program, RMAT designation and the designation of a product for Fast Track review are within the discretion of the FDA. In addition, the START Pilot Program is in its first year as a pilot program, so there is no historical information on how that program is expected to be administered, and the stated intentions of the program may not be met, or the program may cease to have appropriate funding due to changes in the regulatory landscape. Moreover, neither participation in the START Pilot Program nor the receipt of either Fast Track designation or RMAT designation for a product candidate is any guarantee that there will be faster development or a faster or more streamlined regulatory review or approval process compared to products considered for approval under conventional FDA procedures. Neither participation in the START Pilot Program nor either Fast Track designation or RMAT designation will assure ultimate approval by the FDA. In addition, the FDA may later decide that the product candidates no longer meet the conditions to qualify for those programs, and we may not receive the benefits of those programs for the relevant product candidate, or decide that the time period for FDA review or approval will not be shortened. Additionally, changes in the leadership of the FDA and other actions taken by the Trump Administration, including mass layoffs within the federal government, may impose constraints on the FDA's ability to engage in activities in the normal course and may result in reductions to the FDA's budget, employees and operations, which may lead to slower response times and longer review periods, potentially affecting our ability to take advantage of the benefits for the START program and progress development of our product candidates or obtain regulatory approval for our product candidates.

In addition, we have also received PRIME designation from the EMA for NGN-401. PRIME is intended to enhance support for the development of medicines that target an unmet medical need, and is expected to allow enhanced interaction and early dialogue between us and the EMA on development plans for NGN-401 and to potentially speed up the evaluation process. However, similar to the START Pilot Program and Fast Track designation, we cannot be sure that the PRIME designation will actually result in a faster development time or more streamlined review, or that we will necessarily pursue the benefits of the program with respect to development of our product in the European market.

We may seek certain designations for our product candidates, including Breakthrough Therapy and Priority Review designations by the FDA, however, even if we receive such designations, there is no guarantee that they would lead to faster development or regulatory review timelines or increase the likelihood of marketing approval for such product candidate.

We may seek to have one or more of our products designated as a Breakthrough Therapy, which is defined as a product that is intended, alone or in combination with one or more other products, to treat a serious or life threatening disease or condition where preliminary clinical evidence indicates that the product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. For products that have been designated as Breakthrough Therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens.

We may seek an RMAT designation or a priority review designation for one or more of our product candidates. If the FDA determines that a product candidate qualifies as an RMAT, that is intended to treat, reverse, or cure a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the product has the potential to address unmet medical needs for such a disease or condition, the FDA may grant participation in the RMAT program for that product candidate. If the FDA determines that a product candidate offers a treatment for a serious condition, and if approved, would provide a significant improvement in safety or effectiveness where no adequate therapy exists, the FDA may designate the product candidate for priority review. A priority review designation means that the goal for the FDA to review an application is six months, rather than the standard review period of ten months.

As with the Fast Track designation and selection for participation in the START Pilot Program, these designations are within the discretion of the FDA. Even if we believe that one or more of our product candidates meets the criteria for these designations, the FDA may not agree and instead determine to not make such a designation. Even if one or more of our product candidates qualifies for either or both of these designations, the FDA may later decide that such product candidate no longer meets the conditions for those designations, and we may not receive the benefits of the designation for that product candidate. If a product candidate is awarded one or both designations by the FDA, it may not result in a faster or more streamlined regulatory review or approval process compared to products considered for approval under conventional FDA procedures, and it does not assure ultimate marketing approval of such product candidate by the FDA.

We have received orphan drug designation for NGN-401 for the treatment of Rett syndrome and we may seek orphan drug designation for certain future product candidates, but we may be unable to obtain such designations or to maintain the benefits associated with orphan drug designation, including market exclusivity, which may cause our revenue, if any, to be reduced.

We have received orphan drug designation from the FDA and orphan drug designation and advanced therapy medicinal product designation from the European Medicines Agency (EMA) for NGN-401 for the treatment of Rett syndrome. Although we may seek orphan product designation for some or all of our other product candidates, we may never receive such designations. Under the Orphan Drug Act, the FDA may designate a drug or biological product as an orphan drug if it is intended to treat a rare disease or condition, defined as a patient population of fewer than 200,000 in the United States, or a patient population greater than 200,000 in the United States where there is no reasonable expectation that the cost of developing the drug will be recovered from sales in the United States. Orphan drug designation must be requested before submitting a BLA. In the EU, the EMA's Committee for Orphan Medicinal Products grants orphan drug designation to promote the development of products that are intended for the diagnosis, prevention, or treatment of a life-threatening or chronically debilitating condition affecting not more than five in 10,000 persons in the EU. Additionally, designation is granted for products intended for the diagnosis, prevention, or treatment of a life-threatening, seriously debilitating or serious and chronic condition when, without incentives, it is unlikely that sales of the drug in the EU would be sufficient to justify the necessary investment in developing the drug or biological product or where there is no satisfactory method of diagnosis, prevention, or treatment, or, if such a method exists, the medicine must be of significant benefit to those affected by the condition.

In the United States, orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages, and application fee waivers. After the FDA grants orphan drug designation, the generic identity of the drug and its potential orphan use are disclosed publicly by the FDA.

In addition, if a product receives the first FDA approval for the indication for which it has orphan designation, the product is entitled to orphan drug exclusivity, which means the FDA may not approve any other application to market the same drug for the same indication for a period of seven years, except in limited circumstances, such as a showing of clinical superiority over the product with orphan exclusivity or where the manufacturer is unable to assure sufficient product quantity for the orphan patient population. Exclusive marketing rights in the United States may also be unavailable if we or our collaborators seek approval for an indication broader than the orphan designated indication and may be lost if the FDA later determines that the request for designation was materially defective. In the EU, orphan drug designation entitles a party to financial incentives such as reduction of fees or fee waivers and ten years of market exclusivity following drug or biological product approval. This period may be reduced to six years if the orphan drug designation criteria are no longer met, including where it is shown that the product is sufficiently profitable not to justify maintenance of market exclusivity.

Even with an orphan drug designation for our current and potential future product candidates, we may not be the first to obtain marketing approval for any particular orphan indication due to the uncertainties associated with developing pharmaceutical products. Further, even if we obtain orphan drug exclusivity for an existing or future product candidate, that exclusivity may not effectively protect the product from competition because different drugs with different active moieties still can be approved for the same condition even with an orphan drug designation. Even after an orphan drug is approved, the FDA can subsequently approve the same drug with the same active moiety for the same condition if the FDA concludes that the later drug is clinically superior in that it is safer, more effective, or makes a major contribution to patient care. Orphan drug designation neither shortens the development time or regulatory review time of a drug or biologic nor gives the drug or biologic any advantage in the regulatory review or approval process.

We have received Rare Pediatric Disease designation by the FDA for NGN-401 for the treatment of Rett syndrome. However, Rare Pediatric Disease designation for any of our product candidates does not guarantee that the BLA for the product will qualify for a priority review voucher upon approval, and it does not lead to a faster development or regulatory review process, or increase the likelihood that our product candidates will receive marketing approval.

Under the Rare Pediatric Disease Priority Review Voucher program, upon the approval of a qualifying BLA for the treatment of a rare pediatric disease, the sponsor of such an application would be eligible for a rare pediatric disease priority review voucher that can be used to obtain priority review for a subsequent BLA or NDA. If a product candidate was designated before September 30, 2024, it is eligible to receive a voucher if it is approved before September 30, 2026. While we have obtained Rare Pediatric Disease designation for NGN-401 for the treatment of Rett syndrome, it is unlikely that this product candidate will be approved by September 30, 2026. If approval is not obtained by then, we would not be in a position to obtain a priority review voucher, unless Congress further reauthorizes the program beyond the current sunset dates, which require that a product designated as being for a rare pediatric disease be approved by September 30, 2026. Additionally, designation of a biological product for a rare pediatric disease does not guarantee that a BLA will meet the eligibility criteria for a rare pediatric disease priority review voucher at the time the application is approved. Finally, a Rare Pediatric Disease designation does not lead to faster development or regulatory review of the product or increase the likelihood that it will receive marketing approval.

General Risk Factors

Our estimates of market opportunity and forecasts of market growth may prove to be inaccurate, and even if the markets in which we compete achieve the forecasted growth, our business may not grow at similar rates, or at all.

Our market opportunity estimates and growth forecasts are subject to significant uncertainty and are based on assumptions and estimates which may not prove to be accurate. Our estimates and forecasts relating to size and expected growth of our target market may prove to be inaccurate. Even if the markets in which we compete meet our size estimates and growth forecasts, our business may not grow at similar rates, or at all. Our growth is subject to many factors, including our success in implementing our business strategy, which is subject to many risks and uncertainties.

Our revenue will be dependent, in part, upon the size of the markets in the territories for which we gain regulatory approval, the accepted price for the product, the ability to obtain coverage and reimbursement and whether we own the commercial rights for that territory. If the number of our addressable patients is not as significant as we estimate, the indication approved by regulatory authorities is narrower than we expect or the treatment population is narrowed by competition, physician choice or treatment guidelines, we may not generate significant revenue from sales of such products, even if approved.

We may become exposed to costly and damaging liability claims, either when testing a product candidate in the clinical or at the commercial stage, and our product liability insurance may not cover all damages from such claims.

We are exposed to potential product liability and professional indemnity risks that are inherent in the research, development, manufacturing, marketing, and use of pharmaceutical products. While we currently have no products that have been approved for commercial sale, the current and future use of a product candidate in clinical trials, and the sale of any approved products in the future, may expose us to liability claims. These claims may be made by patients that use the product, healthcare providers, pharmaceutical companies, or others selling such product. Any claims against us, regardless of their merit, could be difficult and costly to defend and could materially and adversely affect the market for our products or any prospects for commercialization of our products. Although we believe we currently maintain adequate product liability insurance for NGN-401, NGN-101 and other product candidates, it is possible that our liabilities could exceed our insurance coverage or that in the future we may not be able to maintain insurance coverage at a reasonable cost or obtain insurance coverage that will be adequate to satisfy any liability that may arise. If a successful product liability claim or series of claims is brought against us for uninsured liabilities or in excess of insured liabilities, our assets may not be sufficient to cover such claims and our business operations could be impaired.

Our manufacturing facility is located in Houston, Texas, making us vulnerable to risks (including weather-related risks) associated with maintaining those operations in a single geographic area.

Our manufacturing facility is located in Houston, Texas, which is subject to extreme weather events such as hurricanes and other significant storms, which can cause interruption to our utilities and potentially result in damage to our facility, limit the ability of suppliers to reach us during such disruptions and adversely impact our manufacturing processes. For example, in July 2024, our facility in Houston sustained five days of power loss from the impact of Hurricane Beryl, which was a Category 1 hurricane. While we were able to maintain power to critical systems through the use of our generators, the outage caused a minor delay in our development activities and caused disruptions in our manufacturing processes, including in our clean rooms. The impact of Hurricane Beryl was not material to our operations, however, future weather events could cause more disruption, including the potential for a sustained loss of power that could result in costly delays to our manufacturing process or the loss of certain materials stored in our facility, which could in turn have a material adverse effect on our product development timeline and results of operations.

Litigation costs and the outcome of litigation could have a material adverse effect on our business.

From time to time, we may be subject to litigation claims through the ordinary course of our business operations regarding, but not limited to, employment matters, security of patient and employee personal information, contractual relations with collaborators and intellectual property rights. Litigation to defend ourselves against claims by third parties, or to enforce any rights that we may have against third parties, may continue to be necessary, which could result in substantial costs and diversion of our resources, causing a material adverse effect on our business, financial condition, results of operations or cash flows.

Our business could be adversely affected by economic volatility, inflation, fluctuating interest rates, natural disasters, public health crises, political crises, geopolitical events, or other macroeconomic conditions, which could have a material and adverse effect on our results of operations and financial condition.

The global economy, including credit and financial markets, has experienced and may experience in the future extreme volatility and disruptions, including, among other things, diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, supply chain shortages, new or increased tariffs imposed by the U.S. government and potential retaliatory measures by foreign governments and other barriers to trade, especially in light of recent executive orders made by the Trump Administration, trade and other international disputes, increases in inflation rates, fluctuating interest rates, slower growth or recession, tighter credit, volatility in financial markets, high unemployment, labor availability constraints, public health crises, significant natural disasters, including as a result of climate change, changes to fiscal and monetary policy or government budget dynamics (particularly in the pharmaceutical and biotechnology areas), political and military conflict, and uncertainty about economic stability. In recent months, the U.S. has announced tariffs on imports from most countries, including significant tariffs on imports from certain countries. Historically, tariffs have led to increased trade and political tensions. In response to tariffs, other countries have implemented retaliatory tariffs on U.S. goods. Political tensions as a result of trade policies could reduce trade volume, investment, technological exchange and other economic activities between major international economies, resulting in a material adverse effect on global economic conditions and the stability of global financial markets. While trade negotiations are ongoing and certain bilateral trade deals have been announced, in other cases significant tariffs have been imposed, yet there remains substantial uncertainty about the duration of existing tariffs and whether additional tariffs may be imposed, modified or suspended. Fluctuating interest rates, coupled with reduced government spending and volatility in financial markets, may increase economic uncertainty and affect consumer spending. Similarly, the ongoing military conflict between Russia and Ukraine and in the Middle East, and rising tensions with China have created extreme volatility in the global capital markets and may have further global economic consequences, including disruptions of the global supply chain. Any such volatility and disruptions may adversely affect our business or the third parties on whom we rely. If the equity and credit markets deteriorate, including as a result of economic or political uncertainty, political unrest or war, it may make any necessary debt or equity financing more costly, more dilutive, or more difficult to obtain in a timely manner or on favorable terms, if at all. Increased inflation rates can adversely affect us by increasing our costs, including materials, operational, labor and employee benefit costs.

We may in the future experience disruptions as a result of such macroeconomic conditions, including delays or difficulties in initiating or expanding clinical trials and manufacturing sufficient quantities of materials. Any one or a combination of these events could have a material and adverse effect on our results of operations and financial condition.

Geopolitical events and global economic conditions may also affect the ability of the FDA and other regulatory authorities to perform routine functions. If such concerns prevent the FDA or other regulatory authorities from conducting their regular inspections, reviews or other regulatory activities, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

Risks Related to Owning Our Stock

The market price of our common stock may continue to be volatile.

The market price of our common stock following the merger has been and may continue to be subject to significant fluctuations. Some of the factors that may cause the market price of our common stock to fluctuate include:

- timing and results of clinical trials and preclinical studies of our product candidates, or those of our competitors or our existing or future collaborators;
- failure to meet or exceed financial and development projections that we may provide to the public;
- failure to meet or exceed the financial and development projections of the investment community;
- failure to achieve the perceived benefits of the merger as rapidly or to the extent anticipated by financial or industry analysts;
- announcements of significant acquisitions, strategic collaborations, joint ventures or capital commitments by us or our competitors;
- actions taken by regulatory agencies with respect to our product candidates, clinical studies, manufacturing process or sales and marketing terms;
- disputes or other developments relating to proprietary rights, including patents, litigation matters, and our ability to obtain patent protection for our technologies;

- additions or departures of key personnel;
- significant lawsuits, including patent or stockholder litigation;
- if securities or industry analysts do not publish research or reports about our business, or if they issue adverse or misleading opinions regarding our business and stock;
- changes in the market valuations of similar companies;
- general market, macroeconomic or geopolitical conditions or market conditions in the pharmaceutical and biotechnology sectors;
- sales of securities by us or our securityholders in the future;
- if we fail to raise an adequate amount of capital to fund our operations or continued development of our product candidates;
- trading volume of our common stock;
- announcements by competitors of new commercial products, clinical progress or lack thereof, significant contracts, commercial relationships or capital commitments;
- adverse publicity relating to gene therapy product candidates, including with respect to other products in such markets;
- the introduction of technological innovations or new therapies that compete with our products; and
- period-to-period fluctuations in our financial results.

Moreover, the stock markets in general have experienced substantial volatility that has often been unrelated to the operating performance of individual companies. For example, escalating trade tensions, elevated interest rates and regulatory uncertainty have caused significant market volatility in recent months, and particularly in the biotechnology and biopharmaceutical industries. These broad market fluctuations may also adversely affect the trading price of our common stock. In addition, a recession, depression or other sustained adverse market event could materially and adversely affect our business and the value of our common stock. In the past, following periods of volatility in the market price of a company's securities, stockholders have often instituted class action securities litigation against such companies. Furthermore, market volatility may lead to increased stockholder activism or securities litigation if we experience a market valuation that activists believe is not reflective of our intrinsic value. Activist campaigns that contest or conflict with our strategic direction or seek changes in the composition of our board of directors could have an adverse effect on our operating results, financial condition and cash flows. Class action securities litigation, if instituted, could result in substantial costs and diversion of management attention and resources, which could significantly harm our profitability and reputation.

We may be required to allocate resources to fulfill the requirements of the CVR Agreement entered into in connection with the Reverse Merger related to certain legacy lease obligations which may take away from our core programs and create a distraction for our management and employees.

On December 18, 2023, we completed our business combination with our wholly owned subsidiary incorporated in the state of Nevada and also named Neurogene Inc. ("Neurogene OpCo") in accordance with the terms of the Agreement and Plan of Merger, dated as of July 17, 2023 (the "Merger Agreement"), by and among the Company, Project North Merger Sub, Inc., a Delaware corporation and a wholly owned subsidiary of the Company ("Merger Sub"), and Neurogene OpCo, pursuant to which, among other matters, Merger Sub merged with and into Neurogene OpCo, with Neurogene OpCo surviving as a wholly owned subsidiary of the Company (the "Reverse Merger").

In connection with the Reverse Merger, we declared a dividend, to each person who, as of immediately prior to the effective time of the Reverse Merger, was a stockholder of the Company or had the right to receive our common stock pursuant to an existing pre-funded warrant, of the right to receive one non-transferable contingent value right (each, a "CVR") for each then outstanding share of our common stock (before giving effect to a 1-for-4 reverse stock split (the "Reverse Stock Split") that was implemented immediately prior to the effective time), each representing the non-transferable contractual right to receive certain contingent payments from the Company upon the occurrence of certain events within agreed time periods. Holders of options to purchase our common stock outstanding immediately prior to the effective time of the merger will also receive four CVRs for each share of our common stock that may be issued upon exercise of such option, such that they will receive the same number of CVRs as they would have received if the option had been exercised before the Reverse Stock Split, subject to certain conditions set forth in the CVR Agreement.

Pursuant to the terms of the CVR Agreement, the holders of our common stock prior to the effective time of the Reverse Merger, including holders of existing pre-funded warrants and holders of options to purchase our common stock outstanding immediately prior to the effective time of the merger and exercised after the effective time of the merger, rather than all of our current holders of our common stock, are the primary recipients of any net proceeds of the disposition of the legacy assets related the business of Neoleukin Therapeutics, Inc. as it existed prior to the effective time of the Reverse Merger, the mitigation of legacy lease obligations related the business of Neoleukin Therapeutics, Inc. as it existed prior to the effective time of the Reverse Merger or receipt of any sales tax refund from the State of Washington based on tax returns we filed prior to the effective time of the Reverse Merger. While we have entered into agreements for the disposition of certain legacy assets of Neoleukin, we are still pursuing a resolution of the legacy lease obligations of Neoleukin and expect that we will need to allocate resources, including payment of certain up-front costs, and time from employees and management to complete the resolution of such obligations and to administer the provisions of the CVR Agreement and distribution of any payments to holders of the CVRs.

Accordingly, we may be required to allocate a portion of our funds, time and resources to such activities and not our core programs and the foregoing could be a distraction to our management and employees. As a result, our operations and financial condition may be adversely affected.

We have incurred, and will continue to incur additional costs and increased demands upon management as a result of complying with the laws and regulations affecting public companies.

We have incurred and will continue to incur significant legal, accounting and other expenses as a public company that may not be reflected in our historical financial statements, which reflect our operation as a private company. Some of these additional expenses include costs associated with public company reporting obligations under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Our management team needs to devote substantial time to complying with public company reporting requirements and compliance with applicable laws and regulations to ensure that we comply with all of these requirements. These reporting requirements, rules and regulations, coupled with the increase in potential litigation exposure associated with being a public company, may make it more difficult for us to attract and retain qualified persons to serve on the board of directors or on board committees or to serve as executive officers, or to obtain certain types of insurance, including directors' and officers' insurance, on acceptable terms.

