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, 2026

OR

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

Commission File Number 001-39782

4D Molecular Therapeutics, Inc.

(Exact name of registrant as specified in its Charter)

Delaware	**47-3506994**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
5858 Horton Street #455 Emeryville, CA	**94608**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (510) 505-2680

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 $0.0001 per share	FDMT	The Nasdaq Global Select Market

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

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

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

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

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

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

As of August 10, 2026, there were 55,244,211 shares of 4D Molecular Therapeutics, Inc.'s common stock outstanding. This number does not include 16,935,665 shares of common stock issuable upon the exercise of pre-funded warrants outstanding as of August 10, 2026 (which are immediately exercisable at an exercise price of $0.0001 per share of common stock, subject to beneficial ownership limitations).

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act). These forward-looking statements concern our business, operations and financial performance and condition, as well as our plans, objectives and expectations for our business operations and financial performance and condition. Any statements contained herein that are not statements of historical facts may be deemed to be forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as “aim,” “anticipate,” “assume,” “believe,” “contemplate,” “continue,” “could,” “due,” “estimate,” “expect,” “goal,” “intend,” “may,” “objective,” “plan,” “predict,” “potential,” “positioned,” “seek,” “should,” “target,” “will,” “would” and other similar expressions that are predictions of or indicate future events and future trends, or the negative of these terms or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- the success, cost and timing of our development activities, preclinical studies and clinical trials, including our preclinical and clinical trials for 4D-150, 4D-175, 4D-710 and 4D-725;
- the number, size and design of our planned clinical trials, and what regulatory authorities may require to obtain marketing approval;
- the timing of Investigational New Drug Application (“IND”) enabling studies and results from such studies;
- the timing and success of lead optimization for our product candidates;
- the translation of our preclinical results and data into future clinical trials in humans;
- the timing of any manufacturing runs for materials to be used in patient trials;
- the timing or likelihood of regulatory filings and approvals;
- our ability to obtain and maintain regulatory approval of our product candidates, and any related restrictions, limitations and/or warnings in the label of any approved product candidate;
- our ability to obtain funding for our operations, including funding necessary to develop and commercialize our product candidates;
- our ability to comply with restrictive covenants under our loan and security agreement (the "Loan and Security Agreement"), with Hercules Capital, Inc.;
- Our ability to satisfy interest and principal payments under the Loan and Security Agreement;
- the rate and degree of market acceptance of our product candidates, if approved;
- the success of competing products or platform technologies that are or may become available;
- our plans and ability to establish sales, marketing and distribution infrastructure to commercialize any product candidates for which we obtain approval;
- future agreements with third parties in connection with the commercialization of our product candidates;
- the size and growth potential of the markets for our product candidates, if approved for commercial use, and our ability to serve those markets;
- existing regulations and regulatory developments in the United States and foreign countries;
- the expected potential benefits of strategic collaboration agreements, including our relationships with Otsuka Pharmaceutical Co., Ltd. and the Cystic Fibrosis Foundation, and our ability to attract collaborators with development, regulatory and commercialization expertise;

- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates and technology;
- potential claims relating to our intellectual property and third-party intellectual property;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately;
- the pricing and reimbursement of our product candidates, if approved;
- the potential effects of public health emergencies on our preclinical and clinical programs and our business;
- our ability to attract and retain key managerial, scientific and medical personnel;
- the accuracy of our estimates regarding expenses, capital requirements and needs for additional financing; and
- our financial performance.

These forward-looking statements are based on management's current expectations, estimates, forecasts and projections about our business and the industry in which we operate and management's beliefs and assumptions and are not guarantees of future performance or development and involve known and unknown risks, uncertainties and other factors that are in some cases beyond our control. As a result, any or all of our forward-looking statements in this Quarterly Report on Form 10-Q may turn out to be inaccurate. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under the section titled "Risk Factors" and elsewhere in this Quarterly Report on Form 10-Q. Potential investors are urged to consider these factors carefully in evaluating the forward-looking statements. These forward-looking statements speak only as of the date of this Quarterly Report on Form 10-Q. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future. You should, however, review the factors and risks we describe in the reports we file from time to time with the SEC after the date of this Quarterly Report on Form 10-Q.

Risk Factor Summary

Our ability to implement our business strategy is subject to numerous risks that you should be aware of before making an investment decision. The following is a summary of the principal risks that could seriously harm our business, all of which are more fully described in Part II. Item 1A. "Risk Factors" in this Quarterly Report on Form 10-Q. This summary should be read in conjunction with the discussion of risk factors in Part II, Item 1A of this Quarterly Report on Form 10-Q, and should not be relied upon as an exhaustive summary of the material risks facing our business.

- We are in the late stages of drug development for our lead program and have a limited operating history and no products approved for commercial sale, which may make it difficult to evaluate our current business and predict our future success and viability.
- We have had recurring net losses, and we expect to continue to incur significant net losses for the foreseeable future.
- We will require substantial additional capital to finance our operations. If we are unable to raise such capital when needed, or on acceptable terms, we may be forced to delay, reduce and/or eliminate one or more of our research and drug development programs or future commercialization efforts.

- All of our product candidates are based on a novel AAV genetic medicine technology with which there is limited regulatory and clinical experience to date, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. Further, the regulatory approval process for novel product candidates such as ours can be more expensive and take longer than for other, better known or extensively studied therapeutic modalities.
- Adverse public perception or regulatory scrutiny of genetic medicine technology may negatively impact the developmental progress or commercial success of product candidates that we develop alone or with collaborators.
- Our clinical trials may fail to demonstrate substantial evidence of the safety and efficacy of our product candidates, which would prevent, delay or limit the scope of regulatory approval and commercialization, which could seriously harm our business.
- Gene therapies are novel, complex and difficult to manufacture. We could experience production problems that result in delays in our development or commercialization programs, limit the supply of our products or otherwise seriously harm our business.
- The regulatory approval processes of the U.S. Food and Drug Administration ("FDA"), European Medicines Agency ("EMA") and comparable foreign regulatory authorities are lengthy, expensive, time consuming, and inherently unpredictable. If we are ultimately unable to obtain regulatory approval for our product candidates, we will be unable to generate product revenue and our business will be substantially harmed.
- Our success depends on our ability to protect our intellectual property and our proprietary technologies.
- Our rights to develop and commercialize our product candidates are subject in part to the terms and conditions of licenses granted to us by others, and the patent protection, prosecution and enforcement for some of our product candidates may be dependent on our licensors.
- Our employees, independent contractors, consultants, research or commercial partners or collaborators and vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.