Once we are no longer a smaller reporting company or otherwise no longer qualify for applicable exemptions, we will be subject to additional laws and regulations affecting public companies that will increase our costs and the demands on management and could harm our operating results and cash flows.

We are subject to the reporting requirements of the Exchange Act, which requires, among other things, that we file with the SEC annual, quarterly and current reports with respect to our business and financial condition as well as other disclosure and corporate governance requirements. We expect to still qualify as a "smaller reporting company," as such term is defined in Rule 12b-2 under the Exchange Act, in at least the near term, which allows us to take advantage of many exemptions from disclosure requirements, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act and reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. Once we are no longer a smaller reporting company or otherwise no longer qualify for this exemption, we will be required to comply with these additional legal and regulatory requirements applicable to public companies and will incur significant additional legal, accounting and other expenses to do so. If we are not able to comply with the requirements in a timely manner or at all, our financial condition or the market price of our common stock may be harmed. For example, if we or our independent auditor identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, we could face additional costs to remedy those deficiencies, the market price of our stock could decline or we could be subject to sanctions or investigations by the SEC or other regulatory authorities, any of which would require additional financial and management resources.

If we fail to maintain proper and effective internal controls, our ability to produce accurate financial statements on a timely basis could be impaired.

We are subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act and the rules and regulations of Nasdaq. The Sarbanes-Oxley Act requires, among other things, that we maintain effective disclosure controls and procedures and internal control over financial reporting. We must perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal control over financial reporting in each Annual Report on Form 10-K, as required by Section 404 of the Sarbanes-Oxley Act. Prior to the merger in December 2023, our operating and finance teams were part of a private company, and therefore were not previously required to test internal controls within a specified period. As a result, we have incurred and may continue to incur substantial professional fees and internal costs to expand our accounting and finance functions as well as to expend significant management efforts. We may discover weaknesses in our system of internal financial and accounting controls and procedures that could result in a material misstatement of our financial statements. Our internal control over financial reporting will not prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud will be detected.

For example, our internal controls related to the cash disbursements process were not adequately designed to identify unauthorized payment requests, resulting in the identification of a material weakness. Specifically, at the end of August 2023, we discovered that we were subject to a business email compromise attack by a third party. This deficiency in our controls resulted in the diversion of payments to a fraudulent bank account. While management has determined in its assessment of our internal control over financial reporting as of December 31, 2023, that we have remediated this material weakness, there can be no assurance that the remediation will prevent similar attacks in the future or that we will not identify other material weaknesses in the future. If we are unable to successfully remediate a material weakness in our internal control over financial reporting, or if we identify any other material weaknesses, the accuracy and timing of our financial reporting may be adversely affected, we may be unable to maintain compliance with securities law requirements regarding timely filing of periodic reports in addition to applicable stock exchange listing requirements, investors may lose confidence in our financial reporting, and our stock price may decline as a result. We also could become subject to investigations by Nasdaq, the SEC or other regulatory authorities.

If we are not able to comply with the requirements of Section 404 of the Sarbanes-Oxley Act, or if we are unable to maintain proper and effective internal controls, we may not be able to produce timely and accurate financial statements. If that were to happen, the market price of our common stock could decline and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities.

Our certificate of incorporation and bylaws, as well as provisions under Delaware law, could make an acquisition of the company more difficult and may prevent attempts by our stockholders to replace or remove management.

Provisions in our certificate of incorporation and bylaws may discourage, delay or prevent a merger, acquisition or other change in control of the company that stockholders may consider favorable, including transactions in which our common stockholders might otherwise receive a premium price for their shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, because our board of directors will be responsible for appointing the members of our management team, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove current management by making it more difficult for stockholders to replace members of our board of directors. Among other things, these provisions:

- establish a classified board of directors such that all members of the board are not elected at one time;
- allow the authorized number of our directors to be changed only by resolution of our board of directors;
- limit the manner in which stockholders can remove directors from the board;
- establish advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted on at stockholder meetings;
- require that stockholder actions must be effected at a duly called stockholder meeting and prohibit actions by our stockholders by written consent;
- limit who may call a special meeting of stockholders;
- authorize our board of directors to issue preferred stock without stockholder approval, which could be used to institute a "poison pill" that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our board of directors; and

- require the approval of the holders of at least 66 2/3% of the votes that all stockholders would be entitled to cast to amend or repeal certain provisions of our charter or bylaws.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law ("DGCL"), which prohibits stockholders owning in excess of 15% of our outstanding voting stock from merging or combining with us. Although we believe these provisions collectively will provide for an opportunity to receive higher bids by requiring potential acquirors to negotiate with our board of directors, they would apply even if the offer may be considered beneficial by some stockholders.

Our governing documents provide that, unless we consent in writing to the selection of an alternative forum, certain designated courts will be the sole and exclusive forum for certain legal actions between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, employees or agents.

Our governing documents provide that, unless we consent in writing to an alternative forum, the Court of Chancery of the State of Delaware is the sole and exclusive forum for state law claims for (i) any derivative action or proceeding brought on the company's behalf, (ii) any action asserting a claim of or based on a breach of a fiduciary duty owed by any of our current or former directors, officers, or other employees to the company or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the DGCL, the certificate of incorporation or the bylaws, (iv) any action to interpret, apply, enforce or determine the validity of the certificate of incorporation or bylaws, or (v) any action asserting a claim that is governed by the internal affairs doctrine, in each case subject to the Court of Chancery having personal jurisdiction over the indispensable parties named as defendants therein, which for purposes of this risk factor refers to herein as the "Delaware Forum Provision." Our governing documents further provide that, unless we consent in writing to an alternative forum, the federal district courts of the United States will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act of 1933, as amended (the "Securities Act"), which for purposes of this risk factor refers to herein as the "Federal Forum Provision." Neither the Delaware Forum Provision nor the Federal Forum Provision will apply to any causes of action arising under the Exchange Act. In addition, any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock will be deemed to have notice of and consented to the foregoing Delaware Forum Provision and Federal Forum Provision; *provided*, however, that stockholders cannot and will not be deemed to have waived our compliance with the U.S. federal securities laws and the rules and regulations thereunder.

The Delaware Forum Provision and the Federal Forum Provision may impose additional litigation costs on our stockholders in pursuing any such claims, particularly if such stockholders do not reside in or near the State of Delaware. Additionally, these forum selection clauses may limit our stockholders' ability to bring a claim in a judicial forum that they find favorable for disputes with us or our directors, officers or employees, which may discourage such lawsuits against us and our directors, officers and employees even though an action, if successful, might benefit our stockholders.

Future sales of a substantial number of shares of our stock could cause our stock price to decline.

If our existing stockholders sell, or indicate an intention to sell, substantial amounts of our common stock in the public market, the trading price of our common stock could decline. Based on shares outstanding as of June 30, 2025, there are approximately 21,061,823 shares of our common stock outstanding or issuable on exercise of pre-funded warrants to purchase common stock. All outstanding shares of common stock and any shares issuable on exercise of pre-funded warrants or vested options to purchase our common stock, other than shares held by our affiliates or otherwise subject to restrictions on vesting and exercise, are freely tradable, without restriction, in the public market. If a significant number of these shares are sold, the trading price of our common stock could decline.

We have also filed a shelf registration statement covering the sale of up to $300.0 million of any combination of our common stock, preferred stock, debt securities, warrants or units, and may conduct one or more sales of securities pursuant to such registration statement from time to time. In August 2025, we entered into an ATM Sales Agreement with Leerink, pursuant to which, from time to time, we may offer and sell through Leerink up to $150.0 million of the common stock registered under the shelf registration statement pursuant to one or more "at the market" offerings. Sales of our common stock under the Sales Agreement with Leerink could be subject to business, economic or competitive uncertainties and contingencies, many of which may be beyond our control, and which could cause actual results from the sale of our common stock to differ materially from expectations.

Our executive officers, directors and principal stockholders have the ability to control or significantly influence all matters submitted to our stockholders for approval.

Our executive officers, directors and principal stockholders beneficially own a significant percentage of our outstanding common stock. As a result, if these stockholders were to choose to act together, they would be able to control or significantly influence all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these stockholders, if they choose to act together, would control or significantly influence the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of voting power could delay or prevent our acquisition on terms that other stockholders may desire.

We may be exposed to increased litigation, including stockholder litigation, which could have an adverse effect on our business and operations.

We may be exposed to increased litigation from stockholders, suppliers and other third parties, which may have an adverse impact on our business and results of operations or may cause disruptions to our operations. In the past, stockholders have initiated class action lawsuits against biotechnology companies following periods of volatility in the market prices of these companies' stock or immaterial changes to trial protocols, and we may also be subject to threats of litigation based on our recent merger activity. Such litigation, if instituted against us, could cause us to incur substantial costs and divert management's attention and resources, which could have a material adverse effect on our business, financial condition and results of operations.

If equity research analysts do not publish research or reports, or publish unfavorable research or reports about us, our business or our market, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that equity research analysts publish about us and our business. Equity research analysts may elect to not provide research coverage of our common stock, and such lack of research coverage may adversely affect the market price of our common stock. If we do have equity research analyst coverage, we will not have any control over the analysts or the content and opinions included in their reports. The price of our common stock could decline if one or more equity research analysts downgrade our stock or issue other unfavorable commentary or research. If one or more equity research analysts ceases coverage of us or fails to publish reports on us regularly, demand for our common stock could decrease, which in turn could cause our stock price or trading volume to decline.

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

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

(a) Entry Into a Material Contract

On August 11 2025, we entered into the Sales Agreement with Leerink, pursuant to which we may offer and sell, from time to time through Leerink, shares of our common stock having an aggregate offering price of up to $150.0 million (the "Shares").

The offer and sale of the Shares will be made pursuant to a shelf registration statement on Form S-3 and the related prospectus (File No. 333-286057) we filed with the Securities and Exchange Commission (the "SEC") on March 24, 2025 and declared effective by the SEC on April 4, 2025, as supplemented by a prospectus supplement dated August 11, 2025 and to be filed with the SEC pursuant to Rule 424(b) under the Securities Act.

Pursuant to the Sales Agreement, Leerink may sell the Shares by any method permitted by law deemed to be an "at the market offering" as defined in Rule 415(a)(4) of the Securities Act, including sales made by means of ordinary brokers' transactions, including on the Nasdaq Global Market, at market prices or as otherwise agreed with Leerink. Leerink will use commercially reasonable efforts consistent with its normal trading and sales practices to sell the Shares from time to time, based upon our instructions, including any price or size limits or other customary parameters or conditions we may impose.

We are not obligated to make any sales of the Shares under the Sales Agreement. We and Leerink each have the right, by giving written notice as specified in the Sales Agreement, to terminate the Sales Agreement in each party's sole discretion at any time.

We will pay Leerink a commission rate of up to 3.0% of the aggregate gross proceeds from each sale of Shares and have agreed to provide Leerink with customary indemnification and contribution rights. We will also reimburse Leerink for certain specified expenses in connection with entering into the Sales Agreement. The Sales Agreement contains customary representations and warranties and conditions to the placements of the Shares pursuant thereto.

The foregoing description of the Sales Agreement is not complete and is qualified in its entirety by reference to the full text of such agreement, a copy of which is filed herewith as Exhibit 1.1 to this Quarterly Report on Form 10-Q and is incorporated herein by reference. The opinion of the Company's counsel regarding the validity of the Shares that will be issued pursuant to the Sales Agreement is also filed herewith as Exhibit 5.1.

This Quarterly Report on Form 10-Q shall not constitute an offer to sell or the solicitation of an offer to buy our common stock discussed herein, nor shall there be any offer, solicitation, or sale of common stock in any state in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state.

(c) Trading Plans

During the quarter ended June 30, 2025, no director or officer (as defined in Section 16 of the Exchange Act) adopted, modified or terminated any contract, instruction or written plan for the purchase or sale of our securities that was intended to satisfy the affirmative defense conditions of Rule 10b5-1(c) as amended (the "Rule"), or any "non-Rule 10b5-1 trading arrangement," as defined in Item 408(a) of Regulation S-K.

Item 6. Exhibits

Exhibit Number	Description
1.1	Sales Agreement dated August 11, 2025 by and between Neurogene Inc. and Leerink Partners LLC
5.1	Opinion of Gibson, Dunn & Crutcher LLP
23.1	Consent of Gibson, Dunn & Crutcher (included in Exhibit 5.1 hereto)
31.1	Certification of the Chief Executive Officer (Principal Executive Officer) pursuant to Rule 13a-14(a)
31.2	Certification of the Chief Financial Officer (Principal Financial Officer) pursuant to Rule 13a-14(a)
32.1*	Certification of Chief Executive Officer (Principal Executive Officer) and Chief Financial Officer (Principal Financial Officer) pursuant to 18 U.S.C. Section 1350
101.INS	Inline XBRL Instance Document
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

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

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.

Date: August 11, 2025

Neurogene Inc.
(Registrant)

By: /s/ Rachel McMinn
Name: Rachel McMinn, Ph.D.
Title: Chief Executive Officer (Principal Executive Officer)

Date: August 11, 2025

Neurogene Inc.
(Registrant)

By: /s/ Christine Mikail
Name: Christine Mikail, J.D.
Title: President and Chief Financial Officer (Principal Financial Officer)

NEUROGENE INC.
Shares of Common Stock
($0.000001 par value per share)

SALES AGREEMENT

August 11, 2025

LEERINK PARTNERS LLC
1301 Avenue of the Americas, 5th Floor
New York, New York 10019

Ladies and Gentlemen:

Neurogene Inc., a Delaware corporation (the "**Company**"), confirms its agreement (this "**Agreement**") with Leerink Partners LLC (the "**Agent**"), as follows:

1. Issuance and Sale of Shares. The Company agrees that, from time to time during the term of this Agreement, on the terms and subject to the conditions set forth herein, it may issue and sell through the Agent shares of common stock, $0.000001 par value per share, of the Company (the "**Common Stock**"), subject to the limitations set forth in Section 5(c) (the "**Placement Shares**"). Notwithstanding anything to the contrary contained herein, the parties hereto agree that compliance with the limitation set forth in this Section 1 on the aggregate gross sales price of Placement Shares that may be issued and sold under this Agreement from time to time shall be the sole responsibility of the Company, and that the Agent shall have no obligation in connection with such compliance. The issuance and sale of Placement Shares through the Agent will be effected pursuant to the Registration Statement (as defined below) filed by the Company with the Securities and Exchange Commission (the "**Commission**") on March 24, 2025, and initially declared effective by the Commission on April 4, 2025, although nothing in this Agreement shall be construed as requiring the Company to issue any Placement Shares.

The Company has prepared and filed, in accordance with the provisions of the Securities Act of 1933, as amended, and the rules and regulations thereunder (collectively, the "**Securities Act**"), with the Commission a registration statement on Form S-3 (File No. 333-286057), including a base prospectus, relating to certain securities, including the Common Stock, to be issued from time to time by the Company, and which incorporates by reference documents that the Company has filed or will file in accordance with the provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder (collectively, the "**Exchange Act**"). The Company has prepared a prospectus supplement to the base prospectus included as part of such registration statement at the time the registration statement became effective, which prospectus supplement specifically relates to the Placement Shares to be issued from time to time pursuant to this Agreement (the "**Prospectus Supplement**"). The Company will furnish to the Agent, for use by the Agent, copies of the base prospectus included as part of such registration statement at the time it became effective, as supplemented by the Prospectus Supplement. The Company may file one or more additional registration statements from time to time that will contain a base prospectus and related prospectus or prospectus supplement, if applicable (which shall be a Prospectus Supplement), with respect to the Placement Shares. Except where the context otherwise requires, such registration statement(s), including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus (as defined below) subsequently filed with the Commission pursuant to Rule 424(b) under the Securities Act or deemed to be a part of such registration statement pursuant to Rule 430B or Rule 462(b) under the Securities Act, is herein called the "**Registration Statement**." The base prospectus, including all

documents incorporated therein by reference, included in the Registration Statement, as it may be supplemented by the Prospectus Supplement, in the form in which such prospectus and/or Prospectus Supplement have most recently been filed by the Company with the Commission pursuant to Rule 424(b) under the Securities Act, together with any "issuer free writing prospectus" (as used herein, as defined in Rule 433 under the Securities Act ("**Rule 433**")), relating to the Placement Shares that (i) is required to be filed with the Commission by the Company or (ii) is exempt from filing pursuant to Rule 433(d)(5)(i), in each case, in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company's records pursuant to Rule 433(g), is herein called the "**Prospectus**."

Any reference herein to the Registration Statement, the Prospectus Supplement, the Prospectus or any issuer free writing prospectus shall be deemed to refer to and include the documents, if any, that are or are deemed to be incorporated by reference therein (the "**Incorporated Documents**"), including, unless the context otherwise requires, the documents, if any, filed as exhibits to such Incorporated Documents. Any reference herein to the terms "amend," "amendment" or "supplement" with respect to the Registration Statement, the Prospectus Supplement, the Prospectus or any issuer free writing prospectus shall be deemed to refer to and include the filing of any document under the Exchange Act on or after the most-recent effective date of the Registration Statement, or the respective dates of the Prospectus Supplement, Prospectus or such issuer free writing prospectus, as the case may be, and incorporated therein by reference. For purposes of this Agreement, all references to the Registration Statement, the Prospectus or any amendment or supplement thereto shall be deemed to include the most recent copy filed with the Commission pursuant to its Electronic Data Gathering Analysis and Retrieval System or, if applicable, the Interactive Data Electronic Application system when used by the Commission (collectively, "**EDGAR**").

2. Placements. Each time that the Company wishes to issue and sell any Placement Shares through the Agent hereunder (each, a "**Placement**"), it will notify the Agent by email notice (or other method mutually agreed to in writing by the parties) (each such notice, a "**Placement Notice**") containing the parameters in accordance with which it desires such Placement Shares to be sold, which at a minimum shall include the maximum number or amount of Placement Shares to be sold, the time period during which sales are requested to be made, any limitation on the number or amount of Placement Shares that may be sold in any one Trading Day (as defined in Section 3) and any minimum price below which sales may not be made, a form of which containing such minimum sales parameters is attached hereto as **Schedule 1**. The Placement Notice must originate from one of the individuals authorized to act on behalf of the Company and set forth on **Schedule 2** (with a copy to each of the other individuals from the Company listed on such **Schedule 2**), and shall be addressed to each of the recipients from the Agent set forth on **Schedule 2**, as such **Schedule 2** may be updated by either party from time to time by sending a written notice containing a revised **Schedule 2** to the other party in the manner provided in Section 12 (including by email correspondence to each of the individuals of the Company set forth on **Schedule 2**, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply). The Placement Notice shall be effective upon receipt by the Agent unless and until (i) in accordance with the notice requirements set forth in Section 4, the Agent declines to accept the terms contained therein for any reason, in its sole discretion, within two Trading Days of the date the Agent receives the Placement Notice, (ii) in accordance with the notice requirements set forth in Section 4, the Agent suspends sales under the Placement Notice for any reason in its sole discretion, (iii) the entire amount of the Placement Shares has been sold pursuant to this Agreement, (iv) in accordance with the notice requirements set forth in Section 4, the Company suspends sales under or terminates the Placement Notice for any reason in its sole discretion, (v) the Company issues a subsequent Placement Notice and explicitly indicates that its parameters supersede those contained in the earlier dated Placement Notice or (vi) this Agreement has been terminated pursuant to the provisions of Section 11. The amount of any discount, commission or other compensation to be paid by the Company to the Agent in connection with the sale of the Placement Shares effected through the Agent shall be calculated in accordance with the terms set forth in **Schedule 3**. It is expressly acknowledged and agreed that neither the Company nor the Agent will have any obligation whatsoever with respect to a Placement or any Placement Shares unless and until the Company delivers a Placement Notice to the Agent and the Agent does not decline such Placement Notice pursuant to the terms set forth above, and then only upon the terms specified therein and herein. In the event of a conflict between the terms of this Agreement and the terms of a Placement Notice, the terms of the Placement Notice will control with respect to the matters covered thereby.

3. Sale of Placement Shares by the Agent. On the basis of the representations and warranties herein contained and subject to the terms and conditions herein set forth, including Section 5(c), upon the Agent's acceptance of the terms of a Placement Notice as provided in Section 2, and unless the sale of the Placement Shares described therein has been declined, suspended or otherwise terminated in accordance with the terms of this Agreement, the Agent, for the period specified in the Placement Notice, will use its commercially reasonable efforts consistent with its normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of The Nasdaq Global Market ("**Nasdaq**") to sell such Placement Shares up to the number or amount specified in, and otherwise in accordance with the terms of, such Placement Notice. The Agent will provide written confirmation to the Company (including by email correspondence to each of the individuals of the Company set forth on **Schedule 2**, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) no later than the opening of the Trading Day (as defined below) immediately following the Trading Day on which it has made sales of Placement Shares hereunder setting forth the number or amount of Placement Shares sold on such Trading Day, the volume-weighted average price of the Placement Shares sold and the Net Proceeds (as defined below) payable to the Company. Unless otherwise specified by the Company in a Placement Notice, the Agent may sell Placement Shares by any method permitted by law deemed to be an "at the market offering" as defined in Rule 415(a)(4) of the Securities Act, including sales made directly on or through Nasdaq or on or through any other existing trading market for the Common Stock. If expressly authorized by the Company (including in a Placement Notice), the Agent may also sell Placement Shares in negotiated transactions. Notwithstanding the provisions of Section 6(ss), except as may be otherwise agreed by the Company and the Agent, the Agent shall not purchase Placement Shares on a principal basis pursuant to this Agreement unless the Company and the Agent enter into a separate written agreement setting forth the terms of such sale. The Company acknowledges and agrees that (i) there can be no assurance that the Agent will be successful in selling Placement Shares, (ii) the Agent will incur no liability or obligation to the Company or any other person or entity if it does not sell Placement Shares for any reason other than a failure by the Agent to use its commercially reasonable efforts consistent with its normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of Nasdaq to sell such Placement Shares as required under this Agreement and (iii) the Agent shall be under no obligation to purchase Placement Shares on a principal basis pursuant to this Agreement unless the Company and the Agent enter into a separate written agreement setting forth the terms of such sale. For the purposes hereof, "**Trading Day**" means any day on which the Common Stock is purchased and sold on Nasdaq.

4. Suspension of Sales.

(a) The Company or the Agent may, upon notice to the other party in writing (including by email correspondence to each of the individuals of the other party set forth on **Schedule 2**, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) or by telephone (confirmed immediately by email correspondence to each of the individuals of the other party set forth on **Schedule 2**), suspend any sale of Placement Shares; *provided*, *however*, that such suspension shall not affect or impair either party's obligations with respect to any Placement Shares sold hereunder prior to the receipt of such notice. Each of the parties agrees that no such notice under this Section 4 shall be effective against the other party unless notice is sent by one of the individuals named on **Schedule 2** hereto to the other party in writing (including by email correspondence to each of the individuals of the other party set forth on **Schedule 2**, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply).

(b) Notwithstanding any other provision of this Agreement, during any period in which the Company is, or reasonably could be deemed to be, in possession of material non-public information, the Company and the Agent agree that (i) no sale of Placement Shares will take place, (ii) the Company shall not request the sale of any Placement Shares and shall cancel any effective Placement Notices instructing the Agent to make any sales and (iii) the Agent shall not be obligated to sell or offer to sell any Placement Shares.

5. Settlement and Delivery of the Placement Shares.

(a) Settlement of Placement Shares. Unless otherwise specified in the applicable Placement Notice, settlement for sales of Placement Shares will occur on the first Trading Day (or such earlier day as is industry practice or as is required for regular-way trading) following the date on which such sales are made (each, a "**Settlement Date**"). The Agent shall notify the Company of each sale of Placement Shares no later than the opening of the Trading Day immediately following the date on which such sales are made. The amount of proceeds to be delivered to the Company on a Settlement Date against receipt of the Placement Shares sold (the "**Net Proceeds**") will be equal to the aggregate gross sales price received by the Agent at which such Placement Shares were sold, after deduction of (i) the Agent's commission, discount or other compensation for such sales payable by the Company pursuant to Section 2 hereof, (ii) any other amounts due and payable by the Company to the Agent hereunder pursuant to Section 7(g) hereof and (iii) any transaction fees imposed by any governmental or self-regulatory organization in respect of such sales.

(b) Delivery of Placement Shares. On or before each Settlement Date, the Company will issue the Placement Shares being sold on such date and will, or will cause its transfer agent to, electronically transfer such Placement Shares by crediting the Agent's or its designee's account (provided the Agent shall have given the Company written notice of such designee prior to the Settlement Date) at The Depository Trust Company through its Deposit and Withdrawal at Custodian System ("**DWAC**") or by such other means of delivery as may be mutually agreed upon by the parties hereto, which in all cases shall be duly authorized, freely tradeable, transferable, registered shares of Common Stock in good deliverable form. On each Settlement Date, the Agent will deliver the related Net Proceeds in same day funds to an account designated by the Company on or prior to the Settlement Date. The Agent shall be responsible for providing DWAC instructions or other instructions for delivery by other means with regard to the transfer of the Placement Shares being sold. In addition to and in no way limiting the rights and obligations set forth in Section 9(a) hereto, the Company agrees that if the Company or its transfer agent (if applicable), defaults in its obligation to deliver duly authorized, freely tradeable, transferable, registered Placement Shares in good deliverable form by 2:30 P.M., New York City time, on a Settlement Date (other than as a result of a failure by the Agent to provide instructions for delivery), the Company will (i) take all necessary action to cause the full amount of any Net Proceeds that were delivered to the Company's account with respect to such settlement, together with any documented costs reasonably incurred by the Agent and/or its clearing firm in connection with recovering such Net Proceeds, to be immediately returned to the Agent or its clearing firm no later than 5:00 P.M., New York City time, on such Settlement Date, by wire transfer of immediately available funds to an account designated by the Agent or its clearing firm, (ii) indemnify and hold the Agent and its clearing firm harmless against any reasonably incurred and documented out-of-pocket loss, claim, damage, or expense (including reasonable legal fees and expenses), as incurred, arising out of or in connection with such default by the Company or its transfer agent (if applicable) and (iii) pay to the Agent (without duplication) any commission, discount or other compensation to which it would otherwise have been entitled absent such default. Certificates for the Placement Shares, if any, shall be in such denominations and registered in such names as the Agent may request in writing one Business Day (as defined below) before the applicable Settlement Date. Certificates for the Placement Shares, if any, will be made available by the Company for examination and packaging by the Agent in New York City not later than 12:00 P.M., New York City time, on the Business Day prior to the applicable Settlement Date.

(c) Limitations on Offering Size. Under no circumstances shall the Company cause or request the offer or sale of any Placement Shares if, after giving effect to the sale of such Placement Shares, the aggregate number or gross sales proceeds of Placement Shares sold pursuant to this Agreement would exceed the lesser of: (i) the number or dollar amount of shares of Common Stock registered pursuant to, and available for offer and sale under, the Registration Statement pursuant to which the offering of Placement Shares is being made, (ii) the number of authorized but unissued shares of Common Stock of the Company (less shares of Common Stock issuable upon exercise, conversion or exchange of any outstanding securities of the Company or otherwise reserved from the Company's authorized capital stock), (iii) the number or dollar amount of shares of Common Stock permitted to be offered and sold by the Company under Form S-3 (including General Instruction I.B.6 thereof, if such instruction is applicable), (iv) the number or dollar amount of shares of Common Stock that the Company's board of directors or a duly authorized committee thereof is authorized to issue and sell from time to time, and notified to the Agent in writing, or (v) the dollar amount of shares of Common Stock for which the Company has filed the Prospectus Supplement. Under no circumstances shall the Company

cause or request the offer or sale of any Placement Shares pursuant to this Agreement at a price lower than the minimum price authorized from time to time by the Company's board of directors or a duly authorized committee thereof, and notified to the Agent in writing. Notwithstanding anything to the contrary contained herein, the parties hereto acknowledge and agree that compliance with the limitations set forth in this Section 5(c) on the number or dollar amount of Placement Shares that may be issued and sold under this Agreement from time to time shall be the sole responsibility of the Company, and that the Agent shall have no obligation in connection with such compliance.

6. Representations and Warranties of the Company. The Company represents and warrants to, and agrees with, the Agent that as of the date of this Agreement, and as of (i) each Representation Date (as defined in Section 7(m)) for which no waiver is in effect, (ii) each date on which a Placement Notice is given, (iii) the date and time of each sale of any Placement Shares pursuant to this Agreement and (iv) each Settlement Date (each such time or date referred to in clauses (i) through (iv), an "**Applicable Time**"):

(a) The Company and the transactions contemplated by this Agreement meet the requirements for and comply with the conditions for the use of Form S-3 (including General Instructions I.A and I.B.1) under the Securities Act. The Registration Statement has been filed with the Commission and has been declared effective by the Commission under the Securities Act prior to the issuance of any Placement Notices by the Company. At the time the Registration Statement originally became effective and at the time the Company's most recent Annual Report on Form 10-K, was filed with the Commission, the Company met the then-applicable requirements for use of Form S-3 (including General Instructions I.A and I.B.1) under the Securities Act. The Registration Statement meets, and the offering and sale of Placement Shares as contemplated hereby comply in all material respects with, the requirements of Rule 415(a)(1)(x) under the Securities Act. The Agent is named as the agent engaged by the Company in the section entitled "Plan of Distribution" in the Prospectus Supplement. The Company has not received, and has no notice from the Commission of, any notice pursuant to Rule 401(g)(1) under the Securities Act objecting to the use of the shelf registration statement form. No stop order of the Commission preventing or suspending the use of the base prospectus, the Prospectus Supplement or the Prospectus, or the effectiveness of the Registration Statement, has been issued, and no proceedings for such purpose are pending before or, to the knowledge of the Company, threatened by the Commission. At the time of the initial filing of the Registration Statement, the Company paid the required Commission filing fees relating to the securities covered by the Registration Statement, including the Placement Shares that may be sold pursuant to this Agreement, in accordance with Rule 457(o) under the Securities Act. Copies of the Registration Statement, the Prospectus, any such amendments or supplements to any of the foregoing and all Incorporated Documents that were filed with the Commission on or prior to the date of this Agreement have been delivered, or are available through EDGAR, to the Agent and its counsel.

(b) Each of the Registration Statement and any post-effective amendment thereto, at the time it became effective, at each deemed effective date with respect to the Agent pursuant to Rule 430B(f)(2) under the Securities Act and as of each Applicable Time, complied and complies in all material respects with the requirements of the Securities Act and did not and does not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading, except that the representations and warranties set forth in this sentence do not apply to Agent's Information (as defined below). The Prospectus and any amendment or supplement thereto, when so filed with the Commission under Rule 424(b) under the Securities Act, complied and complies in all material respects with the requirements of the Securities Act, and each Prospectus Supplement, Prospectus or issuer free writing prospectus (or any amendments or supplements to any of the foregoing) furnished to the Agent for use in connection with the offering of the Placement Shares was identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T. Neither the Prospectus nor any amendment or supplement thereto, as of its date, included or includes an untrue statement of a material fact or omitted or omits to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading, except that the representations and warranties set forth in this sentence do not apply to Agent's Information. Each Incorporated Document heretofore filed, when it was filed (or, if any amendment with respect to any such document was filed, when such amendment was filed), conformed in all material respects with the requirements of the Exchange Act and was filed on a timely basis with the Commission; no such Incorporated Document

when it was filed (or, if an amendment with respect to any such document was filed, when such amendment was filed), contained an untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(c) (i) At the time of filing the Registration Statement and (ii) at the time of the execution of this Agreement (with such date being used as the determination date for purposes of this clause (ii)), the Company was not and is not an "ineligible issuer" (as defined in Rule 405 under the Securities Act ("**Rule 405**")), without taking account of any determination by the Commission pursuant to Rule 405 that it is not necessary that the Company be considered an ineligible issuer.

(d) Each issuer free writing prospectus, as of its issue date, did not and does not include any information that conflicted or conflicts with the information contained in the Registration Statement or the Prospectus, including any Incorporated Document deemed to be a part thereof that has not been superseded or modified. Each issuer free writing prospectus that the Company has filed, or is required to file, pursuant to Rule 433 or that was prepared by or on behalf of or used by the Company complies in all material respects with the requirements of the Securities Act.

(e) The Company has not distributed any offering material in connection with the offering and sale of the Placement Shares other than the Registration Statement, the Prospectus or any Permitted Free Writing Prospectus (as defined below).

(f) The interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement and the Prospectus fairly presents the information called for in all material respects and has been prepared in accordance with the Commission's rules and guidelines applicable thereto.

(g) The Company is subject to and in compliance in all material respects with the reporting requirements of Section 13 or Section 15(d) of the Exchange Act. The Common Stock is registered pursuant to Section 12(b) of the Exchange Act and is listed on Nasdaq, and the Company has taken no action designed to, or reasonably likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from Nasdaq, nor has the Company received any notification that the Commission or Nasdaq is contemplating terminating such registration or listing. The Company is in compliance with the current listing standards of Nasdaq. The Company has filed a Notification of Listing of Additional Shares with Nasdaq with respect to the Placement Shares.

(h) No person (as such term is defined in Rule 1-02 of Regulation S-X promulgated under the Securities Act) has the right to act as an underwriter or as a financial advisor to the Company in connection with the offer and sale of the Placement Shares hereunder, whether as a result of the filing or effectiveness of the Registration Statement or the sale of the Placement Shares as contemplated hereby or otherwise. Except for the Agent, there is no broker, finder or other party that is entitled to receive from the Company or any of its Subsidiaries (as defined below) any brokerage or finder's fee or other fee or commission as a result of any transactions contemplated by this Agreement.

(i) The Company has been duly organized and is validly existing as a corporation in good standing under the laws of the State of Delaware, with full corporate power and authority to acquire, own, lease and operate its properties, and to lease the same to others, and to conduct its business as described in the Registration Statement and the Prospectus and to enter into and perform its obligations under this Agreement. The Company is duly qualified to transact business as a foreign corporation and is in good standing in the State of New York and under the laws of each other jurisdiction that requires such qualification, whether by reason of the ownership or leasing of property or the conduct of business, except to the extent that the failure to be so qualified or in good standing could not reasonably be expected, individually or in the aggregate, to have a material adverse effect on the condition (financial or otherwise), earnings, results of operations, business, properties, operations, assets, liabilities or prospects of the Company and its Subsidiaries, taken as a whole, whether or not arising from transactions in the ordinary course of business (a "**Material Adverse Effect**").

(j) Each of the Company's "subsidiaries" (for purposes of this Agreement, as defined in Rule 405 under the Securities Act) (each, a "**Subsidiary**" and collectively, the "**Subsidiaries**") has been duly organized and is validly existing in good standing (where such concept exists) under the laws of the jurisdiction of its organization and has full power and authority to acquire, own, lease and operate its properties, and to conduct its business as described in the Registration Statement and the Prospectus. Each Subsidiary is duly qualified to transact business and is in good standing (where such concept exists) under the laws of each jurisdiction that requires such qualification, whether by reason of the ownership or leasing of property or the conduct of business, except to the extent that the failure to be so qualified or in good standing could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect. All of the issued and outstanding share capital or other equity or ownership interests of each Subsidiary has been duly authorized and validly issued, is fully paid and nonassessable, has been issued in compliance with federal state and securities laws and is owned by the Company, directly or through other wholly-owned Subsidiaries, free and clear of any security interest, mortgage, pledge, lien, encumbrance or adverse claim. The Company does not own or control, directly or indirectly, any corporation, association or other entity, other than the Subsidiaries listed on Exhibit 21.1 to the Company's most recent Annual Report on Form 10-K filed with the Commission. No Subsidiary is prohibited or restricted, directly or indirectly, from paying dividends to the Company, from making any other distribution with respect to such Subsidiary's equity securities, from repaying to the Company or any other Subsidiary any amounts that may from time to time become due under any loans or advances to such Subsidiary from the Company or from transferring any property or assets to the Company or to any other Subsidiary.

(k) The Company has the authorized and outstanding capitalization as set forth in the Company's annual report on Form 10-K for the most recent fiscal year or, if later, the Company's quarterly report on Form 10-Q for the most recent fiscal quarter, as of the dates referred to therein (subject, in each case, to the issuance of Placement Shares under this Agreement, the issuance of shares of Common Stock upon exercise of share options and warrants disclosed as outstanding as of the date hereof in the Registration Statement and the Prospectus and the grant of options under existing share option plans described in the Registration Statement and the Prospectus). The Common Stock conforms in all material respects to the description thereof contained in the Registration Statement and the Prospectus, including under the heading "Description of Securities." All of the issued and outstanding share capital or other equity or ownership interest of the Company (including the Common Stock) has been duly authorized and validly issued and is fully paid and nonassessable, has been issued in compliance with all federal, state and local securities laws and is free and clear of any security interest, mortgage, pledge, lien, encumbrance or adverse claim. None of the outstanding shares of capital stock of the Company were issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. There are no authorized or outstanding options, warrants, preemptive rights, rights of first refusal or other rights to purchase or subscribe for, or equity or debt securities convertible into or exchangeable or exercisable for, any share capital of the Company or any of its Subsidiaries or to which the Company or any of its Subsidiaries is a party or by which any of them may be bound. The descriptions of the Company's equity incentive plan, stock option plans and other stock plans or arrangements described in the Prospectus and in effect as of the date hereof (collectively, the "**Stock Plans**") and the options or other rights granted thereunder, set forth in the Registration Statement and the Prospectus accurately and fairly present the information required to be shown with respect to such Stock Plans and the options or other rights granted thereunder.

(l) The Placement Shares have been duly authorized for issuance and sale pursuant to this Agreement and, when issued and delivered by the Company against payment therefor pursuant to this Agreement, will be validly issued, fully paid and nonassessable and will conform in all material respects to the description thereof contained in the Prospectus. The issuance and sale of the Placement Shares as contemplated hereby shall not be subject to any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase the Placement Shares. When issued and delivered by the Company against payment therefor pursuant to this Agreement, the purchasers of the Placement Shares issued and sold hereunder will acquire good, marketable and valid title to such Placement Shares, free and clear of all pledges, liens, security interests, charges, claims or encumbrances. The issuance and sale of the Placement Shares as contemplated hereby will not cause any holder of any share capital, securities convertible into or exchangeable or exercisable for share capital or options, warrants or other rights to purchase share capital or any other securities of the Company to have any right to acquire any preferred

shares of the Company. There are no restrictions upon the voting or transfer of the Common Stock under the Company's amended and restated certificate of incorporation or amended and restated bylaws or any agreement or other instrument to which the Company is a party or otherwise filed as an exhibit to the Registration Statement.

(m) There is no material statute, regulation, contract, agreement or other document required to be described in the Registration Statement, Prospectus or in any Incorporated Document, or to be filed as an exhibit to the Registration Statement or any Incorporated Document which is not described or filed as required. The statements set forth or incorporated by reference in the Prospectus, insofar as they purport to constitute summaries of the terms of the statutes, regulations, contracts, agreements or other documents described and filed, constitute accurate summaries of the terms thereof in all material respects. The statements set forth or incorporated by reference in the Prospectus under the headings "Risk Factors," "Business—Intellectual Property," "Business—License Agreements," "Business—Government Regulation," "Legal Proceedings," and "Description of Securities," insofar as such statements summarize legal matters, agreements, documents or proceedings discussed therein, are accurate and fair summaries of such legal matters, agreements, documents or proceedings. Neither the Company nor any of its Subsidiaries has sent or received any communication regarding termination of, or intent not to renew or render performance under, any of the material contracts or agreements referred to or described in the Prospectus or any free writing prospectus, or referred to or described in, or filed as an exhibit to, the Registration Statement, or any Incorporated Document, and no such termination or non-renewal has been threatened by the Company or any of its Subsidiaries or, to the Company's knowledge, any other party to any such contract or agreement, which threat of termination or non-renewal has not been rescinded as of the date hereof.

(n) This Agreement has been duly and validly authorized, executed and delivered by the Company and constitutes a valid and legally binding obligation of the Company, enforceable against the Company in accordance with its terms, except as enforceability, including rights of indemnification, may be limited by bankruptcy, insolvency, fraudulent conveyance, reorganization, moratorium and other similar laws relating to or affecting creditors' rights generally and by general principles of equity. This Agreement conforms in all material respects to the descriptions thereof in the Registration Statement and the Prospectus.