PART I. FINANCIAL INFORMATION

Item 1. Condensed Financial Statements (Unaudited)

4D Molecular Therapeutics, Inc.
Condensed Balance Sheets
(In thousands, except share and per share amounts)

	June 30, 2026	December 31, 2025
Assets		
Current assets:		
Cash and cash equivalents	$ 70,372	$ 60,241
Marketable securities	290,962	342,414
Collaboration receivable	4,611	—
Prepaid expenses and other current assets	17,012	10,479
Total current assets	382,957	413,134
Marketable securities, long-term	69,295	111,379
Property and equipment, net	12,379	14,867
Operating lease right-of-use assets, net	16,548	18,143
Other non-current assets	11,436	9,188
Total assets	$ 492,615	$ 566,711
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 12,522	$ 11,159
Accrued and other current liabilities	25,431	26,874
Deferred revenue	360	360
Deferred grant reimbursements	3,986	—
Operating lease liabilities, current portion	5,374	5,592
Total current liabilities	47,673	43,985
Deferred revenue, net of current portion	2,955	745
Derivative liability	384	358
Operating lease liabilities, long-term portion	14,256	15,821
Long-term debt, net	19,587	—
Other liabilities	101	138
Total liabilities	84,956	61,047
Commitments and contingencies (Note 8)		
Stockholders' equity		
Preferred stock, $0.0001 par value, 10,000,000 shares authorized at June 30, 2026 and December 31, 2025; no shares issued and outstanding at June 30, 2026 and December 31, 2025	—	—
Common stock, $0.0001 par value, 300,000,000 shares authorized at June 30, 2026 and December 31, 2025; 55,214,097 and 57,607,874 shares issued and outstanding at June 30, 2026 and December 31, 2025, respectively	6	6
Additional paid-in-capital	1,266,099	1,221,235
Accumulated other comprehensive gain (loss)	(446)	727
Accumulated deficit	(858,000)	(716,304)
Total stockholders' equity	407,659	505,664
Total liabilities and stockholders' equity	$ 492,615	$ 566,711

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

4D Molecular Therapeutics, Inc.
Condensed Statements of Operations
(In thousands, except share and per share amounts)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Revenue:				
Collaboration and license revenue	$ 3,781	$ 15	$ 6,828	$ 29
Operating expenses:				
Research and development	68,282	47,951	133,262	88,650
General and administrative	12,524	11,520	24,212	24,456
Total operating expenses	80,806	59,471	157,474	113,106
Loss from operations	(77,025)	(59,456)	(150,646)	(113,077)
Other income (expense):				
Interest income	4,255	4,859	9,119	10,441
Other income (expense), net	(166)	(61)	(169)	6
Total other income, net	4,089	4,798	8,950	10,447
Net loss	$ (72,936)	$ (54,658)	$ (141,696)	$ (102,630)
Net loss per share, basic and diluted	$ (1.04)	$ (0.98)	$ (2.05)	$ (1.84)
Weighted-average shares outstanding used in computing net loss per share, basic and diluted	70,272,018	55,927,091	69,175,213	55,836,075

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

4D Molecular Therapeutics, Inc.
Condensed Statements of Comprehensive Loss
(In thousands)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Net loss	$ (72,936)	$ (54,658)	$ (141,696)	$ (102,630)
Other comprehensive loss:				
Net unrealized gain (loss) on marketable securities	(266)	5	(1,173)	108
Total comprehensive loss	$ (73,202)	$ (54,653)	$ (142,869)	$ (102,522)

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

4D Molecular Therapeutics, Inc.
Condensed Statements of Stockholders' Equity
(In thousands, except share amounts)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Gain (Loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balances at December 31, 2025	57,607,874	$ 6	$ 1,221,235	$ 727	$ (716,304)	$ 505,664
Issuance of common stock upon exercise of stock options and vesting of RSUs	251,629	—	1,674	—	—	1,674
Issuance of common stock upon ATM offering, net of issuance costs	1,012,145	—	9,712	—	—	9,712
Exchange of common stock for pre-funded warrants	(6,600,000)	(1)	1	—	—	—
Stock-based compensation expense	—	—	4,453	—	—	4,453
Net unrealized loss on marketable securities	—	—	—	(907)	—	(907)
Net loss	—	—	—	—	(68,760)	(68,760)
Balances at March 31, 2026	52,271,648	$ 5	$ 1,237,075	$ (180)	$ (785,064)	$ 451,836
Issuance of common stock upon exercise of stock options and vesting of RSUs	67,640	—	111	—	—	111
Issuance of common stock - 2020 ESPP	368,482	—	1,125	—	—	1,125
Issuance of common stock upon ATM offering, net of issuance costs	2,506,327	1	21,904	—	—	21,905
Stock-based compensation expense	—	—	5,884	—	—	5,884
Net unrealized loss on marketable securities	—	—	—	(266)	—	(266)
Net loss	—	—	—	—	(72,936)	(72,936)
Balances at June 30, 2026	55,214,097	$ 6	$ 1,266,099	$ (446)	$ (858,000)	$ 407,659

Continued on next page.

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

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Gain (Loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balances at December 31, 2024	45,793,942	$ 5	$ 1,086,567	$ 229	$ (576,195)	$ 510,606
Issuance of common stock upon exercise of stock options and vesting of RSUs	22,235	—	—	—	—	—
Issuance of common stock upon exercise of equity warrants	508,465	—	—	—	—	—
Stock-based compensation expense	—	—	6,986	—	—	6,986
Net unrealized gain on marketable securities	—	—	—	103	—	103
Net loss	—	—	—	—	(47,972)	(47,972)
Balances at March 31, 2025	46,324,642	$ 5	$ 1,093,553	$ 332	$ (624,167)	$ 469,723
Issuance of common stock upon exercise of stock options and vesting of RSUs	49,791	—	2	—	—	2
Issuance of common stock - 2020 ESPP	323,290	—	860	—	—	860
Issuance of common stock upon exercise of service warrants	2,519	—	—	—	—	—
Stock-based compensation expense	—	—	4,958	—	—	4,958
Net unrealized gain on marketable securities	—	—	—	5	—	5
Net loss	—	—	—	—	(54,658)	(54,658)
Balances at June 30, 2025	46,700,242	$ 5	$ 1,099,373	$ 337	$ (678,825)	$ 420,890

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

4D Molecular Therapeutics, Inc.
Condensed Statements of Cash Flows
(In thousands)

	Six months ended June 30,	
	2026	**2025**
Cash flows from operating activities		
Net loss	$ (141,696)	$ (102,630)
Adjustments to reconcile net loss to net cash used in operating activities		
Stock-based compensation expense	10,337	11,944
Change in fair value of derivative liability	26	(76)
Depreciation and amortization	2,549	2,217
Loss on disposal of property and equipment	43	—
Amortization of right-of-use assets	1,595	1,425
Net accretion of discount on marketable securities	(2,124)	(2,433)
Changes in operating assets and liabilities		
Prepaid expenses and other current assets	(10,525)	(7)
Other non-current assets	(652)	(5,129)
Accounts payable	(525)	4,314
Accrued and other liabilities	2,421	798
Deferred revenue	2,210	(29)
Operating lease liabilities	(1,783)	(1,529)
Net cash used in operating activities	(138,124)	(91,135)
Cash flows from investing activities		
Purchases of marketable securities	(95,555)	(249,480)
Maturities of marketable securities	190,042	268,273
Acquisition of property and equipment	(55)	(697)
Net cash provided by investing activities	94,432	18,096
Cash flows from financing activities		
Issuance of common stock upon exercise of stock options	1,785	2
Issuance of common stock under the ATM offering program, net of issuance costs	31,654	—
Issuance of common stock - 2020 ESPP	1,125	860
Proceeds from long-term debt, net of discount and issuance costs	19,259	—
Net cash provided by financing activities	53,823	862
Net increase (decrease) in cash and cash equivalents	10,131	(72,177)
Cash and cash equivalents, beginning of period	60,241	149,336
Cash and cash equivalents, end of period	$ 70,372	$ 77,159
Supplemental disclosures of noncash investing and financing information		
Purchases of property and equipment in accrued and other current liabilities	$ 49	$ —
Unpaid debt offering costs in accounts payable	$ 1,888	$ —
Unpaid costs from ATM offering program in accrued and other current liabilities	$ 37	$ —

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

4D Molecular Therapeutics, Inc.
Notes to Condensed Financial Statements (Unaudited)

1. The Company

4D Molecular Therapeutics, Inc. (the "Company") was formed as a limited liability company in September 2013 under the name 4D Molecular Therapeutics, LLC. The Company changed its name and converted into a corporation which was incorporated in the state of Delaware in March 2015. The Company is a late-stage biotechnology company advancing durable and disease-targeted therapeutics with potential to transform treatment paradigms and provide benefits to patients.

2025 Offering

In November 2025, the Company completed an underwritten offering (the "2025 Offering") in which 8,385,809 shares of the Company's common stock were sold at an offering price of $10.51 per share, as well as pre-funded warrants to purchase 1,128,949 shares of the Company's common stock at an offering price of $10.5099 per underlying share pursuant to an effective Registration Statement on Form S-3. The net proceeds from the 2025 Offering were approximately $93.3 million, after deducting the underwriting discounts and commissions and other offering expenses.

Liquidity

The Company has incurred significant losses and negative cash flows from operations and had an accumulated deficit of $858.0 million as of June 30, 2026. The Company believes that its cash, cash equivalents and marketable securities as of June 30, 2026 are sufficient for the Company to fund planned operations for at least one year from the issuance date of these condensed financial statements. The Company has funded its operations primarily through the sale and issuance of equity securities, including primary follow-on offerings and use of the Company's "at-the-market" offering program, from borrowings under the Company's $200.0 million loan facility (the "Loan and Security Agreement") with Hercules Capital, Inc. ("Hercules") (see Note 9, Long-Term Debt) and, to a lesser extent, from cash received pursuant to its collaboration and license agreements. To date, none of the Company's product candidates have been approved for sale, and therefore, the Company has not generated any revenue from product sales. Management expects operating losses and negative cash flows from operations to continue for the foreseeable future. The Company plans to raise additional funding as required based on the status of its clinical trials and projected cash flows. There can be no assurance that, in the event the Company requires additional financing, such financing will be available on terms acceptable to the Company, if at all. Failure to generate sufficient cash flows from operations, raise additional capital and reduce discretionary spending should additional capital not become available could have a material adverse effect on the Company's ability to achieve its business objectives.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying condensed financial statements have been prepared in accordance with United States Generally Accepted Accounting Principles ("U.S. GAAP") and the rules and regulations of the United States Securities and Exchange Commission ("SEC") for interim reporting.

Certain information and note disclosures normally included in annual financial statements prepared in accordance with U.S. GAAP have been condensed or omitted. Accordingly, the condensed financial statements should be read in conjunction with the audited financial statements and the related notes thereto included in the Company's Annual Report on Form 10-K for the year ended December 31, 2025, filed with the SEC.

The accompanying financial information for the three and six months ended June 30, 2026 and 2025 is unaudited. The condensed financial statements have been prepared on the same basis as the annual audited financial statements and, in the opinion of management, reflect all adjustments, consisting of only normal recurring adjustments, necessary for a fair statement of the Company's financial position as of June 30, 2026, and its results of operations and cash flows for the three and six months ended June 30, 2026 and 2025. The condensed balance sheet at December 31, 2025 was derived from audited annual financial statements but does not contain all of the footnote disclosures from the annual financial statements. The results for interim periods are not necessarily indicative of the results expected for the full fiscal year or any other periods.

Use of Estimates and Judgments

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses; and disclosure of contingent assets and liabilities as of the date of the financial statements. Such estimates include the determination of useful lives for property and equipment, the contract term, transaction price and costs of collaboration agreements, stock options, the derivative instrument, long-term debt and income tax uncertainties. Actual results could differ from those estimates.

Due to the war in Ukraine, conflicts in the Middle East, any expansion of these conflicts, rising interest rates, tariffs and inflation, natural disasters and health crises, such as pandemics, there has been uncertainty and disruption in the global economy and financial markets. The Company is not aware of any specific event or circumstance that would require an update to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of June 30, 2026. While there was not a material impact to the Company's condensed financial statements as of June 30, 2026, these estimates may change, as new events occur and additional information is obtained, as well as other factors that could result in material impacts to the condensed financial statements in future reporting periods.

Long-Term Debt

Long-term debt is recognized at cost and presented net of the original issue discount or premium and debt issuance costs on the condensed balance sheets. Amortization of debt discount and debt issuance costs is recognized as interest expense over the period of the debt, using the effective interest rate method. See Note 9, Long-Term Debt, for further discussion on the long-term debt.

Segment Information

The Company manages its business as one segment which includes all activities related to the discovery, development, and commercialization of medicines for specific diseases. See Note 20, Segment Information, for financial information related to the Company's one segment.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to a concentration of credit risk consist of cash and cash equivalents, marketable securities and accounts receivable. The Company's cash is held at two financial institutions in the United States of America. The Company's cash equivalents are invested in money market funds. The Company also invests in U.S. Treasuries, U.S. government sponsored agencies, commercial paper, corporate bonds and certificates of deposit. The Company has not experienced any losses on its deposits of cash and cash equivalents. Such deposits may, at times, exceed federally insured limits.

The Company's partners in collaboration and license agreements who represent 10% or more of the Company's total revenue are as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Customer A	98%	0%	97%	0%
Customer B	*	100%	*	100%
Total	98%	100%	97%	100%

* Less than 10%

As of June 30, 2026, the Company had $4.6 million due from Otsuka Pharmaceutical Co., Ltd. ("Otsuka") related to the estimated cost sharing and reimbursement. The Company did not have accounts receivable from its other partner in collaboration and license agreements as of June 30, 2026 and December 31, 2025.

The Company's total revenues by geographic region, based on the location of the customer, are as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Japan	$ 3,691	$ —	$ 6,648	$ —
United States	90	15	180	29
Total revenue	$ 3,781	$ 15	$ 6,828	$ 29

Other Risks and Uncertainties

The Company is subject to risks and uncertainties common to late clinical-stage companies in the biotechnology industry, including, but not limited to, development by competitors of new technological innovations, protection of proprietary technology, dependence on key personnel, suppliers for key raw materials, contract development and manufacturing organizations ("CDMOs") and contract research organizations ("CROs"), compliance with government regulations and the need to obtain additional financing to fund operations. Product candidates currently under development will require significant additional research and development efforts, including extensive preclinical studies, clinical trials and regulatory approval, prior to commercialization. These efforts require significant amounts of additional capital, adequate personnel and infrastructure and extensive compliance and reporting.

There can be no assurance that the Company's research and development will be successfully completed, that adequate protection for the Company's intellectual property will be obtained or maintained, that any products developed will obtain necessary government regulatory approval or that any approved products will be commercially viable. Even if the Company's product development efforts are successful, it is uncertain when, if ever, the Company will generate significant revenue from product sales. The Company operates in an environment of rapid change in technology and substantial competition from other pharmaceutical and biotechnology companies. In addition, the Company is dependent upon the services of its employees, consultants and other third parties (including for clinical trials and some aspects of research and preclinical testing).