(o) The Company is not and, after giving effect to the offering and sale of the Placement Shares and the application of the proceeds thereof as described in the Prospectus, will not be an "investment company" as defined in the Investment Company Act of 1940, as amended.

(p) No consent, approval, license, permit, qualification, authorization or other order or decree of, or registration or filing with, any court or other governmental, taxing or regulatory authority or agency, is required for the Company's execution, delivery and performance of this Agreement or consummation of the transactions contemplated hereby or by the Registration Statement and the Prospectus (including the issuance and sale of the Placement Shares hereunder), except such as have been already obtained or made or as may be required under the Securities Act, applicable state securities or Blue Sky laws, applicable rules of Nasdaq, or Rule 5110 of the Financial Industry Regulatory Authority, Inc. ("**FINRA**").

(q) Neither the execution and delivery by the Company of, nor the performance of the Company of its obligations under, this Agreement will conflict with, result in a breach or violation of, or result in the creation or imposition of any lien, charge or encumbrance upon any property or assets of the Company or any of its Subsidiaries pursuant to: (i) the certificate of incorporation or bylaws of the Company, (ii) the terms of any indenture, contract, license, lease, mortgage, deed of trust, note agreement, agreement or other instrument, obligation, condition, covenant or instrument to which the Company is a party or bound or to which its property or assets is subject or (iii) any statute, law, rule, regulation, judgment, order or decree applicable to the Company or any of its Subsidiaries of any court, regulatory body, administrative agency, governmental body, arbitrator or other authority having jurisdiction over the Company, any of its Subsidiaries or any of their respective properties or assets, as applicable, except, in the case of clauses (ii) and (iii) above, for any such conflict, breach, violation or default that would not reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect.

(r) Subsequent to the respective dates as of which information is given in the Registration Statement and the Prospectus: (i) there has been no material adverse change, or any development that could reasonably be expected to result in a material adverse change, in the condition (financial or otherwise), earnings, results of operations, business, properties, operations, assets, liabilities or prospects of the Company and its Subsidiaries, taken as a whole, whether or not arising from transactions in the ordinary course of business; (ii) neither the Company nor its Subsidiaries has (A) incurred any material liability or obligation, indirect, direct or contingent, including without limitation any losses or interference with its business from fire, explosion, flood, earthquakes, accident or other calamity, whether or not covered by insurance, or from any strike, labor dispute or court or governmental action, order or decree, that are material, individually or in the aggregate, to the Company and its Subsidiaries, considered as one entity, (B) entered into any material transactions not in the ordinary course of business or (C) issued or granted any shares of the Company's capital stock or securities convertible into or exchangeable or exercisable for or that represent the right to receive shares of the Company's capital stock other than under the Stock Plans; and (iii) there has not been any material decrease in the share capital or any material increase in any short-term or long-term indebtedness of the Company or any of its Subsidiaries and, except for any distributions made pursuant to the Contingent Value Rights Agreement, dated December 18, 2023, by and among the Company, Equiniti Trust Company, LLC and Donna Cochener, there has been no dividend or distribution of any kind declared, paid or made by the Company or, except for dividends paid to the Company or another Subsidiary, by any Subsidiary on any class of shares, or any repurchase or redemption by the Company or any of its Subsidiaries of any class of shares.

(s) There are no persons (as such term is defined in Rule 1-02 of Regulation S-X promulgated under the Securities Act) with registration or other similar rights to have any equity or debt securities of the Company registered for sale under the Registration Statement or included in the offering contemplated by this Agreement, except for such rights as have been duly waived in a writing previously furnished to the Agent.

(t) The financial statements included or incorporated by reference in the Registration Statement and the Prospectus, together with the related notes and schedules, present fairly in all material respects the consolidated financial position of the Company and the Subsidiaries as of the dates indicated and the consolidated results of operations, cash flows and changes in stockholders' equity of the Company and the Subsidiaries for the periods specified and have been prepared in compliance in all material respects with the requirements of the Securities Act and Exchange Act and in conformity in all material respects with United States generally accepted accounting principles ("**GAAP**") applied on a consistent basis during the periods involved. To the extent applicable, any pro forma financial statements, information or data included or incorporated by reference in the Registration Statement and the Prospectus comply in all material respects with the requirements of Regulation S-X of the Securities Act, including, without limitation, Article 11 thereof, fairly present in all material respects the information set forth therein, and the assumptions used in the preparation of such pro forma financial statements and data are reasonable, the pro forma adjustments used therein are appropriate to give effect to the circumstances referred to therein and the pro forma adjustments have been properly applied to the historical amounts in the compilation of those statements and data. The other financial data set forth or incorporated by reference in the Registration Statement and the Prospectus is accurately and fairly presented and prepared in all material respects on a basis consistent with the financial statements and books and records of the Company. There are no financial statements (historical or pro forma) that are required to be included or incorporated by reference in the Registration Statement or the Prospectus that are not included or incorporated by reference therein as required. The Company and the Subsidiaries do not have any material liabilities or obligations, direct or contingent (including any off-balance sheet obligations or any "variable interest entities" as that term is used in Accounting Standards Codification Paragraph 810-10-25-20), not disclosed in the Registration Statement and the Prospectus. All disclosures contained in the Registration Statement or the Prospectus that contain "non-GAAP financial measures" (as such term is defined by the rules and regulations of the Commission) comply, in all material respects, with Regulation G under the Exchange Act and Item 10 of Regulation S-K under the Securities Act, to the extent applicable. The statistical, industry-related and market-related data included or incorporated by reference in the Registration Statement and the Prospectus were obtained or derived from sources which the Company reasonably and in good faith believes are reliable and accurate in all material respects, such data agree with the sources from which they are derived, and the Company has obtained the written consent to the use of such data from such sources to the extent required. To the Company's knowledge,

no person who has been suspended or barred from being associated with a registered public accounting firm, or who has failed to comply with any sanction pursuant to Rule 5300 promulgated by the Public Company Accounting Oversight Board ("**PCAOB**"), has participated in or otherwise aided the preparation of, or audited, the financial statements, supporting schedules or other financial data filed with the Commission as a part of the Registration Statement and the Prospectus.

(u) There are no actions, suits, claims, investigations or proceedings pending or, to the Company's knowledge, threatened to which the Company or any of the Subsidiaries is or would be a party, or of which any of the respective properties or assets of the Company and the Subsidiaries is or would be subject, at law or in equity, before any court or arbitral body or by or before any federal, state, local or foreign governmental or regulatory commission, board, body, authority or agency, that (i) are required to be described in the Registration Statement or the Prospectus and are not so described, (ii) could reasonably be expected to have a Material Adverse Effect on the ability of the Company to perform its obligations under this Agreement or on the consummation of any of the transactions contemplated hereby or (iii) could reasonably be expected to have a Material Adverse Effect. The aggregate of all pending legal or governmental proceedings to which the Company or any of its Subsidiaries is a party or of which any of their respective properties or assets is the subject which are not described in the Prospectus, including ordinary routine litigation incidental to the Company's business, could not reasonably be expected to (A) result in a Material Adverse Effect or (B) have a Material Adverse Effect on the ability of the Company to perform its obligations under this Agreement or the consummation of any of the transactions contemplated hereby.

(v) The Company owns or leases all such real properties as are necessary to the conduct of its operations as presently conducted in all material respects.

(w) Neither the Company nor any Subsidiary is in violation or default of (i) any provision of its certificate or articles of incorporation, charter, bylaws, articles of association, limited liability company agreement, certificate or agreement of limited or general partnership, or other similar organizational documents, as the case may be, of such entity, (ii) the terms of any indenture, contract, lease, mortgage, deed of trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which it is a party or bound or to which its property or assets is subject, or (iii) any statute, law, rule, regulation, judgment, order or decree of any court, regulatory body, administrative agency, governmental body, arbitrator or other authority having jurisdiction over the Company, any of its Subsidiaries or any of their respective properties or assets, as applicable, except, in the case of clauses (ii) and (iii) above, for any such default or violation that would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect.

(x) Deloitte & Touche LLP, whose report on the consolidated financial statements of the Company is filed with the Commission as part of the Company's most recent annual report on Form 10-K filed with the Commission and incorporated by reference in the Registration Statement and the Prospectus, is (i) an independent registered public accounting firm as required by the Securities Act, the Exchange Act and the rules of the PCAOB, (ii) in compliance with the applicable requirements relating to the qualification of accountants under Rule 2-01 of Regulation S-X under the Securities Act and (iii) a registered public accounting firm as defined by the PCAOB whose registration has not been suspended or revoked and who has not, to the Company's knowledge, requested such registration to be withdrawn. Deloitte & Touche LLP has not been engaged by the Company to perform any "prohibited activities" or provided to the Company any "non-audit services" (as defined in Section 10A of the Exchange Act).

(y) There are no transfer taxes or other similar fees or charges under federal law, the laws of any state, any foreign law, or any political subdivision thereof, required to be paid in connection with the execution and delivery of this Agreement or the issuance by the Company or sale by the Company of the Placement Shares.

(z) All United States federal income tax returns of the Company and its Subsidiaries required by law to be filed have been filed or extensions thereof have been requested (except where the failure to file would not reasonably be expected, singly or in the aggregate, to have a Material Adverse Effect on the Company and its subsidiaries, taken as whole), and all taxes shown by such returns or otherwise assessed, which are due and payable, have been paid, except where the failure to file would not

reasonably be expected, singly or in the aggregate, to have a Material Adverse Effect on the Company and its subsidiaries, taken as whole, or except assessments that are being contested in good faith and as to which adequate reserves have been provided under GAAP. The Company has no knowledge of any material tax deficiency which has been or is likely to be threatened or asserted against the Company or its Subsidiaries. Each of the Company and its Subsidiaries has filed all foreign, state, provincial, local or other tax returns that are required to have been filed pursuant to applicable foreign, state, provincial, local or other law except insofar as the failure to file such returns would not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Effect, and paid all taxes due pursuant to such returns or pursuant to any assessment received by the Company and its Subsidiaries, except for such taxes, if any, as are being contested in good faith and as to which adequate reserves have been provided and except for such taxes or assessments the nonpayment of which would not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Effect. The charges, accruals and reserves on the books of the Company and its Subsidiaries in respect of any income or other tax liability for any years not finally determined are adequate to meet any assessments or re-assessments for additional tax for any years not finally determined, except to the extent of any inadequacy that would not reasonably be expected to result in a Material Adverse Effect. All material taxes which the Company and its Subsidiaries are required by law to withhold or to collect for payment have been duly withheld and collected and have been paid to the appropriate governmental authority or agency or have been accrued, reserved against and entered on the books of the Company and its Subsidiaries.

(aa) No labor dispute with the employees of the Company or any of its Subsidiaries exists or, to the Company's knowledge, is threatened or imminent, and the Company is not aware of any existing, threatened or imminent labor disturbance by the employees of any of its or any of its Subsidiaries' principal suppliers, manufacturers, contractors or customers, in each case that would reasonably be expected to have a Material Adverse Effect. None of the employees of the Company or any of its Subsidiaries is represented by a union and, to the knowledge of the Company, no union organizing activities are taking place. Neither the Company nor any of its Subsidiaries has violated (or received notice of any violation of) any federal, state or local law or foreign law relating to the discrimination in hiring, promotion or pay of employees, nor any applicable wage or hour laws, or the rules and regulations thereunder, or analogous foreign laws and regulations, which would, individually or in the aggregate, reasonably be expected to result in a Material Adverse Effect.

(ab) Each of the Company and its Subsidiaries are insured by recognized and reputable institutions with policies in such amounts and with such deductibles and covering such risks as are, in the reasonable judgment of the Company, prudent and customary in the businesses in which it is engaged, including, but not limited to, policies covering real and personal property owned or leased by the Company and its Subsidiaries against theft, damage, destruction, acts of vandalism and earthquakes and policies covering the Company and its Subsidiaries for clinical trial liability claims. The Company has no reason to believe that it or any of its Subsidiaries will not be able (i) to renew its existing insurance coverage as and when such policies expire or (ii) to obtain comparable coverage from similar institutions as may be necessary or appropriate to conduct its business as now conducted and at a cost that could not reasonably be expected to have a Material Adverse Effect. Neither the Company nor any of its Subsidiaries has been denied any material insurance coverage which it has sought or for which it has applied.

(ac) The Company and each of its Subsidiaries has good and marketable title in fee simple to all real property owned by them and good and marketable title to all personal property owned by them that is material to their business (except with respect to intellectual property, which is addressed exclusively in Section 6(oo) and Section 6(fff) below), in each case free and clear of all liens, encumbrances and defects except such as do not materially affect the value of such property and do not interfere with the use made and proposed to be made of such property by the Company or any Subsidiary; and any real property and buildings held under lease by the Company or any of its Subsidiaries are held by them under valid, subsisting and enforceable leases (subject to the effects of (A) bankruptcy, insolvency, fraudulent conveyance, fraudulent transfer, reorganization, moratorium or other similar laws relating to or affecting the rights or remedies of creditors generally; (B) the application of general principles of equity (including, without limitation, concepts of materiality, reasonableness, good faith and fair dealing, regardless of whether enforcement is considered in proceedings at law or in equity); and (C) applicable law and public policy with respect to rights to indemnity and contribution) with such

exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company or such Subsidiary.

(ad) The Company and its Subsidiaries possess and are operating in compliance with such valid and current material certificates, authorizations or permits required by United States federal, state or foreign regulatory agencies or bodies to conduct their respective businesses as currently conducted and as described in the Registration Statement and the Prospectus (collectively, "**Permits**"), except where failure to obtain such certificates, authorizations and permits would not, singly or in the aggregate, reasonably be expected to have a Material Adverse Effect. Neither the Company nor any of its Subsidiaries is in violation of, or in default under, any of the Permits or has received any written notice of proceedings relating to the revocation or modification of, or non-compliance with, any such certificate, authorization or permit, which would, individually or in the aggregate, if the subject of an unfavorable decision, ruling or finding, reasonably be expected to result in a Material Adverse Effect.

(ae) The Company and each of its Subsidiaries, taken as a whole, make and keep accurate books and records and maintain a system of internal accounting controls sufficient to provide reasonable assurance that: (i) transactions are executed in accordance with management's general or specific authorization; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain accountability for assets; (iii) access to assets is permitted only in accordance with management's general or specific authorization; (iv) the recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences; and (v) the interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement and the Prospectus fairly presents the information called for in all material respects and is prepared in accordance with the Commission's rules and guidelines applicable thereto.

(af) The Company and each of its Subsidiaries have established and maintain disclosure controls and procedures (as defined in Rules 13a-15 and 15d-15 under the Exchange Act), which (i) are designed to ensure that information relating to the Company, including its consolidated Subsidiaries, is made known to the Company's principal executive officer and its principal financial officer by others within those entities, particularly during the periods in which the periodic reports required under the Exchange Act are being prepared; (ii) have been evaluated by management of the Company for effectiveness as of the end of the Company's most recent fiscal quarter; and (iii) are effective in all material respects to perform the functions for which they were established. Since the end of the Company's most recent audited fiscal year, there has been no material weakness in the Company's internal control over financial reporting (whether or not remediated) and no material change in the Company's internal control over financial reporting, including any corrective actions with regard to significant deficiencies or material weaknesses. The Company is not aware of any change in its internal control over financial reporting that has occurred during its most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

(ag) Neither the Company, nor any of its Subsidiaries, nor to the knowledge of the Company, any of its or their respective directors, officers or controlling persons has taken, directly or indirectly, without giving effect to any actions taken by the Agent, (i) any action designed to or that might constitute or reasonably be expected to cause or result in, under the Exchange Act or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Placement Shares or (ii) any action designed to or that might constitute or reasonably be expected to cause or result in a violation of Regulation M under the Exchange Act.

(ah) Except as could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect: (i) neither the Company nor any of its Subsidiaries is in violation of any United States federal, state or local, or any foreign, statute, law, rule, regulation, ordinance, code, policy or rule of common law or any judicial or administrative interpretation thereof, including any judicial or administrative order, consent, decree or judgment, relating to pollution or protection of human health, the environment (including, without limitation, ambient air, surface water, groundwater, land surface or subsurface strata) or wildlife, including, without limitation, laws and regulations relating to the emissions, discharges, release or threatened release of chemicals, pollutants, contaminants, wastes, toxic substances,

hazardous substances, petroleum or petroleum products (collectively, "**Hazardous Materials**") or otherwise related to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials (collectively, "**Environmental Laws**"), which violation includes, but is not limited to, noncompliance with any permits or other governmental authorizations required for the operation of the business of the Company or any of its Subsidiaries under applicable Environmental Laws, or noncompliance with the terms and conditions thereof, nor has the Company or any of its Subsidiaries received any written communication, whether from a governmental authority, citizens group, employee or otherwise, that alleges that the Company or any of its Subsidiaries is in violation of any Environmental Law; (ii) the Company and its Subsidiaries have all material permits, authorizations and approvals required under any applicable Environmental Laws and are in compliance with their requirements; (iii) there are no pending or, to the Company's knowledge, threatened administrative, regulatory or judicial actions, suits, demands, demand letters, claims, liens, notices of noncompliance or violation, investigation or proceedings relating to any Environmental Law against the Company or any of its Subsidiaries, or any investigation with respect to which the Company or any of its Subsidiaries has received written notice or any written notice by any person or entity alleging potential liability for investigatory costs, cleanup costs, governmental responses costs, natural resources damages, property damages, personal injuries, attorneys' fees or penalties arising out of, based on or resulting from the presence, or release into the environment, of any Hazardous Materials at any location owned, leased or operated by the Company or any of its Subsidiaries, now or in the past; and (iv) to the Company's knowledge, there are no past or present actions, activities, events, conditions, incidents or circumstances that might reasonably be expected to result in a violation of any Environmental Law or form the basis of an order for clean-up or remediation, or an action, suit, investigation or proceeding by any private party or governmental body or agency, against or affecting the Company or any of its Subsidiaries relating to Hazardous Materials or any Environmental Laws.

(ai) The Company and any "employee benefit plan" (as defined under the Employee Retirement Income Security Act of 1974, as amended, and the regulations and published interpretations thereunder (collectively, "**ERISA**")) established or maintained by the Company, or its "ERISA Affiliates" (as defined below) are in compliance in all material respects with ERISA. "ERISA Affiliates" means, with respect to the Company, any member of any group of organizations described in Sections 414(b), (c), (m) or (o) of the Internal Revenue Code of 1986, as amended, and the regulations and published interpretations thereunder (the "**Code**") of which the Company is a member. No "reportable event" (as defined under ERISA) has occurred or is reasonably expected to occur with respect to any "employee benefit plan" established or maintained by the Company, or any of its ERISA Affiliates. No "employee benefit plan" established or maintained by the Company or any of its ERISA Affiliates, if such "employee benefit plan" were terminated, would have any "amount of unfunded benefit liabilities" (as defined under ERISA). Neither the Company nor any of its ERISA Affiliates has incurred or reasonably expects to incur any liability under (i) Title IV of ERISA with respect to termination of, or withdrawal from, any "employee benefit plan" or (ii) Sections 412, 4971, 4975 or 4980B of the Code. Each "employee benefit plan" established or maintained by the Company or any of its ERISA Affiliates that is intended to be qualified under Section 401(a) of the Code is so qualified and nothing has occurred, whether by action or failure to act, which would cause the loss of such qualification.

(aj) The Company is in compliance with, and there is and has been no failure on the part of the Company and, to the Company's knowledge, any of the Company's directors or officers, in their capacities as such, to comply with, any applicable provision of the Sarbanes-Oxley Act of 2002 and all rules and regulations promulgated thereunder or implementing the provisions thereof (the "**Sarbanes-Oxley Act**") and the rules and regulations promulgated in connection therewith, including Section 402 relating to loans.

(ak) Neither the Company, any of its Subsidiaries, nor, to the knowledge of the Company, any of their respective directors, officers, agents, employees or affiliates, has taken or will take any action in furtherance of an offer, payment, promise to pay, or authorization or approval of the unlawful payment or giving of money, property, gifts or anything else of value, directly or indirectly, to any "government official" (including any officer or employee of a government or government-owned or controlled entity or of a public international organization, or any person acting in an official capacity for or on behalf of any of the foregoing, or any political party or party official or candidate for political office) to influence official action or secure an improper advantage; and the Company, each of its Subsidiaries and, to the

Company's knowledge, each of their respective affiliates have conducted their businesses in compliance with applicable anti-corruption laws.