Recently Issued Accounting Pronouncements Not Yet Adopted

In November 2024, the Financial Accounting Standards Board issued Accounting Standards Update ("ASU") No. 2024-03, *Income Statement - Reporting Comprehensive Income - Expense Disaggregation Disclosures (Topic 220) - Disaggregation of Income Statement Expenses*. ASU 2024-03 requires public business entities to disclose, on an annual and interim basis, disaggregated information about certain income statement expense line items in the notes to the financial statements. ASU 2024-03 is effective for fiscal years beginning after December 15, 2026 (fiscal 2027) and interim periods within fiscal years beginning after December 15, 2027 (fiscal 2028). The ASU must be applied prospectively and may be applied retrospectively if elected. The Company is currently evaluating the effect of adopting this new accounting guidance.

Recently Issued Accounting Pronouncements Adopted

In December 2025, the FASB issued *ASU 2025-10, Government Grants* (Topic 832): *Accounting for Government Grants Received by Business Entities*, which establishes authoritative guidance on the recognition, measurement, presentation and disclosure of government grants received by business entities. The guidance applies to grants related to assets and grants related to income and requires recognition when it is probable that the Company will comply with the conditions attached to the grant and the grant will be received. The guidance also permits either modified prospective, modified retrospective or retrospective transition and is effective for annual and interim periods beginning after December 15, 2028, with early adoption permitted. The Company early adopted *ASU 2025-10* as of the beginning of the current fiscal year using the modified prospective approach. The adoption did not have an impact on the Company's condensed financial statements or related disclosures.

3. Fair Value Measurements and Marketable Securities

The following tables represent the Company's fair value hierarchy for financial assets and financial liabilities measured at fair value on a recurring basis (in thousands):

	Amortized Cost Basis	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value as of June 30, 2026	Cash and Cash Equivalents	Current Marketable Securities	Non-Current Marketable Securities
Assets							
Cash	$ 29,718	$ —	$ —	$ 29,718	$ 29,718	$ —	$ —
Level 1:							
Money market funds	34,659	—	—	34,659	34,659	—	—
Level 2:							
Certificates of deposit	20,892	4	(9)	20,887	—	20,887	—
Commercial paper	54,813	5	(52)	54,766	5,995	48,771	—
U.S. Treasuries	92,469	10	(216)	92,263	—	67,884	24,379
Corporate bonds	198,524	51	(239)	198,336	—	153,420	44,916
Subtotal	366,698	70	(516)	366,252	5,995	290,962	69,295
Total	$ 431,075	$ 70	$ (516)	$ 430,629	$ 70,372	$ 290,962	$ 69,295

	Amortized Cost Basis	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value as of December 31, 2025	Cash and Cash Equivalents	Current Marketable Securities	Non-Current Marketable Securities
Assets							
Cash	$ 10,696	$ —	$ —	$ 10,696	$ 10,696	$ —	$ —
Level 1:							
Money market funds	39,570	—	—	39,570	39,570	—	—
Level 2:							
Certificates of deposit	35,986	37	—	36,023	—	36,023	—
Commercial paper	63,875	48	—	63,923	5,479	58,444	—
U.S. Treasuries	76,920	153	—	77,073	—	63,589	13,484
Corporate bonds	286,260	492	(3)	286,749	4,496	184,358	97,895
Subtotal	463,041	730	(3)	463,768	9,975	342,414	111,379
Total	$ 513,307	$ 730	$ (3)	$ 514,034	$ 60,241	$ 342,414	$ 111,379

There are no Level 3 assets and no Level 1 or 2 liabilities.

Level 3 Inputs

The fair value of the derivative liability is based on significant inputs not observable in the market, which represent a Level 3 measurement within the fair value hierarchy. The fair value of the derivative liability was determined using a present value analysis with multiple scenarios. In determining the fair value of the derivative liability, the inputs impacting fair value include the change of control payment to the Cystic Fibrosis Foundation, the probability of a change of control event, the product status at time of a change of control event and the discount rate. See Note 6, Research and Collaboration Arrangements, and Note 16, Derivative Liability, for further discussion on the embedded derivative.

There were no transfers between Level 1, 2 and 3 for assets or liabilities during the periods presented.

The following table sets forth a summary of the changes in the fair value of the Company's Level 3 financial instrument (in thousands):

	Derivative Liability
Balance as of December 31, 2025	$ 358
Change in fair value	26
Balance as of June 30, 2026	$ 384

The change in fair value above is included in other income (expense), net, in the Company's condensed statements of operations.

All marketable securities held as of June 30, 2026 had contractual maturities of less than two years. There have been no material realized gains or losses on marketable securities for the periods presented.

Aggregate fair values of marketable securities with unrealized losses and gains were as follows as of June 30, 2026 and December 31, 2025 (in thousands):

	June 30, 2026	December 31, 2025
Aggregate fair value of marketable securities in a continuous loss position for less than twelve months	$ 260,917	$ 15,449
Aggregate fair value of marketable securities in a continuous loss position for more than twelve months	—	1,951
Aggregate fair value of marketable securities in unrealized gain position	105,335	446,368
Total marketable securities	$ 366,252	$ 463,768

The Company manages credit risk associated with its investment portfolio through its investment policy, which limits purchases to high-quality issuers and also limits the amount of its portfolio that can be invested in a single issuer. The Company did not record an allowance for credit losses or other impairment charges related to its marketable securities for any period presented. The Company has determined that (i) it does not have the intent to sell any of these investments, and (ii) it is not more likely than not that it will be required to sell any of these investments before recovery of the entire amortized cost basis. The Company further considered the maximum unrealized loss amounts both at the individual instrument level, $41 thousand, as well as in aggregate, $516 thousand, as of June 30, 2026, as immaterial. These unrealized losses were not attributed to credit risk and were associated with changes in market conditions. The Company periodically reviews its marketable securities for indications of credit losses. The Company anticipates that it will recover the entire amortized cost basis of such securities, and therefore, no credit loss existed as of June 30, 2026.

4. Property and Equipment, Net

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

	June 30, 2026	December 31, 2025
Machinery and equipment	$ 14,154	$ 14,538
Leasehold improvements	18,467	18,467
Furniture and fixtures	1,067	1,086
Office equipment	301	324
Computer equipment and software	1,739	1,685
Transportation equipment	46	46
Construction in progress	49	—
Total property and equipment	35,823	36,146
Less: Accumulated depreciation and amortization	(23,444)	(21,279)
Property and equipment, net	$ 12,379	$ 14,867

All property and equipment are maintained in the United States. Depreciation expense was $1.3 million for each of the three months ended June 30, 2026 and 2025, and $2.5 million and $2.6 million for the six months ended June 30, 2026 and 2025, respectively.

5. Accrued and Other Current Liabilities

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

	June 30, 2026	December 31, 2025
Payroll and related expenses	$ 7,818	$ 13,806
Accrued clinical and preclinical study costs	14,014	10,273
Consulting and outside services	3,475	2,666
Other accrued expenses	124	129
Total accrued and other current liabilities	$ 25,431	$ 26,874

6. Research and Collaboration Arrangements

Collaboration and license revenue for each period was as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Otsuka Pharmaceutical Co., Ltd.	$ 3,691	$ —	$ 6,648	$ —
Cystic Fibrosis Foundation	90	15	180	29
Total revenue	$ 3,781	$ 15	$ 6,828	$ 29

Deferred revenue is summarized as follows (in thousands):

	June 30, 2026	December 31, 2025
Otsuka Pharmaceutical Co., Ltd.	$ 2,390	$ —
Cystic Fibrosis Foundation	925	1,105
Total deferred revenue	$ 3,315	$ 1,105

An immaterial amount of revenue was recorded during the six months ended June 30, 2026 and 2025 which was included in deferred revenue at January 1, 2026 and 2025, respectively, for Cystic Fibrosis Foundation.

Cystic Fibrosis Foundation (“CFF”)

In September 2016, the Company entered into an award agreement for the Optimized Adeno-Associated Virus for Lung Epithelia Gene Delivery Development Program with CFF, a non-profit organization dedicated to finding a cure for cystic fibrosis, an inherited disorder that causes disease in the pulmonary airways leading to morbidity and mortality. Under this agreement, CFF contributes funding to help advance the Company’s cystic fibrosis research program. The September 2016 grant award agreement was incorporated into a new grant award agreement with CFF in September 2017 with the same objectives, which was subsequently amended in August 2018 and February 2021. In August 2023, the Company executed a third amendment to the agreement (the “August 2023 Amendment”), which modified the research plan, increased the aggregate milestone payments from $3.5 million to $6.3 million and extended the estimated project completion date. The aforementioned September 2017 agreement and three amendments are collectively referred to as the “CFF Agreement”. The August 2023 Amendment represents a contract modification to an existing contract under ASC Topic 606, given the amendment did not include any additional goods or services, and the remaining research activities are not distinct from those previously provided. The August 2023 Amendment did not impact the transaction price, given the increased award amount relates to variable consideration for future milestones that are fully constrained. Accordingly, the contract modification did not result in a revenue adjustment. As of June 30, 2026 and December 31, 2025, the Company had achieved cumulative milestones totaling $1.8 million under the CFF Agreement. The remaining award amount will be paid by CFF based on achievement of certain development milestones by the Company.

The Company expects to make payments to CFF equal to six times the actual award received by the Company in three installments within the first four years of the first commercial sale of a product developed under this agreement. The Company also has agreed to make future sales-based milestone payments to CFF of up to three times the actual award received upon achieving specified commercialization milestones with respect to the first of any product developed utilizing any compound covered under the CFF Agreement. The CFF Agreement also requires the Company to pay to CFF royalties of a mid-single digit percentage, up to six times the actual award received, on any amounts received by the Company from the sale, license or transfer to a third-party of rights in the technology developed as a result of this collaboration. Any such royalty payments shall be credited against the payments owed by the Company upon first commercial sale. In the event of a change of control of the Company, CFF will receive certain payments, depending on the timing of the change of control and the size of the transaction.

To date, the Company has not developed a commercial product in connection with the CFF Agreement, and it has not licensed, sold or otherwise transferred to another party the product developed under the CFF Agreement or the underlying technology.

If at any time prior to the first commercial sale of a product developed as a result of the CFF Agreement, the Company ceases to use commercially reasonable efforts to develop or commercialize any product under the CFF Agreement for a continuous period of 180 consecutive days and fails to present a reasonable plan to resume commercially reasonable efforts, the Company will grant to CFF an irrevocable, exclusive worldwide interruption license under all of the Company's interest in the research plan technology to exploit such product. Any third-party license granted by the Company shall be subject to such interruption license.

The Company identified one performance obligation within the CFF Agreement for research activities. The CFF Agreement does not include a significant financing component.

The Company concluded that the transaction price should not include the variable consideration related to future research milestones as they were considered to be constrained as it is probable that the inclusion of such variable consideration could result in a significant reversal of cumulative revenue in the future. The Company re-evaluates the transaction price and estimated period of performance at each reporting period.

Revenue recognized during the three and six months ended June 30, 2026 was $0.1 million and $0.2 million, respectively, while revenue recognized during the three and six months ended June 30, 2025 was immaterial. As of June 30, 2026 and December 31, 2025, deferred revenue relating to the CFF Agreement was $0.9 million and $1.1 million, respectively. There were no accounts receivable from CFF under the CFF Agreement as of June 30, 2026 and December 31, 2025. As of June 30, 2026 and December 31, 2025, the aggregate amount of the transaction price allocated to the remaining performance obligation was $0.9 million and $1.1 million, respectively. Based on current timelines, the deferred revenue is expected to be recognized as revenue over the next four years as the Company performs research services through the completion of IND-enabling studies.

The obligation to make payments to CFF upon a change of control meets the definition of an embedded derivative that is required to be bifurcated and separately accounted for as a derivative liability. See Note 3, Fair Value Measurements and Marketable Securities, and Note 16, Derivative Liability, for further discussion of the embedded derivative.

Otsuka Pharmaceutical Co., Ltd.

On October 31, 2025, the Company entered into a Collaboration and License Agreement (the "Otsuka Agreement") with Otsuka. Pursuant to the Otsuka Agreement, the Company granted Otsuka an exclusive royalty-bearing sublicensable license to its intellectual property to develop, manufacture and commercialize 4D-150, its lead product candidate for ophthalmological diseases, in Japan, Korea, China, Australia, and certain other Asia-Pacific markets ("Otsuka Territory"). The Company retains full development and commercialization rights for 4D-150 outside the Otsuka Territory, including the United States, Latin America, and Europe.

Otsuka will lead all regulatory and commercialization activities in the Otsuka Territory. The Company will lead all Phase 3 clinical activity globally, including within the Otsuka Territory. In aggregate, the Company is currently responsible for separate global phase 3 trials for wet age-related macular degeneration ("wet AMD") and diabetic macular edema (“DME”), local clinical trials in the Otsuka Territory as required by local regulatory authorities, and several other studies, including the related regulatory activities and long-term follow up studies. The Company and Otsuka will coordinate and review the development and other activities through a joint steering committee.

The Company also will manufacture and supply 4D-150 to Otsuka for clinical and commercial use at a supply price derived from the Company's manufacturing costs plus a margin.

The Company has received a nonrefundable upfront cash payment of $85.0 million and is eligible to receive quarterly clinical trial cost sharing and reimbursement amounts. In addition, the Company is eligible for up to $335.5 million in potential regulatory and commercial milestone payments and tiered double-digit royalties on net sales in the Otsuka Territory, and subject to royalty reductions under certain circumstances.

The Otsuka Agreement will remain in effect, unless earlier terminated, on a country-by-country basis, until the date that Otsuka is no longer developing or commercializing 4D-150 in such country within the Otsuka Territory. Otsuka may terminate the Otsuka Agreement for convenience, on a country-by-country basis, upon sufficient prior written notice as per the Otsuka Agreement, or due to safety reasons or the failure of certain of the Company’s related clinical trials to achieve their primary endpoints. The Company may terminate the Otsuka Agreement upon notice if Otsuka ceases all development activities and commercialization of 4D-150 in Japan for an agreed upon period as per the Otsuka Agreement and does not resume such activities or commercialization within a specified notice period. Upon termination, any license granted by the Company to Otsuka will terminate.