(al) None of the Company, any Subsidiary, affiliate, director, officer or employee thereof or, to the best of the Company's knowledge, any agent, representative or other person acting on behalf of the Company or any of its Subsidiaries or affiliates, is aware of or has taken any action, directly or indirectly, that would result in a violation by such persons of any applicable anti-corruption laws, including the Foreign Corrupt Practices Act of 1977, as amended, and the rules and regulations thereunder (the "**FCPA**"), including, without limitation, making use of the mails or any means or instrumentality of interstate commerce corruptly in furtherance of an offer, payment, promise to pay or authorization of the payment of any money, or other property, gift, promise to give, or authorization of the giving of anything of value to any "foreign official" (as such term is defined in the FCPA) or any foreign political party or official thereof or any candidate for foreign political office or otherwise took any action (or failed to fully disclose any action) in contravention of the FCPA; and the Company, its Subsidiaries and, to the Company's knowledge, each of their respective affiliates have conducted their businesses in compliance with the FCPA and have instituted and maintain, and will continue to maintain, policies and procedures designed to ensure, and which are reasonably expected to continue to ensure, continued compliance therewith.

(am) The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements and the money laundering statutes and the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the "**Money Laundering Laws**") and no action, suit, investigation or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its Subsidiaries with respect to the Money Laundering Laws is pending or, to the best of the Company's knowledge, threatened.

(an) Neither the Company nor any of its Subsidiaries, nor any director or officer thereof, nor, to the Company's knowledge, any employee, agent, affiliate or representative of the Company or any of its Subsidiaries, is currently or is owned or controlled by an individual or entity that is subject to any sanctions administered or enforced by the United States government (including, without limitation, the Office of Foreign Assets Control of the United States Department of the Treasury), the United Nations Security Council, the European Union, His Majesty's Treasury or other relevant sanctions authority (collectively, "**Sanctions**") or is located, organized or resident in a country or territory that is the subject or target of Sanctions; and the Company will not directly or indirectly use the proceeds of the sale of the Placement Shares, or lend, contribute or otherwise make available such proceeds to any Subsidiary, or any joint venture partner or other person or entity, for the purpose of financing or facilitating the activities of or business of any person or entity, or in any country or territory, that currently or at the time of such financing or facilitation is the subject of any Sanctions or in any other manner that will result in a violation by any person or entity (including any person participating in the transactions contemplated by this Agreement) of any Sanctions. Since April 24, 2019, the Company and its Subsidiaries have not knowingly engaged in and are not now knowingly engaged in any dealings or transactions with any person or entity, or in any country or territory, that at the time of the dealing or transaction is or was the subject of Sanctions.

(ao) The Company and its Subsidiaries own or possess the right to use all inventions, patent applications, patents, trademarks, trade names, service names, domain names, copyrights, trade secrets, know-how and other intellectual property (collectively, "**Intellectual Property**") as are (i) necessary or material for the conduct of their respective businesses as currently conducted or as currently proposed to be conducted and as described in the Registration Statement and the Prospectus and (ii) necessary or material for the commercialization of the products described in the Registration Statement and the Prospectus as being under development. There is no pending or, to the Company's knowledge, threatened (i) action, suit, proceeding, or claim by others challenging the rights of the Company or any of its Subsidiaries in or to any such Intellectual Property that, if decided adversely to the Company or such Subsidiary would, individually or in the aggregate, have a Material Adverse Effect, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (ii) action, suit, proceeding, or claim by others that the Company or any of its Subsidiaries infringes, misappropriates, or

otherwise violates any Intellectual Property of others that, if decided adversely to the Company or such Subsidiary would, individually or in the aggregate, have a Material Adverse Effect, and the Company is unaware of any facts which would form a reasonable basis for any such claim; or (iii) action, suit, proceeding, or claim by others challenging the validity, scope, or enforceability of any such Intellectual Property owned or licensed by the Company or its Subsidiaries and the Company is unaware of any facts which would form a reasonable basis for any such claim. To the best of the Company's knowledge, the operation of the business of the Company and its Subsidiaries as now conducted, and as described in the Prospectus, and in connection with the development and commercialization of the products described in the Prospectus does not infringe, misappropriate, conflict with or otherwise violate any claim of any granted patent of any other person or entity. There is no prior art of which the Company or any of its Subsidiaries is aware that may render any patent owned or licensed by the Company or its Subsidiaries invalid or any patent application owned or licensed by the Company or its Subsidiaries unpatentable which has not been disclosed to the applicable government patent office. The Company's granted or issued patents, registered trademarks and registered copyrights have been duly maintained and are in full force and effect, and none of the patents, trademarks and copyrights have been adjudged invalid or unenforceable in whole or in part. The Company knows of no infringement, misappropriation or violation by others of any Intellectual Property owned or licensed by the Company or its Subsidiaries which would reasonably be expected to have a Material Adverse Effect. Neither the Company nor any of its Subsidiaries is a party to or bound by any options, licenses or agreements with respect to the Intellectual Property of any other person or entity that are required to be set forth in the Prospectus and that are not described therein in all material respects. The Company and its Subsidiaries have taken all reasonable steps necessary to secure their interests in the Intellectual Property of the Company and its Subsidiaries from their employees and contractors and to protect the confidentiality of all of their confidential information and trade secrets. None of the technology or intellectual property used by the Company and its Subsidiaries in its business has been obtained or is being used by the Company or its Subsidiaries in violation of any contractual obligation binding on the Company or its Subsidiaries, or, to the Company's knowledge, any of its officers, directors or employees or otherwise in violation of the rights of any persons. No third party has been granted by the Company or its Subsidiaries rights to the Intellectual Property of the Company or its Subsidiaries, including any rights that, if exercised, could enable such party to develop products competitive to those of the Company as described in the Registration Statement and the Prospectus. All Intellectual Property owned or exclusively licensed by the Company or its Subsidiaries are free and clear of all liens, encumbrances, defects or other restrictions (other than non-exclusive licenses granted in the ordinary course of business), except those that could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect. The Company and its Subsidiaries are not subject to any judgment, order, writ, injunction or decree of any court or any federal, state, local, foreign or other governmental department, commission, board, bureau, agency or instrumentality, domestic or foreign, or any arbitrator, nor has it entered into or is it a party to any agreement made in settlement of any pending or threatened litigation, which materially restricts or impairs their use of any Intellectual Property.

(ap) The Company and each of its Subsidiaries (i) are and have at all times been in full compliance with all laws, statutes, rules, regulations or guidance applicable to the Company and its Subsidiaries and the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, advertising, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any pharmaceuticals or biohazardous substances, materials or any other products developed, manufactured or distributed by the Company (including, without limitation, from the United States Food and Drug Administration ("**FDA**"), European Medicines Agency ("**EMA**") and any local or other governmental or regulatory authority performing functions similar to those performed by the FDA or EMA) (collectively, "**Applicable Laws**"), except as could not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Effect, (ii) have not received any notice of adverse finding, warning letter, untitled letter or other correspondence or notice from the FDA or any other federal, state or foreign governmental authority having authority over the Company, any of its Subsidiaries or their activities alleging or asserting noncompliance with any Applicable Laws or any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws (collectively, the "**Governmental Permits**"), (iii) have made all filings with, the appropriate local, or other governmental or regulatory agencies or bodies that are necessary for the ownership or lease of their respective properties or the conduct of their respective businesses as described in the Registration Statement and the Prospectus, except where any failures to

possess or make the same would not, singularly or in the aggregate, have a Material Adverse Effect, (iv) possess all material Governmental Permits necessary to conduct their respective businesses as described in the Registration Statement and the Prospectus, and such Governmental Permits are valid and in full force and effect and are not in violation of any term of any such Governmental Permits, (v) have filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Governmental Permits and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and correct in all material respects on the date filed (or were corrected or supplemented by a subsequent submission), and (vi) are not a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders or similar agreements with or imposed by any governmental authority. All Governmental Permits are valid and in full force and effect, except where the validity or failure to be in full force and effect would not, singularly or in the aggregate, have a Material Adverse Effect. Neither the Company nor any Subsidiary has received notification of any revocation, modification, suspension, termination or invalidation (or proceedings related thereto) of any such Governmental Permit and the Company has no reason to believe that any such Governmental Permit will not be renewed. Neither the Company, any of its Subsidiaries nor, to the Company's knowledge, any of their respective directors, officers, employees or agents has been convicted of any crime under any Applicable Laws or has been the subject of an FDA debarment proceeding. Neither the Company nor any of its Subsidiaries has been nor is now subject to the FDA's Application Integrity Policy. To the Company's knowledge, neither the Company, any of its Subsidiaries nor any of its directors, officers, employees or agents has made, or caused the making of, any false statements on, or material omissions from, any other records or documentation prepared or maintained to comply with the requirements of the FDA or any other governmental authority.

(aq) There is no legal or governmental proceeding to which the Company or any of its Subsidiaries is a party or of which any property or assets of the Company or any of its Subsidiaries is the subject, including any proceeding before the FDA, the EMA or any foreign, local, national or other governmental agency with jurisdiction over the types of products being developed by the Company that is required to be described in the Registration Statement or the Prospectus and is not described therein, or which, singularly or in the aggregate, if determined adversely to the Company or any of its Subsidiaries, could reasonably be expected to have a Material Adverse Effect; and no such proceedings are threatened or contemplated by governmental or regulatory authorities or threatened by others. The Company and its Subsidiaries (i) have not received notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any governmental authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Governmental Permits and have no knowledge that any such governmental authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding and (ii) have not received notice that any governmental authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any Governmental Permits and the Company has no knowledge that any such governmental authority is considering such action.

(ar) The research, non-clinical and pre-clinical studies and clinical trials conducted or being conducted by or on behalf of the Company or any of its Subsidiaries or in which any of their respective product candidates have participated and, to the Company's knowledge, the preclinical studies and clinical trials directed or sponsored by the Company's collaborators (collectively, the "**Studies**") that are described in, or the results of which are referred to in, the Registration Statement and the Prospectus were and, if still pending, are being conducted with reasonable care and in all material respects in accordance with the protocols, procedures and controls pursuant to all Applicable Laws and Governmental Permits and with standard medical and scientific research procedures; each description of the results of such Studies is accurate and complete in all material respects and fairly presents the data derived from such Studies, and the Company and its Subsidiaries have no knowledge of any other research, non-clinical studies or tests the results of which are inconsistent with, or otherwise call into question, the results described or referred to in the Registration Statement and the Prospectus; the Company and its Subsidiaries have made all such filings and obtained all such approvals as may be required by the EMA, the FDA or any committee thereof or from any other United States or foreign government agency with jurisdiction over the types of products being developed by the Company; neither the Company nor any of its Subsidiaries has received any notice of, or correspondence from, any governmental authority requiring the termination, suspension or modification of any Study; and the Company and its Subsidiaries have

each operated and currently are in compliance in all material respects with all applicable rules, regulations and policies of all governmental authorities. Except as disclosed in the Registration Statement and the Prospectus (including the documents incorporated by reference therein), there have been no material serious adverse events resulting from any Study. To the Company's knowledge, the manufacturing facilities and operations of its suppliers are operated in compliance in all material respects with all Applicable Laws and Governmental Permits.

(as) The Company acknowledges and agrees that the Agent has informed the Company that the Agent may, to the extent permitted under the Securities Act and the Exchange Act, purchase and sell shares of Common Stock for its own account while this Agreement is in effect; *provided*, that (i) no such purchase or sales shall take place while a Placement Notice is in effect (except to the extent the Agent may engage in sales of Placement Shares purchased or deemed purchased from the Company as a "riskless principal" or in a similar capacity) and (ii) the Company shall not be deemed to have authorized or consented to any such purchases or sales by the Agent, except as may be otherwise agreed by the Company and the Agent.

(at) The Company is not a party to any other agreement with an agent or underwriter for any other "at the market" or continuous equity transaction.

(au) The Company is not required to register as a "broker" or "dealer" in accordance with the provisions of the Exchange Act and does not, directly or indirectly through one or more intermediaries, control or have any other association with (within the meaning of Article I of the By-laws of FINRA) any member firm of FINRA. No relationship, direct or indirect, exists between or among the Company, on the one hand, and the directors, officers or shareholders of the Company, on the other hand, which is required by the rules of FINRA to be described in the Registration Statement and the Prospectus, which is not so described. All of the information (including, but not limited to, information regarding affiliations, security ownership and trading activity) provided to the Agent or its counsel by the Company, its officers and directors and the holders of any securities (debt or equity) or warrants, options or rights to acquire any securities of the Company in connection with the filing to be made and other supplemental information to be provided to FINRA pursuant to FINRA Rule 5110 in connection with the transactions contemplated by this Agreement is true, complete and correct.

(av) As of the close of trading on Nasdaq on at least one date within the 60 calendar day period ending March 24, 2025, the aggregate market value of the outstanding voting and non-voting common equity (as defined in Rule 405) of the Company held by persons other than affiliates of the Company (pursuant to Rule 144 of the Securities Act, those that directly, or indirectly through one or more intermediaries, control, or are controlled by, or are under common control with, the Company) (the "**Non-Affiliate Shares**"), was equal to or greater than $75.0 million (calculated by multiplying (x) the price at which the common equity of the Company was last sold on Nasdaq on such date by (y) the number of Non-Affiliate Shares outstanding on such date). The Company is not a shell company (as defined in Rule 405) and has not been a shell company for at least 12 calendar months previously.

(aw) Neither the issuance, sale and delivery of the Placement Shares nor the application of the proceeds thereof by the Company as described in the Registration Statement and the Prospectus will violate Regulation T, U or X of the Board of Governors of the Federal Reserve System or any other regulation of such Board of Governors.

(ax) Each of the independent directors (or independent director nominees, once appointed, if applicable) named in the Registration Statement and Prospectus satisfies the independence standards established by Nasdaq and, with respect to members of the Company's audit committee, the enhanced independence standards contained in Rule 10A-3(b)(1) promulgated by the Commission under the Exchange Act.

(ay) Neither the Company nor, to the Company's knowledge, any of its affiliates (within the meaning of Rule 144 under the Securities Act) has, prior to the date hereof, made any offer or sale of any securities which could be "integrated" (within the meaning of the Securities Act) with the offer and sale of the Placement Shares hereunder.

(az) Neither the Company nor any of its Subsidiaries has (i) failed to pay any dividend or sinking fund installment on preferred stock or (ii) defaulted on any installment or payment due on indebtedness for borrowed money or on any rental on one or more long-term leases, which defaults, individually or in the aggregate, could reasonably be expected to result in a Material Adverse Effect.

(ba) Each financial or operational projection or other "forward-looking statement" (as defined by Section 27A of the Securities Act or Section 21E of the Exchange Act) contained in the Registration Statement or the Prospectus (i) was so included by the Company in good faith and with reasonable basis after due consideration by the Company of the underlying assumptions, estimates and other applicable facts and circumstances and (ii) as required, is accompanied by meaningful cautionary statements identifying those factors that could cause actual results to differ materially from those in such forward-looking statement. No such statement was made with the knowledge of a director or senior manager of the Company that was false or misleading.

(bb) There are no relationships, direct or indirect, or related party transactions involving the Company or any of its Subsidiaries or any other person (including any director, officer, stockholder, customer or supplier of the Company or any of its Subsidiaries) required to be described in the Registration Statement or the Prospectus that have not been described as required. There are no material outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees of indebtedness by the Company or any of its Subsidiaries to or for the benefit of any of the officers or directors of the Company or any of its Subsidiaries, or any of the family members of any of such persons.

(bc) The Company is not in or subject to a bankruptcy or insolvency proceeding in any jurisdiction.

(bd) The Company and its Subsidiaries (i) are in compliance, in all material respects, with any and all applicable foreign, federal, state and local laws, rules, regulations, treaties, statutes and codes promulgated by any and all governmental authorities (including pursuant to the Occupational Health and Safety Act) relating to the protection of human health and safety the workplace ("**Occupational Laws**"); (ii) have received all material permits, licenses or other approvals required of it under applicable Occupational Laws to conduct their respective businesses as currently conducted; and (iii) are in compliance, in all material respects, with all terms and conditions of such permit, license or approval. No action, proceeding, revocation proceeding, writ, injunction or claim is pending or, to the Company's knowledge, threatened against the Company or any of its Subsidiaries relating to Occupational Laws, and the Company does not have knowledge of any facts, circumstances or developments relating to its operations or cost accounting practices that could reasonably be expected to form the basis for or give rise to such actions, suits, investigations or proceedings.

(be) No director or officer of the Company or any of its Subsidiaries is subject to any non-competition agreement or non-solicitation agreement with any employer or prior employer which could materially affect each director's or officer's ability to be and act in the capacity of a director or officer of the Company or a Subsidiary.

(bf) The Company has duly and properly filed or caused to be filed with the U.S. Patent and Trademark Office (the "**PTO**") and applicable foreign and international patent and trademark authorities all patents, trademarks, copyrights and applications relating to the same owned by the Company and its Subsidiaries (the "**Company Patent and Trademark Applications**"), except where failure to file would not, singly or in the aggregate, reasonably be expected to have a Material Adverse Effect. To the knowledge of the Company, the Company has complied with the PTO's duty of candor and disclosure for the Company Patent and Trademark Applications and has made no material misrepresentation in the Company Patent and Trademark Applications. To the Company's knowledge, the Company Patent and Trademark Applications disclose patentable subject matter. The Company has not been notified of any inventorship challenges nor has any interference been declared or provoked nor is any material fact known by the Company that would preclude the issuance of patents with respect to the Company Patent and Trademark Applications or would render such patents, if issued, invalid or unenforceable. Except as would not have a Material Adverse Effect, neither the Company nor any of its Subsidiaries has breached or is currently in breach of any provision of any license, contract or other agreement governing the use by

the Company or its Subsidiaries of Intellectual Property owned by third parties (collectively, the "**Licenses**") and no third party has alleged any such breach and the Company is unaware of any facts that would form a reasonable basis for such a claim. To the Company's knowledge, no other party to the Licenses has breached or is currently in breach of any provision of the Licenses. Each of the Licenses is in full force and effect and constitutes a valid and binding agreement between the parties thereto, enforceable in accordance with its terms, and there has not occurred any breach or default under any such Licenses or any event that, with the giving of notice or lapse of time, would constitute a breach or default thereunder. Except as would not have a Material Adverse Effect, neither the Company nor any of its Subsidiaries has been and is currently involved in any disputes regarding the Licenses. To the Company's knowledge, all patents licensed to the Company pursuant to the Licenses are valid, enforceable and being duly maintained. To the Company's knowledge, all patent applications licensed to the Company pursuant to the Licenses are being duly prosecuted.

(bg) Neither the Company nor any of its Subsidiaries is a "covered foreign person", as that term is defined in 31 C.F.R. § 850.209. Neither the Company nor any of its Subsidiaries currently engages, or has plans to engage, directly or indirectly, in a "covered activity", as that term is defined in 31 C.F.R. § 850.208 ("**Covered Activity**"). The Company does not have any joint ventures that engages in or plans to engage in any Covered Activity. The Company also does not, directly or indirectly, hold a board seat on, have a voting or equity interest in, or have any contractual power to direct or cause the direction of the management or policies of any person or persons that engages or plans to engage in any Covered Activity.

(bh) The Company's and its Subsidiaries' information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications, and databases (collectively, "**IT Systems**") are adequate for, and operate and perform in all material respects as required in connection with the operation of the business of the Company and its Subsidiaries as currently conducted, free and clear of all material bugs, errors, defects, Trojan horses, time bombs, malware and other corruptants. The Company and its Subsidiaries have implemented and maintained commercially reasonable physical, technical and administrative controls, policies, procedures, and safeguards to maintain and protect their material confidential information and the integrity, continuous operation, redundancy and security of all IT Systems and data, including "Personal Data," used in connection with their businesses. "**Personal Data**" means (i) a natural person's name, street address, telephone number, e-mail address, photograph, social security number or tax identification number, driver's license number, passport number, credit card number, bank information, or customer or account number; (ii) any information which would qualify as "personally identifying information" under the Federal Trade Commission Act, as amended; (iii) "personal data" as defined by GDPR (as defined below); (iv) any information which would qualify as "protected health information" under the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act (collectively, "**HIPAA**"); and (v) any other piece of information that allows the identification of such natural person, or his or her family, or permits the collection or analysis of any data related to an identified person's health or sexual orientation. To the Company's knowledge, there have been no breaches, violations, outages or unauthorized uses of or accesses to same, except for those that have been remedied without material cost or liability or the duty to notify any other person, nor any incidents under internal review or investigations relating to the same. The Company and its Subsidiaries are presently in material compliance with all applicable laws or statutes and all judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, internal policies and contractual obligations relating to the privacy and security of IT Systems and Personal Data and to the protection of such IT Systems and Personal Data from unauthorized use, access, misappropriation or modification.