The Company concluded that Otsuka is a customer and that the arrangement represents a contract with a customer under the scope of ASC 606. The Company identified the following promised goods and services that represent performance obligations:

- the exclusive license to its intellectual property to develop, manufacture and commercialize 4D-150 in the Otsuka Territory,
- performance of separate global phase 3 trials for wet AMD and DME, local clinical trials in the Otsuka Territory as required by the local regulatory authorities, and several other studies, including the associated regulatory and joint steering committee activities. Separate performance obligations were identified for each individual trial or study.

The license was considered functional intellectual property as of the inception of the Otsuka Agreement and distinct from other promises under the contract, as Otsuka can benefit from the license on its own or together with other readily available resources. Each of the clinical trial and other study services were considered distinct as the customer can benefit from these services together with the license transferred at the inception of the Otsuka Agreement. The clinical trial and other study services will not modify or customize the initial intellectual property transferred at contract inception due to the late stage of development of the intellectual property.

The Company concluded manufacturing and supply of 4D-150 for clinical and commercial use does not represent a performance obligation, as these activities are at Otsuka's option. Product supply is priced at standalone selling prices, and therefore does not provide Otsuka with material rights.

To the extent Otsuka requests the Company to supply 4D-150, such supply will be considered a separate contract with the customer.

The initial transaction price includes the upfront cash payment and variable consideration for clinical trials and other studies performance obligations, some of which have started and others that have not yet started as of June 30, 2026. The upfront cash payment is $85 million and was received during the year ended December 31, 2025. The variable consideration in the form of the estimated cost sharing and reimbursement of approximately $33.4 million represents the amount allocated to unsatisfied or partially unsatisfied performance obligations, that have already started as of June 30, 2026, and was allocated entirely to the clinical trials and other studies performance obligations using the variable consideration allocation exception.

The regulatory milestone amounts are not currently probable and have not been included in the transaction price as the amounts are fully constrained. The sales-based commercial milestones and royalties relate to the granted intellectual property license and will be recognized when the related sales occur.

At the end of each reporting period, the Company will re-evaluate the estimated variable consideration and if necessary, adjust the transaction price.

To determine the standalone selling prices of each performance obligation, the Company used significant estimates and assumptions that include but are not limited to, expected market opportunity and pricing, expected future costs of clinical trials and other studies, and timelines and likelihood of success of clinical and regulatory activities. For the standalone selling price of the license, the Company used a discounted cash flow analysis of projected cash flows and potential revenues from the commercial sales of 4D-150 in the Otsuka Territory. To determine the standalone selling prices of the Company's obligations to conduct clinical trials and other studies, the expected cost plus margin approach was used.

Variable consideration to which the Company is entitled to is allocated directly to the associated performance obligations, as it is triggered by the Company's performance or represents specific outcomes from such performance, and the resulting allocation meets the allocation objective.

The upfront amount of $85.0 million was allocated entirely to the license performance obligation and was recognized at a point in time upon the transfer of control during the year ended December 31, 2025.

Revenue attributable to the remaining performance obligations to conduct clinical trials and other studies will be recognized over time as the underlying services are performed, over the period through the completion of program development activities. Progress is measured using an input method based on cumulative cost incurred relative to the total estimated cost of the performance obligation. Estimated progress and the underlying costs will be reviewed and adjusted as necessary at every reporting date. Revenue from clinical trials and other studies performance obligations was approximately $3.7 million and $6.6 million during the three and six months ended June 30, 2026, respectively.

The transaction price amount allocated to unsatisfied or partially unsatisfied performance obligations as of June 30, 2026 was approximately $33.4 million, expected to be recognized during 2026 through 2032 as clinical trials and other studies continue. Certain performance obligations have not started as of June 30, 2026 and the related amounts are not included above.

The amount due from Otsuka was $4.6 million as of June 30, 2026, for the estimated cost sharing and reimbursement and is presented as collaboration receivable on the Company's condensed balance sheets.

7. License Arrangements

Aevitas Therapeutics, Inc. and The Trustees of the University of Pennsylvania

On April 21, 2023, the Company entered into an agreement (the "Aevitas Agreement") with Aevitas Therapeutics, Inc. ("Aevitas"), pursuant to which the Company acquired all of Aevitas' worldwide rights to short-form human complement factor H (sCFH), which the Company plans to use for its 4D-175 product candidate research program. The asset purchase was accounted for as an asset acquisition. As consideration for the Aevitas Agreement, the Company shall pay Aevitas up to approximately $144.1 million in cash upon certain late-stage milestones being achieved, including $7.2 million for development milestones, $68.0 million for regulatory milestones and $68.9 million for sales milestones plus royalties in the low single digits range on sales of 4D-175. In addition, as part of the Aevitas Agreement, the Company was assigned a License Agreement for sCFH with the Trustees of the University of Pennsylvania, under which the Company shall pay the University of Pennsylvania up to approximately $41.6 million in cash upon certain late-stage milestones being achieved, including $1.9 million development, $21.5 million regulatory and $18.2 million sales milestones plus royalties in the low single digits range on sales of 4D-175. No upfront consideration was paid under the Aevitas Agreement.

As of June 30, 2026, the Company has not recorded a liability related to contingent consideration for future milestone and royalty payments to either Aevitas or the University of Pennsylvania, as the achievement of such milestones has not occurred and was not deemed probable and product sales have not commenced.

Regents of the University of California

The Company has exclusive, worldwide license agreements (the "UC Agreements") with the Regents of the University of California (the "UC Regents") relating to the use of certain patents and intellectual property surrounding its core technologies, including Therapeutic Vector Evolution. Pursuant to each of the UC Agreements executed prior to January 2019, the Company was obligated to pay a (i) non-refundable license fee of $5,000 upon execution, (ii) a non-refundable license fee of $5,000 each year thereafter, until sales of a licensed product are made and royalties are paid to the UC Regents, (iii) reimbursement of domestic and foreign patent filing, prosecution and maintenance fees, and (iv) either $50,000 or issuance of a 3% equity interest in the Company upon the closing of the first qualified financing at the option of the UC Regents. The Company's first qualified financing occurred in 2015 and at the election of the UC Regents, the Company issued the UC Regents in January 2016 an amount of common stock equal to 6% of the equity interests in the Company pursuant to the applicable clause in each of the UC Agreements.

Pursuant to an agreement with the UC Regents executed in January 2019 the Company paid a non-refundable license fee of $50,000 to the UC Regents upon execution of the agreement. The Company is obligated to pay a non-refundable license fee of $5,000 on the one-year anniversary of the contract effective date and each year thereafter, until sales of a licensed product are made and royalties are paid to the UC Regents.

In addition, the Company is obligated to make certain contingent payments including (i) development milestones up to $3.1 million, (ii) low single digit royalties on the net sales of its developed products that consist of a minimum annual royalty of up to $0.1 million per year for the term of the agreement beginning in the first calendar year after the year in which net sales first occurred, and (iii) sublicense consideration in the mid-teens to the mid-twenties-range on any future sublicensing arrangements the Company may enter into with third-party licensees.

As of June 30, 2026, the Company has not recorded a liability related to contingent consideration for future milestone and royalty payments to UC Regents, as the achievement of such milestones has not occurred and was not deemed probable and product sales have not commenced.