(bi) The Company and its Subsidiaries are, and at all prior times were, in material compliance with all applicable state and federal data privacy and security laws and regulations, including without limitation HIPAA, and the Company and its subsidiaries have taken commercially reasonable actions to prepare to comply with, and have been and currently are in compliance with, the European Union General Data Protection Regulation ("**GDPR**") (EU 2016/679) (collectively, the "**Privacy Laws**"). The Company and its Subsidiaries have in place, comply with, and take appropriate steps reasonably designed to ensure compliance in all material respects with their policies and procedures relating to data privacy and security and the collection, storage, use, disclosure, handling, and analysis of Personal Data (the "**Policies**"). The

Company and its Subsidiaries have at all times made all disclosures to users or customers required by applicable laws and regulatory rules or requirements, and none of such disclosures made or contained in any Policy have, to the knowledge of the Company, been inaccurate or in violation of any applicable laws and regulatory rules or requirements in any material respect. The Company further certifies that neither it nor any Subsidiary: (i) has received notice of any actual or potential liability under or relating to, or actual or potential violation of, any of the Privacy Laws, and has no knowledge of any event or condition that would reasonably be expected to result in any such notice; (ii) is currently conducting or paying for, in whole or in part, any investigation, remediation, or other corrective action pursuant to any Privacy Law; or (iii) is a party to any order, decree, or agreement that imposes any obligation or liability under any Privacy Law.

(bj) Any certificate signed by any officer of the Company and delivered to the Agent or its counsel in connection with the offering of the Placement Shares shall be deemed a representation and warranty by the Company, as to matters covered thereby, to the Agent.

7. Covenants of the Company. The Company covenants and agrees with the Agent that:

(a) Registration Statement Amendments. After the date of this Agreement and during any period in which the Prospectus relating to any Placement Shares is required to be delivered by the Agent under the Securities Act (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act or a similar rule); (i) the Company will notify the Agent promptly of the time when any subsequent amendment to the Registration Statement, other than Incorporated Documents, has been filed with the Commission and/or has become effective or any subsequent supplement to the Prospectus, other than Incorporated Documents, has been filed and of any request by the Commission for any amendment or supplement to the Registration Statement or Prospectus or for additional information (in each case, insofar as it relates to the transactions contemplated hereby); (ii) the Company will prepare and file with the Commission, promptly upon the Agent's request, any amendments or supplements to the Registration Statement or Prospectus that, in the Agent's reasonable opinion, may be necessary or advisable in connection with the distribution of the Placement Shares by the Agent (provided, however, that the failure of the Agent to make such request shall not relieve the Company of any obligation or liability hereunder, or affect the Agent's right to rely on the representations and warranties made by the Company in this Agreement and provided, further, that the only remedy the Agent shall have with respect to the failure by the Company to make such filing (but without limiting the Agent's rights under Section 9 hereof) will be to cease making sales under this Agreement until such amendment or supplement is filed); (iii) the Company will not file any amendment or supplement to the Registration Statement or Prospectus, other than Incorporated Documents, relating to the Placement Shares or a security convertible into or exchangeable or exercisable for the Placement Shares unless a copy thereof has been submitted to the Agent within a reasonable period of time before the filing and the Agent has not reasonably objected thereto (provided, however, that the failure of the Agent to make such objection shall not relieve the Company of any obligation or liability hereunder, or affect the Agent's right to rely on the representations and warranties made by the Company in this Agreement and the Company shall have no obligation to provide the Agent any advance copy of such filing or to provide the Agent an opportunity to object to such filing if the filing does not name the Agent or does not relate to the Placement Shares or the transactions contemplated by this Agreement and provided, further, that the only remedy the Agent shall have with respect to the Company's making such filing notwithstanding the Agent's objection (but without limiting the Agent's rights under Section 9 hereof) will be to cease making sales under this Agreement) and the Company will furnish to the Agent at the time of filing thereof a copy of any Incorporated Document, except for those documents available via EDGAR; and (iv) the Company will cause each amendment or supplement to the Prospectus, other than Incorporated Documents, to be filed with the Commission as required pursuant to the applicable paragraph of Rule 424(b) of the Securities Act and, in the case of any Incorporated Document, to be filed with the Commission as required pursuant to the Exchange Act, within the time period prescribed (the determination to file or not file any amendment or supplement with the Commission under this Section 7(a), based on the Company's reasonable opinion or reasonable objections, shall be made exclusively by the Company).

(b) Notice of Commission Stop Orders. The Company will advise the Agent, promptly after it receives notice or obtains knowledge thereof, of the issuance or threatened issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement, of the suspension of the

qualification of the Placement Shares for offering or sale in any jurisdiction or of the initiation or threatening of any proceeding for any such purpose; and it will promptly use its commercially reasonable efforts to prevent the issuance of any stop order or to obtain its withdrawal if such a stop order should be issued. The Company will advise the Agent promptly after it receives any request by the Commission for any amendments to the Registration Statement or any amendment or supplements to the Prospectus or for additional information related to the offering of the Placement Shares or for additional information related to the Registration Statement or the Prospectus.

(c) Delivery of Prospectus; Subsequent Changes. During any period in which the Prospectus relating to the Placement Shares is required to be delivered by the Agent under the Securities Act with respect to the offer and sale of the Placement Shares (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act or a similar rule), the Company will comply in all material respects with all requirements imposed upon it by the Securities Act, as from time to time in force, and will file on or before their respective due dates (taking into account any extensions available under the Exchange Act) all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Sections 13(a), 13(c), 14, 15(d) or any other provision of or under the Exchange Act. If during such period any event occurs as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary to amend or supplement the Registration Statement or Prospectus to comply with the Securities Act, the Company will promptly notify the Agent to suspend the offering of Placement Shares during such period and the Company will promptly amend or supplement the Registration Statement or Prospectus (at the expense of the Company) so as to correct such statement or omission or effect such compliance; provided, however, that the Company may delay the filing of any amendment or supplement, if in the reasonable judgment of the Company, it is in the best interests of the Company to do so; provided further, however, that any Placement Notices previously delivered shall be suspended during any such delay and the Company may not deliver Placement Notices during any such delay. If the Company has omitted any information from the Registration Statement pursuant to Rule 430B under the Securities Act, it will use its best efforts to comply with the provisions thereof and make all requisite filings with the Commission pursuant to said Rule 430B and to notify the Agent promptly of all such filings if not available on EDGAR.

(d) Listing of Placement Shares. During any period in which the Prospectus relating to the Placement Shares is required to be delivered by the Agent under the Securities Act with respect to the offer and sale of the Placement Shares (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act or a similar rule), the Company will use its commercially reasonable efforts to cause the Placement Shares to be listed on Nasdaq. The Company will timely file with Nasdaq all material documents and notices required by Nasdaq of companies that have or will issue securities that are traded on Nasdaq.

(e) Delivery of Registration Statement and Prospectus. The Company will furnish to the Agent and its counsel (at the expense of the Company) copies of the Registration Statement, the Prospectus (including all Incorporated Documents) and all amendments and supplements to the Registration Statement or Prospectus that are filed with the Commission during any period in which the Prospectus relating to the Placement Shares is required to be delivered under the Securities Act (including all Incorporated Documents filed with the Commission during such period), in each case as soon as reasonably practicable and in such quantities as the Agent may from time to time reasonably request and, at the Agent's request, will also furnish copies of the Prospectus to each exchange or market on which sales of the Placement Shares may be made; *provided*, *however*, that the Company shall not be required to furnish any document (other than the Prospectus) to the Agent to the extent such document is available on EDGAR.

(f) Earnings Statement. The Company will make generally available to its security holders and to the Agent as soon as practicable, but in any event not later than 15 months after the end of the Company's current fiscal quarter, an earnings statement covering a 12-month period that satisfies the provisions of Section 11(a) of and Rule 158 under the Securities Act; provided, however, that the requirements of this Section 7(f) shall be deemed satisfied to the extent such statement is available on EDGAR.

(g) Expenses. The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is terminated in accordance with the provisions of Section 11 hereunder, will pay all expenses incident to the performance of its obligations hereunder, including expenses relating to (i) the preparation, printing and filing of the Registration Statement and each amendment and supplement thereto, of the Prospectus and of each amendment and supplement thereto and of this Agreement and such other documents as may be required in connection with the offering, purchase, sale, issuance or delivery of the Placement Shares, (ii) the preparation, issuance, sale and delivery of the Placement Shares and any taxes due or payable in connection therewith, (iii) the qualification of the Placement Shares under securities laws in accordance with the provisions of Section 7(w) of this Agreement, including filing fees (provided, however, that any fees or disbursements of counsel for the Agent in connection therewith shall be paid by the Agent except as set forth in clauses (vii) and (viii) below), (iv) the printing and delivery to the Agent and its counsel of copies of the Prospectus and any amendments or supplements thereto, and of this Agreement, (v) the fees and expenses incurred in connection with the listing or qualification of the Placement Shares for trading on Nasdaq, (vi) the filing fees and expenses, if any, owed to the Commission or FINRA and the fees and expenses of any transfer agent or registrar for the Placement Shares, (vii) the reasonable and documented fees and associated expenses of the Agent's outside legal counsel for filings with the FINRA Corporate Financing Department in an amount not to exceed $15,000 (excluding FINRA filing fees referred to in clause (vi) above and in addition to the fees and disbursements referred to in clause (viii) below), and (viii) the reasonable and documented fees and disbursements of the Agent's outside legal counsel (A) in an amount not to exceed $100,000 arising out of the execution of this Agreement and the Company's delivery of the initial certificate pursuant to Section 7(m), (B) in an amount not to exceed $25,000 in connection with each Representation Date (as defined below) involving the filing of a Form 10-K (including any Form 10-K/A containing amended financial information or a material amendment to the previously filed Form 10-K) on which the Company is required to provide a certificate pursuant to Section 7(m) (in addition to the fees and associated expenses referred to in clause (vii) above) and (C) in an amount not to exceed $15,000 in connection with each other Representation Date on which the Company is required to provide a certificate pursuant to Section 7(m) (in addition to the fees and associated expenses referred to in clause (vii) above).

(h) Use of Proceeds. The Company will use the Net Proceeds as described in the Prospectus in the section entitled "Use of Proceeds."

(i) Notice of Other Sales. Without the prior written consent of the Agent, the Company will not, directly or indirectly, offer to sell, sell, contract to sell, grant any option to sell or otherwise dispose of any shares of Common Stock (other than the Placement Shares offered pursuant to this Agreement) or securities convertible into or exchangeable or exercisable for shares of Common Stock, warrants or any rights to purchase or acquire shares of Common Stock during the period beginning on the third Trading Day immediately prior to the date on which any Placement Notice is delivered to the Agent hereunder and ending on the first Trading Day immediately following the final Settlement Date with respect to Placement Shares sold pursuant to such Placement Notice (or, if the Placement Notice has been terminated or suspended prior to the sale of all Placement Shares covered by a Placement Notice, the date of such suspension or termination); *provided*, *however*, that such restrictions will not be required in connection with the Company's issuance, grant or sale of (i) shares of Common Stock, options to purchase shares of Common Stock, other securities under the Company's existing equity incentive plans, or shares of Common Stock issuable upon the exercise of options or vesting of other securities, pursuant to any employee or director stock option or benefits plan, stock ownership plan or dividend reinvestment plan (but not shares of Common Stock subject to a waiver to exceed plan limits in its dividend reinvestment plan), inducement award under Nasdaq rules or other compensation plan of the Company whether now in effect or hereafter implemented, (ii) shares of Common Stock issuable upon conversion of securities or the exercise of warrants, options or other rights in effect or outstanding, and disclosed in filings by the Company available on EDGAR or otherwise in writing to the Agent, and (iii) shares of Common Stock or securities convertible into or exchangeable for shares of Common Stock as consideration for mergers, acquisitions, other business combinations or strategic alliances occurring after the date of this Agreement which are not issued primarily for capital raising purposes. Without the prior written consent of the Agent, prior to the later of (x) the termination of this Agreement and (y) the thirtieth day immediately following the final Settlement Date with respect to Placement Shares sold pursuant to such Placement Notice, the Company will not, directly or indirectly, engage in any other "at

the market offering" or continuous equity transaction in order to offer to sell, sell, contract to sell, grant any option to sell or otherwise dispose of any shares of Common Stock (other than the Placement Shares offered pursuant to this Agreement) or securities convertible into or exchangeable or exercisable for shares of Common Stock, warrants or any rights to purchase or acquire, shares of Common Stock.

(j) Change of Circumstances. The Company will, at any time during a fiscal quarter in which the Company intends to tender a Placement Notice or sell Placement Shares, advise the Agent promptly after it shall have received notice or obtained knowledge of any information or fact that would alter or affect in any material respect any opinion, certificate, letter or other document provided or required to be provided to the Agent pursuant to this Agreement.

(k) Due Diligence Cooperation. During the term of this Agreement, the Company will cooperate with any reasonable due diligence review conducted by the Agent, its affiliates, agents and counsel from time to time in connection with the transactions contemplated hereby, including providing information and making available documents and senior corporate officers, during regular business hours and at the Company's principal offices, as the Agent may reasonably request.

(l) Required Filings Relating to Placement of Placement Shares. The Company agrees that on or prior to such dates as the Securities Act shall require, the Company will (i) file a prospectus supplement with the Commission under the applicable paragraph of Rule 424(b) under the Securities Act, which prospectus supplement will set forth, within the relevant period, the number or amount of Placement Shares sold through the Agent, the Net Proceeds to the Company and the compensation payable by the Company to the Agent with respect to such Placement Shares, and (ii) deliver such number of copies of each such prospectus supplement to each exchange or market on which such sales were effected as may be required by the rules or regulations of such exchange or market; *provided*, that, unless a prospectus supplement containing such information is required to be filed under the Securities Act, the requirement of this Section 7(l) may be satisfied by Company's inclusion in the Company's Form 10-K or Form 10-Q, as applicable, of the number or amount of Placement Shares sold through the Agent, the Net Proceeds to the Company and the compensation payable by the Company to the Agent with respect to such Placement Shares during the relevant period.

(m) Representation Dates; Certificate. On or prior to the date on which the Company first delivers a Placement Notice pursuant to this Agreement (the "**First Placement Notice Date**") and each time the Company:

(i) amends or supplements the Registration Statement or the Prospectus relating to the Placement Shares (other than a prospectus supplement filed in accordance with Section 7(l) of this Agreement) by means of a post-effective amendment, sticker or supplement but not by means of incorporation of document(s) by reference into the Registration Statement or the Prospectus relating to the Placement Shares;

(ii) files an annual report on Form 10-K under the Exchange Act (including any Form 10-K/A containing amended financial information or a material amendment to the previously filed Form 10-K);

(iii) files a quarterly report on Form 10-Q under the Exchange Act; or

(iv) files a current report on Form 8-K containing amended financial information (other than an earnings release that is "furnished" pursuant to Item 2.02 or Item 7.01 of Form 8-K) under the Exchange Act (each date of filing of one or more of the documents referred to in clauses (i) through (iv) shall be a "**Representation Date**"),

the Company shall furnish the Agent (but in the case of clause (iv) above only if (1) a Placement Notice is pending or in effect and (2) the Agent requests such certificate within three Business Days after the filing of such Form 8-K with the Commission) with a certificate, in the form attached hereto as **Exhibit 7(m)** (modified, as necessary, to relate to the Registration Statement and the Prospectus as then amended or supplemented), within two Trading Days of any Representation Date. The requirement to provide a

certificate under this Section 7(m) shall be waived for any Representation Date occurring at a time at which no Placement Notice is pending or in effect, which waiver shall continue until the earlier to occur of (1) the date the Company delivers a Placement Notice hereunder (which for such calendar quarter shall be considered a Representation Date) and (2) the next occurring Representation Date. Notwithstanding the foregoing, if the Company subsequently decides to sell Placement Shares following a Representation Date on which the Company relied on the waiver referred to in the previous sentence and did not provide the Agent with a certificate under this Section 7(m), then before the Company delivers a Placement Notice or the Agent sells any Placement Shares pursuant thereto, the Company shall provide the Agent with a certificate, in the form attached hereto as **Exhibit 7(m)**, dated the date of such Placement Notice. Within two Trading Days of each Representation Date, the Company shall have furnished to the Agent such further information, certificates and documents as the Agent may reasonably request.

(n) Legal Opinions. On or prior to the First Placement Notice Date and on any date which the Company is obligated to deliver a certificate pursuant to Section 7(m) for which no waiver is applicable, the Company shall cause to be furnished to the Agent the written opinion and negative assurance letter of Gibson, Dunn & Crutcher LLP, counsel to the Company, or such other counsel reasonably satisfactory to the Agent ("**Company Counsel**"), in form and substance reasonably satisfactory to the Agent and its counsel, dated the date that the opinion and negative assurance letter are required to be delivered, modified, as necessary, to relate to the Registration Statement and the Prospectus as then amended or supplemented; *provided*, *however*, that in lieu of such opinion and negative assurance letter for subsequent Representation Dates, Company Counsel may furnish the Agent with a letter to the effect that the Agent may rely on a prior opinion or negative assurance letter delivered by such counsel under this Section 7(n) to the same extent as if it were dated the date of such letter (except that statements in such prior opinion or negative assurance letter shall be deemed to relate to the Registration Statement and the Prospectus as amended or supplemented at such Representation Date).

(o) Intellectual Property Opinion. On or prior to the First Placement Notice Date and on any date which the Company is obligated to deliver a certificate pursuant to Section 7(m) for which no waiver is applicable, the Company shall cause to be furnished to the Agent the written opinion of Foley Hoag LLP, counsel for the Company with respect to intellectual property matters, or such other intellectual property counsel reasonably satisfactory to the Agent ("**Intellectual Property Counsel**"), in form and substance reasonably satisfactory to the Agent and its counsel, dated the date that the opinion letter is required to be delivered, modified, as necessary, to relate to the Registration Statement and the Prospectus as then amended or supplemented; *provided*, *however*, that in lieu of such written opinion for subsequent Representation Dates, Intellectual Property Counsel may furnish the Agent with a letter to the effect that the Agent may rely on a prior opinion letter delivered by such counsel under this Section 7(o) to the same extent as if it were dated the date of such opinion letter (except that statements in such prior opinion letter shall be deemed to relate to the Registration Statement and the Prospectus as amended or supplemented at such Representation Date).

(p) Comfort Letter. On or prior to the First Placement Notice Date and on any date which the Company is obligated to deliver a certificate pursuant to Section 7(m) for which no waiver is applicable, the Company shall cause its independent registered public accounting firm (and any other independent accountants whose report is included or incorporated by reference in the Registration Statement or the Prospectus) to furnish the Agent letters (the "**Comfort Letters**"), dated the date the Comfort Letter is delivered, which shall meet the requirements set forth in this Section 7(p); *provided*, that if reasonably requested by the Agent, the Company shall cause a Comfort Letter to be furnished to the Agent within 10 Trading Days of the occurrence of any material transaction or event that necessitates the filing of additional, pro forma, amended or revised financial statements (including any restatement of previously issued financial statements). Each Comfort Letter shall be in form and substance reasonably satisfactory to the Agent and each Comfort Letter from the Company's independent registered public accounting firm shall (i) confirm that they are an independent registered public accounting firm within the meaning of the Securities Act and the PCAOB, (ii) state, as of such date, the conclusions and findings of such firm with respect to the financial information and other matters ordinarily covered by accountants' "comfort letters" to underwriters in connection with registered public offerings (the first such letter, the "**Initial Comfort Letter**") and (iii) update the Initial Comfort Letter with any information that would

have been included in the Initial Comfort Letter had it been given on such date and modified as necessary to relate to the Registration Statement and the Prospectus, as amended and supplemented to the date of such letter.