8. Commitments and Contingencies

Operating Lease Commitments

5980 Horton Street Building Lease

In May 2015, the Company executed a lease agreement (the "5980 Horton Lease") for office and laboratory space in Emeryville, California. The 5980 Horton Lease, as amended, expires in August 2026. As of June 30, 2026, the right-of-use asset and lease liability related to the 5980 Horton Lease were each $0.1 million. As of December 31, 2025, the right-of-use asset and lease liability related to the 5980 Horton Lease were $0.3 million and $0.4 million, respectively.

5858 Horton Street Lease and Expansion

In October 2018, the Company executed a lease agreement (the "5858 Horton Lease") for office and laboratory facilities in Emeryville, California. The 5858 Horton Lease, as amended in 2019, 2021 and 2022, consists of approximately 40,802 square feet of space and has a lease term through December 31, 2029. In July 2024, the Company extended the term of the 5858 Horton Lease for a period of twelve months to December 31, 2030. In accordance with ASC Topic 842, *Leases*, the Company accounted for the extension as a modification and remeasured the lease liability based on the new lease term and an updated, estimated incremental borrowing rate of 10.75%. The modification resulted in an increase to the lease liability of $0.8 million and a corresponding increase to the carrying value of the right-of-use asset. No gain or loss was recognized upon the modification. As of June 30, 2026, the right-of-use asset and lease liability related to the 5858 Horton Lease were $8.1 million and $10.4 million, respectively. As of December 31, 2025, the right-of-use asset and lease liability related to the 5858 Horton Lease were $8.8 million and $11.2 million, respectively.

In July 2024, the Company also entered into a lease agreement for additional office and laboratory space in Emeryville, California (the "5858 Horton Expansion Lease"). The 5858 Horton Expansion Lease consists of approximately 32,038 square feet of space and commenced on September 1, 2024 and has a lease term through December 31, 2030. As of June 30, 2026, the right-of-use asset and lease liability related to the 5858 Horton Expansion Lease were $7.2 million and $8.0 million, respectively. As of December 31, 2025, the right-of-use asset and lease liability related to the 5858 Horton Expansion Lease were $7.8 million and $8.6 million, respectively. The discount rate used to measure the lease liability was 11.02%.

Emeryville Warehouse Lease

In January 2024, the Company entered into a lease agreement for warehouse space in Emeryville, California (the "Warehouse Lease"). The Warehouse Lease commenced on August 1, 2024. The Warehouse Lease consists of approximately 7,800 square feet of warehouse space and has a lease term through December 31, 2029. As of June 30, 2026, the right-of-use asset and lease liability related to the Warehouse Lease were each $1.1 million. As of December 31, 2025, the right-of-use asset and lease liability related to the Warehouse Lease were each $1.2 million. The discount rate used to measure the lease liability related to the Warehouse Lease was 10.69%.

The following table summarizes the components of lease expense, which are included in operating expenses in the Company's condensed statements of operations (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Operating lease cost	$ 1,344	$ 1,344	$ 2,688	$ 2,688
Variable lease cost	678	648	1,355	1,422
Total	$ 2,022	$ 1,992	$ 4,043	$ 4,110

Variable lease payments include amounts relating to common area maintenance and are recognized in the condensed statements of operations as incurred.

Cash paid for amounts included in the measurement of the Company's operating lease liabilities and presented within cash used in operating activities in the condensed statements of cash flows was $2.9 million and $2.8 million for the six months ended June 30, 2026 and 2025, respectively.

The following table summarizes supplemental information related to operating leases:

	June 30, 2026	December 31, 2025
Weighted-average remaining lease term (in years):	4.4	4.8
Weighted-average discount rate:	10.8%	10.8%

The following table summarizes the maturities of lease liabilities as of June 30, 2026 (in thousands):

2026 (remaining six months)	$ 2,725
2027	5,350
2028	5,510
2029	5,675
2030	5,455
Total future minimum lease payments	24,715
Less: Amount representing interest	(5,085)
Present value of future minimum lease payments	19,630
Less: Current portion of operating lease liabilities	(5,374)
Long-term portion of operating lease liabilities	$ 14,256

Indemnification Agreements

In the ordinary course of business, the Company enters into agreements that may include indemnification provisions, such as with vendors and other parties. Pursuant to such agreements, the Company may indemnify, hold harmless and defend an indemnified party for losses suffered or incurred by the indemnified party. Some of the provisions will limit losses to those arising from third-party actions. In some cases, the indemnification will continue after the termination of the agreement. The maximum potential amount of future payments the Company could be required to make under these provisions is not determinable. The Company has never incurred material costs to defend lawsuits or settle claims related to these indemnification provisions. The Company has also entered into indemnification agreements with its directors and officers that require the Company, among other things, to indemnify them against certain liabilities that may arise by reason of their status or service as directors or officers to the fullest extent permitted by Delaware corporate law. The Company currently maintains directors' and officers' liability insurance that would generally enable it to recover a portion of any future amounts paid. The Company believes the estimated fair value of its indemnification agreements in excess of applicable insurance coverage is not material.

Contractual Obligations and Commitments

The Company enters into various agreements in the ordinary course of business, such as those with suppliers, CROs, CDMOs and clinical trial sites. These contracts generally provide for termination on notice or may have a potential termination fee if a purchase order is canceled within a specified time. The total value of non-cancellable obligations under contracts was $4.9 million and $4.0 million as of June 30, 2026 and December 31, 2025, respectively. This presentation of non-cancellable purchase obligations does not include any estimates of potential reduction of such liabilities related to mitigation obligations of the counter-parties in the event of cancellation under the terms of the Company's engagements.

Legal Proceedings

From time to time, the Company may become involved in legal proceedings arising from the ordinary course of its business. If applicable, the Company records a legal liability when it believes that it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated. Significant judgment by the Company is required to determine both probability and the estimated amount. There are no material legal proceedings outstanding at June 30, 2026.

9. Long-Term Debt

In June 2026, the Company entered into a Loan and Security Agreement (the “Loan and Security Agreement”) with Hercules Capital, Inc., providing for up to $200.0 million in term loan borrowings. At the closing on June 24, 2026, the Company had access to a $50.0 million tranche, of which it borrowed $20.0 million. The remaining $30.0 million is available, at the Company's option, through June 15, 2027. The Company may draw up to an additional $100.0 million in three separate tranches upon achievement of certain clinical, regulatory, financing and capitalization milestones. As of June 30, 2026, the Company had not met the requirements to access the funds under these tranches, as it had not achieved the related milestone. An additional fifth tranche of $50.0 million may be made available upon the Company's request and at Hercules’ sole discretion and is not contingent upon the Company’s achievement of the milestones applicable to the prior tranches. The Loan and Security Agreement matures on June 1, 2031. The initial borrowing of $20.0 million bears interest at a floating rate equal to the greater of (i) the prime rate plus 2.0% and (ii) 8.75%, and all future borrowings, including the available balance of $30.0 million of the $50.0 million tranche available as of June 24, 2026, bear interest at a floating rate equal to the greater of (i) the prime rate plus 2.5% and (ii) 9.25%. The floating interest rate is capped at 0.75% more than the interest rate at the time of the borrowing. The Company is required to make monthly interest-only payments for borrowings under the initial tranche of $50.0 million for a period of 29 months, which may be extended by up to an additional 30 months upon achievement of certain clinical, regulatory, financing and capitalization milestones.