(q) Market Activities. The Company will not, directly or indirectly, and will cause its officers, directors and Subsidiaries not to (i) take any action designed to cause or result in, or that constitutes or might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of shares of Common Stock or (ii) sell, bid for, or purchase shares of Common Stock in violation of Regulation M, or pay anyone any compensation for soliciting purchases of the Placement Shares other than the Agent; *provided*, *however*, that the Company may bid for and purchase shares of Common Stock in accordance with Rule 10b-18 under the Exchange Act.

(r) Insurance. The Company and its Subsidiaries shall maintain, or cause to be maintained, insurance in such amounts and covering such risks as is reasonable and customary for the business for which it is engaged.

(s) Compliance with Laws. The Company and each of its Subsidiaries shall maintain, or cause to be maintained, all material Permits, and the Company and each of its Subsidiaries shall conduct their businesses, or cause their businesses to be conducted, in substantial compliance with such Permits and with applicable Environmental Laws, except where the failure to maintain or be in compliance with such Permits could not reasonably be expected to result in a Material Adverse Effect.

(t) Investment Company Act. The Company will conduct its affairs in such a manner so as to reasonably ensure that neither it nor any of its Subsidiaries will be or become, at any time prior to the termination of this Agreement, an "investment company," as such term is defined in the Investment Company Act.

(u) Securities Act and Exchange Act. The Company will use its commercially reasonable efforts to comply with all requirements imposed upon it by the Securities Act and the Exchange Act as from time to time in force, so far as necessary to permit the sales of, or dealings in, the Placement Shares as contemplated by the provisions hereof and the Prospectus.

(v) No Offer to Sell. Other than a free writing prospectus (as defined in Rule 405 under the Securities Act) approved in advance by the Company and the Agent, neither the Agent nor the Company (including its agents and representatives, other than the Agent in its capacity as agent) will make, use, prepare, authorize, approve or refer to any written communication (as defined in Rule 405 under the Securities Act), required to be filed with the Commission, that constitutes an offer to sell or solicitation of an offer to buy Placement Shares hereunder.

(w) Blue Sky and Other Qualifications. The Company will use its commercially reasonable efforts, in cooperation with the Agent, to qualify the Placement Shares for offering and sale, or to obtain an exemption for the Placement Shares to be offered and sold, under the applicable securities laws of such states and other jurisdictions (domestic or foreign) as the Agent may designate and to maintain such qualifications and exemptions in effect for so long as required for the distribution of the Placement Shares (but in no event for less than one year from the date of this Agreement); *provided, however*, that the Company shall not be obligated to file any general consent to service of process or to qualify as a foreign corporation or as a dealer in securities in any jurisdiction in which it is not so qualified or to subject itself to taxation in respect of doing business in any jurisdiction in which it is not otherwise so subject. In each jurisdiction in which the Placement Shares have been so qualified or exempt, the Company will file such statements and reports as may be required by the laws of such jurisdiction to continue such qualification or exemption, as the case may be, in effect for so long as required for the distribution of the Placement Shares (but in no event for less than one year from the date of this Agreement).

(x) Sarbanes-Oxley Act. The Company will maintain and keep accurate books and records reflecting its assets and maintain internal accounting controls in a manner designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP and including those policies and procedures that (i) pertain

to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company, (ii) provide reasonable assurance that transactions are recorded as necessary to permit the preparation of the Company's financial statements in accordance with GAAP, (iii) that receipts and expenditures of the Company are being made only in accordance with management's and the Company's directors' authorization, and (iv) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on its financial statements. The Company will maintain such controls and other procedures, including, to the extent applicable to the Company, those required by Sections 302 and 906 of the Sarbanes-Oxley Act, and the applicable regulations thereunder that are designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Commission's rules and forms, including, without limitation, controls and procedures designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company's management, including its principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure and to ensure that material information relating to the Company is made known to it by others within the Company, particularly during the period in which such periodic reports are being prepared.

(y) Renewal of Registration Statement. If, immediately prior to the third anniversary of the initial effective date of the Registration Statement (the "**Renewal Date**"), any of the Placement Shares remain unsold and this Agreement has not been terminated, the Company, in its sole discretion, may, prior to the Renewal Date, file a new shelf registration statement or, if applicable, an automatic shelf registration statement relating to the Common Stock that may be offered and sold pursuant to this Agreement (which shall include a prospectus reflecting the number or amount of Placement Shares that may be offered and sold pursuant to this Agreement), in a form reasonably satisfactory to the Agent and its counsel, and, if such registration statement is not an automatic shelf registration statement, will use commercially reasonable efforts to cause such registration statement to be declared or become effective within 180 days after the Renewal Date. The Company will take all other reasonable actions necessary or appropriate to permit the public offer and sale of the Placement Shares to continue as contemplated in the expired registration statement and this Agreement. From and after the effective date thereof, references herein to the "Registration Statement" shall include such new shelf registration statement or such new automatic shelf registration statement, as the case may be.

(z) General Instruction I.B.6 of Form S-3. If, from and after the date of this Agreement, the Company is no longer eligible to use Form S-3 (including pursuant to General Instruction I.B.6) at the time it files with the Commission an annual report on Form 10-K or any post-effective amendment to the Registration Statement, then it shall promptly notify the Agent and, within two Business Days after the date of filing of such annual report on Form 10-K or amendment to the Registration Statement, the Company shall file a new prospectus supplement with the Commission reflecting the number of shares of Common Stock available to be offered and sold by the Company under this Agreement pursuant to General Instruction I.B.6 of Form S-3; *provided*, *however*, that the Company may delay the filing of any such prospectus supplement for up to 30 days if, in the reasonable judgment of the Company, it is in the best interest of the Company to do so, provided that no Placement Notice is in effect or pending during such time. Until such time as the Company shall have corrected such misstatement or omission or effected such compliance, the Company shall not notify the Agent to resume the offering of Placement Shares.

(aa) Tax Indemnity. The Company will indemnify and hold harmless the Agent against any documentary, stamp or similar issue tax, including any interest and penalties, on the issue and sale of the Placement Shares.

(ab) Transfer Agent. The Company has engaged and will maintain, at its sole expense, a transfer agent and registrar for the Common Stock.

8. Conditions to the Agent's Obligations. The obligations of the Agent hereunder with respect to a Placement will be subject to the continuing accuracy and completeness of the representations and warranties made by the Company herein, to the due performance by the Company of its obligations

hereunder, to the completion by the Agent of a due diligence review satisfactory to the Agent in its reasonable judgment, and to the continuing satisfaction (or waiver by the Agent in its sole discretion) of the following additional conditions:

(a) Registration Statement Effective. The Registration Statement shall be effective and shall be available for all offers and sales of Placement Shares (i) that have been issued pursuant to all prior Placement Notices and (ii) that will be issued pursuant to any Placement Notice.

(b) Prospectus Supplement. The Company shall have filed with the Commission the Prospectus Supplement pursuant to Rule 424(b) under the Securities Act not later than the Commission's close of business on the second Business Day following the date of this Agreement.

(c) No Material Notices. None of the following events shall have occurred and be continuing: (i) receipt by the Company or any of its Subsidiaries of any request for additional information from the Commission or any other federal or state governmental authority during the period of effectiveness of the Registration Statement, the response to which would require any post-effective amendments or supplements to the Registration Statement or the Prospectus; (ii) the issuance by the Commission or any other federal or state governmental authority of any stop order suspending the effectiveness of the Registration Statement or the initiation of any proceedings for that purpose; (iii) receipt by the Company or any of its Subsidiaries of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Placement Shares for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose; or (iv) the occurrence of any event that makes any material statement made in the Registration Statement or the Prospectus or any material Incorporated Document untrue in any material respect or that requires the making of any material changes in the Registration Statement, the Prospectus or Incorporated Documents so that, in the case of the Registration Statement, it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading and, in the case of the Prospectus, so that it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(d) No Misstatement or Material Omission. The Agent shall not have advised the Company that the Registration Statement or Prospectus, or any amendment or supplement thereto, contains an untrue statement of fact that in the Agent's reasonable opinion is material, or omits to state a fact that in the Agent's reasonable opinion is material and is required to be stated therein or is necessary to make the statements therein not misleading.

(e) Material Changes. Except as contemplated in the Prospectus, or disclosed in the Company's reports filed with the Commission, there shall not have been any material adverse change, on a consolidated basis, in the authorized capital stock of the Company or any Material Adverse Effect or any development that could reasonably be expected to result in a Material Adverse Effect, or any downgrading in or withdrawal of the rating assigned to any of the Company's securities (other than asset backed securities), if any, by any rating organization or a public announcement by any rating organization that it has under surveillance or review its rating of any of the Company's securities (other than asset backed securities), if any, the effect of which, in the judgment of the Agent (without relieving the Company of any obligation or liability it may otherwise have), is so material as to make it impracticable or inadvisable to proceed with the offering of the Placement Shares on the terms and in the manner contemplated in the Prospectus.

(f) Company Counsel Legal Opinions. The Agent shall have received the opinions and negative assurance letters, as applicable, of Company Counsel and Intellectual Property Counsel required to be delivered pursuant to Section 7(n) and Section 7(o), as applicable, on or before the date on which such delivery of such opinions and negative assurance letters are required pursuant to Section 7(n) and Section 7(o), as applicable.

(g) Agent's Counsel Legal Opinion. The Agent shall have received from Cooley LLP, counsel for the Agent, such opinion or opinions, on or before the date on which the delivery of the Company Counsel legal opinion is required pursuant to Section 7(n), with respect to such matters as the

Agent may reasonably require, and the Company shall have furnished to such counsel such documents as they may request to enable them to pass upon such matters.

(h) Comfort Letter. The Agent shall have received the Comfort Letter required to be delivered pursuant to Section 7(p) on or before the date on which such delivery of such Comfort Letter is required pursuant to Section 7(p).

(i) Representation Certificate. The Agent shall have received the certificate required to be delivered pursuant to Section 7(m) on or before the date on which delivery of such certificate is required pursuant to Section 7(m).

(j) Secretary's Certificate. On or prior to the First Placement Notice Date, the Agent shall have received a certificate, signed on behalf of the Company by the Secretary of the Company and attested to by an executive officer of the Company, dated as of such date and in form and substance reasonably satisfactory to the Agent and its counsel, certifying as to (i) the amended and restated certificate of incorporation of the Company, (ii) the amended and restated bylaws of the Company, (iii) the resolutions of the board of directors of the Company or duly authorized committee thereof authorizing the execution, delivery and performance of this Agreement and the issuance and sale of the Placement Shares and (iv) the incumbency of the officers of the Company duly authorized to execute this Agreement and the other documents contemplated by this Agreement (including each of the officers set forth on **Schedule 2**).

(k) No Suspension. The Common Stock shall be duly listed, and admitted and authorized for trading, subject to official notice of issuance, on Nasdaq. Trading in the Common Stock shall not have been suspended on, and the Common Stock shall not have been delisted from, Nasdaq.

(l) Other Materials. On each date on which the Company is required to deliver a certificate pursuant to Section 7(m), the Company shall have furnished to the Agent such appropriate further information, opinions, certificates, letters and other documents as the Agent may have reasonably requested. All such information, opinions, certificates, letters and other documents shall have been in compliance with the provisions hereof. The Company shall have furnished the Agent with conformed copies of such opinions, certificates, letters and other documents as the Agent may have reasonably requested.

(m) Securities Act Filings Made. All filings with the Commission required by Rule 424(b) or Rule 433 under the Securities Act to have been filed prior to the issuance of any Placement Notice hereunder shall have been made within the applicable time period prescribed for such filing by Rule 424(b) (without reliance on Rule 424(b)(8) of the Securities Act) or Rule 433, as applicable.

(n) Approval for Listing. Either (i) the Placement Shares shall have been approved for listing on Nasdaq, subject only to notice of issuance, or (ii) the Company shall have filed an application for listing of the Placement Shares on Nasdaq at, or prior to, the First Placement Notice Date and Nasdaq shall have reviewed such application and not provided any objections thereto.

(o) FINRA. FINRA shall have raised no objection to the terms of the offering contemplated hereby and the amount of compensation allowable or payable to the Agent as described in the Prospectus.

(p) No Termination Event. There shall not have occurred any event that would permit the Agent to terminate this Agreement pursuant to Section 11(a).

9. Indemnification and Contribution.

(a) Company Indemnification. The Company agrees to indemnify and hold harmless the Agent, its affiliates and their respective partners, members, directors, officers, employees and agents, and each person, if any, who (i) controls the Agent within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act or (ii) is controlled by or is under common control with the Agent, in each case from and against any and all losses, claims, liabilities, expenses and damages, including any and all reasonable and documented investigative, legal and other expenses reasonably incurred in

connection with, and any and all amounts paid in settlement of (in accordance with this Section 9), any action, suit, investigation or proceeding between any of the indemnified parties and any indemnifying parties or between any indemnified party and any third party (including any governmental or self-regulatory authority, or otherwise, or any claim asserted or threatened), as and when incurred, to which the Agent, or any such other person may become subject under the Securities Act, the Exchange Act or other federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, liabilities, expenses or damages arise out of or are based, directly or indirectly, on (x) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement or the Prospectus (or any amendment or supplement to the Registration Statement or the Prospectus) or in any free writing prospectus or in any application or other document executed by or on behalf of the Company or based on written information furnished by or on behalf of the Company filed in any jurisdiction in order to qualify the Common Stock under the securities laws thereof or filed with the Commission, (y) the omission or alleged omission to state in any such document a material fact required to be stated therein or necessary to make the statements therein (solely with respect to the Prospectus, in light of the circumstances under which they were made) not misleading or (z) any breach by any of the indemnifying parties of any of their respective representations, warranties or agreements contained in this Agreement; *provided*, *however*, that this indemnity agreement shall not apply to the extent that such loss, claim, liability, expense or damage arises from the sale of the Placement Shares pursuant to this Agreement and is caused, directly or indirectly, by an untrue statement or omission, or alleged untrue statement or omission, made in reliance upon and in conformity with the Agent's Information. This indemnity agreement will be in addition to any liability that the Company might otherwise have.

(b) Agent Indemnification. The Agent agrees to indemnify and hold harmless the Company and its directors and each officer of the Company who signed the Registration Statement, and each person, if any, who (i) controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act or (ii) is controlled by or is under common control with the Company against any and all loss, liability, claim, damage and expense described in the indemnity contained in Section 9(a), as incurred, but only with respect to untrue statements or omissions, or alleged untrue statements or omissions, made in the Registration Statement (or any amendments thereto) or the Prospectus (or any amendment or supplement thereto) in reliance upon and in conformity with the Agent's Information.

(c) Procedure. Any party that proposes to assert the right to be indemnified under this Section 9 will, promptly after receipt of notice of commencement of any action against such party in respect of which a claim is to be made against an indemnifying party or parties under this Section 9, notify each such indemnifying party of the commencement of such action, enclosing a copy of all papers served, but the omission so to notify such indemnifying party will not relieve the indemnifying party from (i) any liability that it might have to any indemnified party otherwise than under this Section 9 and (ii) any liability that it may have to any indemnified party under the foregoing provision of this Section 9 unless, and only to the extent that, such omission results in the forfeiture of substantive rights or defenses by the indemnifying party. If any such action is brought against any indemnified party and it notifies the indemnifying party of its commencement, the indemnifying party will be entitled to participate in and, to the extent that it elects by delivering written notice to the indemnified party promptly after receiving notice of the commencement of the action from the indemnified party, jointly with any other indemnifying party similarly notified, to assume the defense of the action, with counsel reasonably satisfactory to the indemnified party, and after notice from the indemnifying party to the indemnified party of its election to assume the defense, the indemnifying party will not be liable to the indemnified party for any other legal expenses except as provided below and except for the reasonable and documented costs of investigation subsequently incurred by the indemnified party in connection with the defense. The indemnified party will have the right to employ its own counsel in any such action, but the fees, expenses and other charges of such counsel will be at the expense of such indemnified party unless (1) the employment of counsel by the indemnified party has been authorized in writing by the indemnifying party, (2) the indemnified party has reasonably concluded (based on advice of counsel) that there may be legal defenses available to it or other indemnified parties that are different from or in addition to those available to the indemnifying party, (3) a conflict or potential conflict exists (based on advice of counsel to the indemnified party) between the indemnified party and the indemnifying party (in which case the indemnifying party will not have the right to direct the defense of such action on behalf of the indemnified party) or (4) the indemnifying party has not in fact employed counsel reasonably

satisfactory to the indemnified party to assume the defense of such action within a reasonable time after receiving notice of the commencement of the action, in each of which cases the reasonable fees, disbursements and other charges of counsel will be at the expense of the indemnifying party or parties. It is understood that the indemnifying party or parties shall not, in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the reasonable fees, disbursements and other charges of more than one separate firm (plus local counsel) admitted to practice in such jurisdiction at any one time for all such indemnified party or parties. All such fees, disbursements and other charges will be reimbursed by the indemnifying party within thirty days after the indemnifying party receives a written invoice relating to such fees, disbursements and other charges in reasonable detail. An indemnifying party will not, in any event, be liable for any settlement of any action or claim effected without its written consent. No indemnifying party shall, without the prior written consent of each indemnified party, settle or compromise or consent to the entry of any judgment in any pending or threatened claim, action or proceeding relating to the matters contemplated by this Section 9 (whether or not any indemnified party is a party thereto), unless such settlement, compromise or consent (1) includes an unconditional release of each indemnified party, in form and substance reasonably satisfactory to such indemnified party, from all liability arising out of such claim, action or proceeding and (2) does not include a statement as to or an admission of fault, culpability or a failure to act by or on behalf of any indemnified party.

(d) Settlement Without Consent if Failure to Reimburse. If an indemnified party shall have requested an indemnifying party to reimburse the indemnified party for reasonable and documented fees and expenses of counsel for which it is entitled to be reimbursed under this Section 9, such indemnifying party agrees that it shall be liable for any settlement of the nature contemplated by Section 9(a) effected without its written consent if (i) such settlement is entered into more than 45 days after receipt by such indemnifying party of the aforesaid request, (ii) such indemnifying party shall have received notice of the terms of such settlement at least 30 days prior to such settlement being entered into and (iii) such indemnifying party shall not have reimbursed such indemnified party in accordance with such request prior to the date of such settlement.

(e) Contribution. In order to provide for just and equitable contribution in circumstances in which the indemnification provided for in the foregoing paragraphs of this Section 9 is applicable in accordance with its terms but for any reason is held to be unavailable or insufficient from the Company or the Agent, the Company and the Agent will contribute to the total losses, claims, liabilities, expenses and damages (including any investigative, legal and other expenses reasonably incurred in connection with, and any amount paid in settlement of, any action, suit, investigation or proceeding or any claim asserted, but after deducting any contribution received by the Company from persons other than the Agent, such as persons who control the Company within the meaning of the Securities Act, officers of the Company who signed the Registration Statement and directors of the Company, who also may be liable for contribution) to which the Company and the Agent may be subject in such proportion as shall be appropriate to reflect the relative benefits received by the Company on the one hand and the Agent on the other hand. The relative benefits received by the Company on the one hand and the Agent on the other hand shall be deemed to be in the same proportion as the total Net Proceeds from the sale of the Placement Shares (before deducting expenses) received by the Company bear to the total compensation received by the Agent from the sale of Placement Shares on behalf of the Company. If, but only if, the allocation provided by the foregoing sentence is not permitted by applicable law, the allocation of contribution shall be made in such proportion as is appropriate to reflect not only the relative benefits referred to in the foregoing sentence but also the relative fault of the Company, on the one hand, and the Agent, on the other hand, with respect to the statements or omission that resulted in such loss, claim, liability, expense or damage, or action, suit, investigation or proceeding in respect thereof, as well as any other relevant equitable considerations with respect to such offering. Such relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or the Agent, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Agent agree that it would not be just and equitable if contributions pursuant to this Section 9(e) were to be determined by *pro rata* allocation or by any other method of allocation that does not take into account the equitable considerations referred to herein. The amount paid or payable by an indemnified party as a result of the loss, claim, liability, expense or damage, or action, suit, investigation or proceeding in respect thereof, referred to above in this Section 9(e) shall be deemed to include, for the purpose of this Section 9(e), any legal or other expenses

reasonably incurred by such indemnified party in connection with investigating or defending any such action, suit, investigation, proceeding or claim to the extent consistent with this Section 9. Notwithstanding the foregoing provisions of this Section 9(e), the Agent shall not be required to contribute any amount in excess of the commissions received by it under this Agreement and no person found guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 9(e), any person who controls a party to this Agreement within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, any affiliates of the Agent, any partners, members, directors, officers, employees and agents of the Agent and each person that is controlled by or under common control with the Agent will have the same rights to contribution as that party, and each officer and director of the Company who signed the Registration Statement will have the same rights to contribution as the Company, subject in each case to the provisions hereof. Any party entitled to contribution, promptly after receipt of notice of commencement of any action against such party in respect of which a claim for contribution may be made under this Section 9(e), will notify any such party or parties from whom contribution may be sought, but the omission to so notify will not relieve that party or parties from whom contribution may be sought from any other obligation it or they may have under this Section 9(e) except to the extent that the failure to so notify such other party materially prejudiced the substantive rights or defenses of the party from whom contribution is sought. Except for a settlement entered into pursuant to the last sentence of Section 9(c) hereof or pursuant to Section 9(d) hereof, no party will be liable for contribution with respect to any action or claim settled without its written consent if such consent is required pursuant to Section 9(c) hereof.

10. Representations and Agreements to Survive Delivery. The indemnity and contribution agreements contained in Section 9 of this Agreement and all representations and warranties of the Company herein or in certificates delivered pursuant hereto shall survive, as of their respective dates, regardless of (i) any investigation made by or on behalf of the Agent, any controlling persons, or the Company (or any of their respective officers, directors, employees or controlling persons), (ii) delivery and acceptance of the Placement Shares and payment therefor or (iii) any termination of this Agreement.

11. Termination.

(a) The Agent shall have the right, by giving notice as hereinafter specified, at any time to terminate this Agreement if (i) any Material Adverse Effect, or any development that could reasonably be expected to result in a Material Adverse Effect, has occurred that, in the judgment of the Agent, may materially impair the ability of the Agent to sell the Placement Shares hereunder, (ii) the Company shall have failed, refused or been unable to perform any agreement on its part to be performed hereunder; *provided*, *however*, in the case of any failure of the Company to deliver (or cause another person to deliver) any certification, opinion or letter required under Section 7(m), Section 7(n), Section 7(o) or Section 7(p), the Agent's right to terminate shall not arise unless such failure to deliver (or cause to be delivered) continues for more than 15 calendar days from the date such delivery was required, (iii) any other condition of the Agent's obligations hereunder is not fulfilled, (iv) any suspension or limitation of trading in the Placement Shares or in securities generally on Nasdaq shall have occurred, (v) a general banking moratorium shall have been declared by any of United States federal or New York authorities, or (vi) there shall have occurred any outbreak or escalation of national or international hostilities or any crisis or calamity, or any change in the United States or international financial markets, or any substantial change or development involving a prospective substantial change in United States or international political, financial or economic conditions that, in the judgment of the Agent, may materially impair the ability of the Agent to sell the Placement Shares hereunder or to enforce contracts for the sale of securities. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination. If the Agent elects to terminate this Agreement as provided in this Section 11(a), the Agent shall provide the required notice as specified in Section 12.

(b) The Company shall have the right, by giving 10 days' prior notice as hereinafter specified, to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 11(f), Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(c) The Agent shall have the right, by giving 10 days' prior notice as hereinafter specified, to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 11(f), Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(d) Unless earlier terminated pursuant to this Section 11, this Agreement shall automatically terminate upon the issuance and sale of all of the Placement Shares through the Agent on the terms and subject to the conditions set forth herein; *provided* that the provisions of Section 7(g), Section 9, Section 10, Section 11(f), Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(e) This Agreement shall remain in full force and effect unless terminated pursuant to Sections 11(a), (b), (c), or (d) above or otherwise by mutual agreement of the parties; *provided*, *however*, that any such termination by mutual agreement shall in all cases be deemed to provide that Section 7(g), Section 9, Section 10, Section 11(f), Section 16 and Section 17 shall remain in full force and effect.

(f) Any termination of this Agreement shall be effective on the date specified in such notice of termination; *provided, however*, that such termination shall not be effective until the close of business on the date of receipt of such notice by the Agent or the Company, as the case may be. If such termination shall occur prior to the Settlement Date for any sale of Placement Shares, such Placement Shares shall settle in accordance with the provisions of this Agreement. Upon termination of this Agreement, the Company shall not be required to pay to the Agent any discount or commission with respect to any Placement Shares not otherwise sold by the Agent under this Agreement; *provided*, *however*, that the Company shall remain obligated to reimburse the Agent's expenses pursuant to Section 7(g).

12. Notices. All notices or other communications required or permitted to be given by any party to any other party pursuant to the terms of this Agreement shall be in writing, unless otherwise specified in this Agreement, and if sent to the Agent, shall be delivered to:

Leerink Partners LLC
1301 Avenue of the Americas, 5th Floor
New York, New York 10019
Attention: Peter M. Fry
E-mail: [***]

with copies (which shall not constitute notice) to:

Leerink Partners LLC
1301 Avenue of the Americas, 5th Floor
New York, New York 10019
Attention: Legal Department
E-mail: LegalNotice@leerink.com

Cooley LLP
55 Hudson Yards
New York, New York 1001
Attention: Daniel I. Goldberg, Esq.
Email: dgoldberg@cooley.com

and if to the Company, shall be delivered to:

Neurogene Inc.
535 W 24th St, 5th Floor

New York, NY 10011
Attention: Christine Mikail
E-mail: [***]

with copies (which shall not constitute notice) to:

Gibson, Dunn & Crutcher LLP
One Embarcadero Center Suite 2600
San Francisco, California 94111
Attention: Ryan A. Murr and Branden C. Berns
E-mail: RMurr@gibsondunn.com; BBerns@gibsondunn.com

Each party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose. Each such notice or other communication shall be deemed given (i) when delivered personally on or before 4:30 P.M., New York City time, on a Business Day, or, if such day is not a Business Day, on the next succeeding Business Day, (ii) by Electronic Notice as set forth in the next paragraph, (iii) on the next Business Day after timely delivery to a nationally-recognized overnight courier or (iv) on the Business Day actually received if deposited in the U.S. mail (certified or registered mail, return receipt requested, postage prepaid). For purposes of this Agreement, "**Business Day**" shall mean any day on which the Nasdaq and commercial banks in the City of New York are open for business.

An electronic communication ("**Electronic Notice**") shall be deemed written notice for purposes of this Section 12 if sent to the electronic mail address specified by the receiving party in this Section 12. Electronic Notice shall be deemed received at the time the party sending Electronic Notice receives actual acknowledgment of receipt from the person whom the notice is sent, other than via auto-reply. Any party receiving Electronic Notice may request and shall be entitled to receive the notice on paper, in a nonelectronic form ("**Nonelectronic Notice**"), which shall be sent to the requesting party within 10 days of receipt of the written request for Nonelectronic Notice.

13. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the Company and the Agent and their respective successors and the affiliates, controlling persons, officers, directors and other persons referred to in Section 9 hereof. References to any of the parties contained in this Agreement shall be deemed to include the successors and permitted assigns of each such party. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto, the persons referred to in the preceding sentence and their respective successors and permitted assigns any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement. Neither party may assign its rights or obligations under this Agreement without the prior written consent of the other party; *provided, however*, that the Agent may assign its rights and obligations hereunder to an affiliate of the Agent without obtaining the Company's consent, so long as such affiliate is a registered broker-dealer.

14. Adjustments for Share Splits. The parties acknowledge and agree that all share-related numbers contained in this Agreement shall be adjusted to take into account any share split, share dividend or similar event effected with respect to the Common Stock.

15. Entire Agreement; Amendment; Severability; Waiver. This Agreement (including all schedules (as amended pursuant to this Agreement) and exhibits attached hereto and Placement Notices issued pursuant hereto) constitutes the entire agreement and supersedes all other prior and contemporaneous agreements and undertakings, both written and oral, among the parties hereto with regard to the subject matter hereof. Neither this Agreement nor any term hereof may be amended except pursuant to a written instrument executed by the Company and the Agent; *provided*, *however*, that **Schedule 2** of this Agreement may be amended by either party from time to time by sending a notice

containing a revised **Schedule 2** to the other party in the manner provided in Section 12 and, upon such amendment, all references herein to **Schedule 2** shall automatically be deemed to refer to such amended **Schedule 2**. In the event that any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable as written by a court of competent jurisdiction, then such provision shall be given full force and effect to the fullest possible extent that it is valid, legal and enforceable, and the remainder of the terms and provisions herein shall be construed as if such invalid, illegal or unenforceable term or provision was not contained herein, but only to the extent that giving effect to such provision and the remainder of the terms and provisions hereof shall be in accordance with the intent of the parties as reflected in this Agreement. No implied waiver by a party shall arise in the absence of a waiver in writing signed by such party. No failure or delay in exercising any right, power, or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any right, power, or privilege hereunder.

16. GOVERNING LAW AND TIME; WAIVER OF JURY TRIAL. THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAWS. SPECIFIED TIMES OF DAY REFER TO NEW YORK CITY TIME. EACH PARTY HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL RIGHT TO TRIAL BY JURY IN ANY LEGAL PROCEEDING ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY.

17. Consent to Jurisdiction. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan, for the adjudication of any dispute hereunder or in connection with any of the transactions contemplated hereby, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is brought in an inconvenient forum, or that the venue of such suit, action or proceeding is improper. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy (certified or registered mail, return receipt requested) to such party at the address in effect for notices under Section 12 of this Agreement and agrees that such service shall constitute good and sufficient notice of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any manner permitted by law.

18. Construction.

(a) The section and exhibit headings herein are for convenience only and shall not affect the construction hereof.

(b) Words defined in the singular shall have a comparable meaning when used in the plural, and vice versa.

(c) The words “hereof,” “hereto,” “herein” and “hereunder” and words of similar import, when used in this Agreement, shall refer to this Agreement as a whole and not to any particular provision of this Agreement.

(d) Wherever the word “include,” “includes” or “including” is used in this Agreement, it shall be deemed to be followed by the words “without limitation.”

(e) References herein to any gender shall include each other gender.

(f) References herein to any law, statute, ordinance, code, regulation, rule or other requirement of any governmental authority shall be deemed to refer to such law, statute, ordinance, code, regulation, rule or other requirement of any governmental authority as amended, reenacted, supplemented or superseded in whole or in part and in effect from time to time and also to all rules and regulations promulgated thereunder.

19. Permitted Free Writing Prospectuses. Each of the Company and the Agent represents, warrants and agrees that, unless it obtains the prior written consent of the other party, which consent shall not be unreasonably withheld, conditioned or delayed, it has not made and will not make any offer relating to the Placement Shares that would constitute an issuer free writing prospectus, or that would otherwise constitute a free writing prospectus (as defined in Rule 405), required to be filed with the Commission. Any such free writing prospectus consented to by the Agent or by the Company, as the case may be, is hereinafter referred to as a "**Permitted Free Writing Prospectus**." The Company represents and warrants that it has treated and agrees that it will treat each Permitted Free Writing Prospectus as an issuer free writing prospectus, and that it has complied and will comply in all material respects with the requirements of Rule 433 applicable to any Permitted Free Writing Prospectus, including timely filing with the Commission where required, legending and record keeping.

20. Absence of Fiduciary Relationship. The Company acknowledges and agrees that:

(a) the Agent has been retained to act as sales agent in connection with the sale of the Placement Shares, the Agent has acted at arms' length and no fiduciary or advisory relationship between the Company or any of its respective affiliates, stockholders (or other equity holders), creditors or employees or any other party, on the one hand, and the Agent, on the other hand, has been or will be created in respect of any of the transactions contemplated by this Agreement, irrespective of whether the Agent has advised or is advising the Company on other matters and the Agent has no duties or obligations to the Company with respect to the transactions contemplated by this Agreement except the obligations expressly set forth herein;

(b) the Company is capable of evaluating, and understanding and understands and accepts, the terms, risks and conditions of the transactions contemplated by this Agreement;

(c) neither the Agent nor its affiliates have provided any legal, accounting, regulatory or tax advice with respect to the transactions contemplated by this Agreement and it has consulted its own legal, accounting, regulatory and tax advisors to the extent it has deemed appropriate;

(d) the Company has been advised and is aware that the Agent and its affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that the Agent and its affiliates have no obligation to disclose such interests and transactions to the Company by virtue of any fiduciary, advisory or agency relationship or otherwise; and

(e) the Company waives, to the fullest extent permitted by law, any claims it may have against the Agent or its affiliates for breach of fiduciary duty or alleged breach of fiduciary duty in connection with the transactions contemplated by this Agreement and agrees that the Agent and its affiliates shall have no liability (whether direct or indirect) to the Company in respect of such a fiduciary claim or to any person asserting a fiduciary duty claim on behalf of or in right of the Company, including stockholders (or other equity holders), creditors or employees of the Company.

21. Recognition of the U.S. Special Resolution Regimes. In the event that the Agent is a Covered Entity and becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer from the Agent of this Agreement, and any interest and obligation in or under this Agreement, will be effective to the same extent as the transfer would be effective under the U.S. Special Resolution Regime if this Agreement, and any such interest and obligation, were governed by the laws of the United States or a state of the United States.

In the event that the Agent is a Covered Entity and the Agent or a BHC Act Affiliate of the Agent becomes subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under this Agreement that may be exercised against the Agent are permitted to be exercised to no greater extent than such Default Rights could be exercised under the U.S. Special Resolution Regime if this Agreement were governed by the laws of the United States or a state of the United States.

For purposes of this Agreement, (A) "BHC Act Affiliate" has the meaning assigned to the term "affiliate" in, and shall be interpreted in accordance with, 12 U.S.C. § 1841(k); (B) "Covered Entity" means any of the following: (i) a "covered entity" as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b); (ii) a "covered bank" as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or (iii) a "covered FSI" as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b); (C) "Default Right" has the meaning assigned to that term in, and shall be interpreted in accordance with, 12 C.F.R. §§ 252.81, 47.2 or 382.1, as applicable; and (D) "U.S. Special Resolution Regime" means each of (i) the Federal Deposit Insurance Act and the regulations promulgated thereunder and (ii) Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act and the regulations promulgated thereunder.

22. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery of an executed Agreement by one party to the other may be made by facsimile or electronic transmission. Counterparts may be delivered via facsimile, electronic mail (including any electronic signature covered by the U.S. federal ESIGN Act of 2000, Uniform Electronic Transactions Act, the Electronic Signatures and Records Act or other applicable law, e.g., www.docusign.com) or other transmission method and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes.

23. Use of Information. The Agent may not provide any information gained in connection with this Agreement and the transactions contemplated by this Agreement, including due diligence, to any third party other than its legal counsel advising it on this Agreement and the transactions contemplated by this Agreement unless expressly approved by the Company in writing.

24. Agent's Information. As used in this Agreement, "**Agent's Information**" means solely the following information in the Registration Statement and the Prospectus: the tenth paragraph under the heading "Plan of Distribution" in the Prospectus Supplement.

All references in this Agreement to the Registration Statement, the Prospectus or any amendment or supplement to any of the foregoing shall be deemed to include the copy filed with the Commission pursuant to EDGAR. All references in this Agreement to financial statements and schedules and other information that is "contained," "included" or "stated" in the Registration Statement or the Prospectus (and all other references of like import) shall be deemed to mean and include all such financial statements and schedules and other information that is incorporated by reference in the Registration Statement or the Prospectus, as the case may be.

All references in this Agreement to "supplements" to the Prospectus shall include any supplements, "wrappers" or similar materials prepared in connection with any offering, sale or private placement of any Placement Shares by the Agent outside of the United States.

[Remainder of Page Intentionally Blank]

If the foregoing correctly sets forth the understanding between the Company and the Agent, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement between the Company and the Agent.

Very truly yours,

NEUROGENE INC.

By: /s/ Christine Mikail
Name: Christine Mikail
Title: President, Chief Financial Officer

ACCEPTED as of the date first-above written:

LEERINK PARTNERS LLC

By: /s/ Peter M. Fry
Name: Peter M. Fry
Title: Head of Alternative Equities

SCHEDULE 1

FORM OF PLACEMENT NOTICE

From: [ ]
[TITLE]
NEUROGENE INC.
Cc: [ ]
To: Leerink Partners LLC
Subject: Leerink Partners —At the Market Offering—Placement Notice

Ladies and Gentlemen:

Pursuant to the terms and subject to the conditions contained in the Sales Agreement, dated August 11, 2025 (the "**Agreement**"), by and between Neurogene Inc., a Delaware corporation (the "**Company**"), and Leerink Partners LLC ("**Leerink Partners**"), I hereby request on behalf of the Company that Leerink Partners sell up to [ ] shares of common stock, $0.000001 par value per share, of the Company (the "**Shares**"), at a minimum market price of $ per share[; *provided* that no more than [ ] Shares shall be sold in any one Trading Day (as such term is defined in Section 3 of the Agreement)]. Sales should begin [on the date of this Placement Notice] and end on [DATE] [until all Shares that are the subject of this Placement Notice are sold].

SCHEDULE 2

The Company

[***]

[***]

Leerink Partners

[***]

[***]

SCHEDULE 3

Compensation

The Company shall pay Leerink Partners compensation in cash up to 3.0% of the gross proceeds from the sales of Placement Shares pursuant to the terms of the Sales Agreement of which this **Schedule 3** forms a part.

Gibson, Dunn & Crutcher LLP
T: +1 415.393.4631
gibsondunn.com

GIBSON DUNN

August 11, 2025

Neurogene Inc.
535 W 24th St., 5th Floor New York, New York 10011

Re: Neurogene Inc.
Registration Statement on Form S-3 (File No. 333-286057)

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-3, File No. 333-286057 (the "Registration Statement") of Neurogene Inc., a Delaware corporation (the "Company"), filed with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), and the prospectus supplement thereto dated August 11, 2025 (the "Prospectus Supplement"), in connection with the offering by the Company of up to $150,000,000 of the Company's common stock, par value $0.000001 per share (the "Shares").

In arriving at the opinion expressed below, we have examined originals, or copies certified or otherwise identified to our satisfaction as being true and complete copies of the originals, of specimen common stock certificates and such other documents, corporate records, certificates of officers of the Company and of public officials and other instruments as we have deemed necessary or advisable to enable us to render the opinions set forth below. In our examination, we have assumed without independent investigation the genuineness of all signatures, the legal capacity and competency of all natural persons, the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as copies. We have further assumed that all offers and sales of the Shares will comply with the minimum offering price and pricing formula set forth in the authorization of the offering and sale of the Shares by the Company's Board of Directors, or a duly authorized committee thereof.

Based upon the foregoing, and subject to the assumptions, exceptions, qualifications and limitations set forth herein, we are of the opinion that the Shares, when issued against payment therefor as set forth in the Registration Statement and the Prospectus Supplement thereto, will be validly issued, fully paid and non-assessable.

We consent to the filing of this opinion as an exhibit to the Registration Statement, and we further consent to the use of our name under the caption "Legal Matters" in the Registration Statement and the Prospectus Supplement. In giving these consents, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the Rules and Regulations of the Commission.

Very truly yours,

/s/ Gibson, Dunn & Crutcher LLP

Exhibit 31.1

CERTIFICATIONS

I, Rachel McMinn, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of of Neurogene Inc:

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

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

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

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

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

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

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

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

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

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

Date: August 11, 2025

/s/ Rachel McMinn

Rachel McMinn

Chief Executive Officer (Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Christine Mikail, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of of Neurogene Inc:

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

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

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

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

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

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

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

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

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

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

Date: August 11, 2025

/s/ Christine Mikail

Christine Mikail

President and Chief Financial Officer (Principal Financial Officer)

Exhibit 32.1

NEUROGENE INC.
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 Neurogene Inc. (the "Company") for the quarter ended June 30, 2025, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Rachel McMinn, Chief Executive Officer of the Company, and Christine Mikail, President and Chief Financial Officer of the Company, each hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of her knowledge:

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

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

IN WITNESS WHEREOF, the undersigned have set their hands hereto as of August 11, 2025.

/s/ Rachel McMinn	/s/ Christine Mikail
Rachel McMinn	Christine Mikail
Chief Executive Officer	*President and Chief Financial Officer*

This certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. Section 1350, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Neurogene Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.

Note: A signed original of this written statement required by §906 has been provided to Neurogene Inc. and will be retained by Neurogene Inc. and furnished to the Securities and Exchange Commission or its staff upon request.