The Loan and Security Agreement includes an end-of-term charge ranging from 3.70% to 6.50% of the aggregate principal amount, depending on the timing of the repayment. The recognition of the end-of-term charge is reflected as interest expense over the term of the borrowing using the effective interest rate method. The Company may voluntarily prepay outstanding borrowings, subject to prepayment premiums ranging from 1.0% to 3.0% of the principal amount prepaid, depending on the timing of repayment.

In connection with the Loan and Security Agreement, the Company paid a $0.5 million facility fee for the $50.0 million tranche and is subject to a 1.00% facility fee for subsequent borrowings. Because the facility fee relates to the total $50.0 million initial tranche, the Company allocated the costs among the two initial borrowing tranches based on the relative borrowing capacity available under each tranche. In addition to the initial facility fee, the Company incurred approximately $2.1 million of debt issuance costs, consisting primarily of lender fees and third-party legal and other transaction costs. Because the debt issuance costs relate to the $150.0 million for the first four tranches of the Loan and Security Agreement, the Company allocated the costs among the various borrowing tranches based on the relative borrowing capacity available under each tranche. Facility fees and debt issuance costs attributable to funded borrowings were recorded as a reduction to the carrying value of the debt and are being amortized to interest expense using the effective interest method over the expected term of the borrowing. Facility fees and debt issuance costs attributable to unfunded borrowing commitments were capitalized to prepaid and other current assets or other non-current assets according to the access period or classification of the underlying debt, as appropriate, and are being amortized to interest expense over the applicable commitment periods or will be reclassified as debt upon funding of the related borrowings.

The Loan and Security Agreement contains financial covenants, including minimum cash and performance-based covenants, that are not yet subject to testing or effective as of June 30, 2026. Upon the occurrence of certain events and beginning no earlier than January 1, 2028, the Company may become subject to minimum cash and performance-based financial covenants. The Loan and Security Agreement contains customary events of default, including failure to make required payments or maintain compliance with covenants, breach, default, insolvency, attachment or judgment events and any circumstance which could reasonably be expected to have a material adverse effect on the Company. The Loan and Security Agreement also contains customary affirmative and restrictive covenants, representations and warranties associated with a secured loan facility, including certain limitations on indebtedness, liens, investments, distributions, mergers or acquisitions and corporate changes.

As of June 30, 2026, the outstanding principal under the Loan and Security Agreement was $20.0 million, bearing interest at a rate of 8.75% per annum, with an effective interest rate of 10.64%.

The future principal payments due under the Loan and Security Agreement as of June 30, 2026 were as follows (in thousands):

Remainder of 2026	$	—
2027		—
2028		594
2029		7,523
2030		8,230
Thereafter		4,953
Total	$	21,300

As of June 30, 2026, the carrying value of the Loan and Security Agreement was as follows (in thousands):

Principal outstanding	$	20,000
Less: unamortized discount and debt issuance costs		(413)
Long-term debt, net	$	19,587

As of June 30, 2026, debt issuance costs and debt discount of approximately $2.2 million were included in prepaid expenses and other current assets and in other non-current assets on the condensed balance sheet, as appropriate. As of June 30, 2026, approximately $1.9 million of unpaid debt issuance costs were included in accounts payable on the condensed balance sheet. For the three and six months ended June 30, 2026, the Company recognized an immaterial amount of interest expense for borrowings under the Loan and Security Agreement. The Loan and Security Agreement is secured by a first-priority security interest in substantially all of the Company's assets, including intellectual property, subject to customary exclusions.

10. Income Taxes

For the three and six months ended June 30, 2026 and 2025, the Company did not record a federal or state income tax provision due to its recurring net losses. In addition, the Company has taken a full valuation allowance against its net deferred tax assets as the Company believes it is not more likely than not that the benefit will be realized.

11. Common Stock

As of June 30, 2026 and December 31, 2025, the Company's certificate of incorporation authorized the Company to issue 300,000,000 shares of common stock, at the par value of $0.0001 per share. The holder of each share of common stock is entitled to one vote per share.

Common stockholders are entitled to dividends, if and when declared by the board of directors. To date, no dividends on common stock have been declared by the board of directors.

The Company has reserved common stock, on an as-converted basis, for future issuance as follows:

	June 30, 2026	December 31, 2025
Issuance of common stock under the 2020 Equity Incentive Award Plan and 2025 Employment Inducement Award Plan	2,607,822	2,506,434
Issuance of common stock under the 2020 Employee Stock Purchase Plan	390,372	182,775
Exercise of stock options issued and outstanding and future vesting of restricted stock units	13,553,890	10,157,578
Exercise of pre-funded warrants	16,935,665	10,335,665
Exercise of common stock warrants	30,000	30,000
Total common stock reserved for future issuance	33,517,749	23,212,452

Funding Agreement with CFF — In April 2020, CFF made a $10.0 million investment in the Company's Series C redeemable convertible preferred stock financing. In return for the investment, CFF received shares of Series C redeemable convertible preferred stock, and the Company and CFF entered into a Funding Agreement (the "Funding Agreement"). Pursuant to the terms of the Funding Agreement, except in the event of a technical failure, the $10.0 million received from CFF will be used to advance the development program for 4D-710, the Company's lead product candidate in cystic fibrosis, or any other therapeutic approved by the Program Advisory Group ("PAG") to alleviate pulmonary complications of cystic fibrosis (the "Funding Agreement Product").

CFF committed to provide an additional $4.0 million of funding upon acceptance of an IND application or its equivalent to allow for human testing of the Funding Agreement Product ("Acceptance").

In October 2021, the IND was cleared by the U.S. Food and Drug Administration and CFF made the additional investment of $4.0 million in cash for the issuance of 125,715 shares of the Company's common stock to CFF.

The Company was committed to providing an amount equal to the funding provided by CFF to be used solely to advance the Funding Agreement Product. As of June 30, 2026, the funding commitment has been fulfilled. Under the terms of the Funding Agreement, neither the $10.0 million investment in the Series C redeemable convertible preferred stock, which converted to common stock as of December 31, 2020, nor the $4.0 million of funding upon Acceptance are restricted as to withdrawal or usage.

CFF purchased 776,398 shares of the Company's common stock for $7.5 million in October 2025. The Company will use the proceeds of this investment to support continued development of 4D-710. The Company also agreed with CFF to form a Joint Steering Committee, with senior clinical development and regulatory expertise to enhance strategic planning, guidance, and coordination of 4D-710's development. This agreement between CFF and the Company entered into in October 2025 also provides that CFF will invest an additional $3.6 million in exchange for shares of the Company's common stock subject to achievement of specific clinical milestones and at the option of the Company. This agreement between the Company and CFF entered into in October 2025 does not modify the prior agreements with CFF.

Sales Agreement with Leerink Partners LLC ("Leerink") — In June 2024, the Company entered into a Sales Agreement (the "Leerink Sales Agreement") with Leerink as sales agent to sell shares of the Company's common stock, from time to time, with aggregate gross sales proceeds of up to $250.0 million pursuant to a Registration Statement on Form S-3 that the Company filed with the SEC in February 2024, and subsequently amended in February 2025, as an "at-the-market" offering under the Securities Act. For the year ended December 31, 2025, 1,175,000 shares of the Company's common stock were sold pursuant to the Leerink Sales Agreement for net proceeds to the Company of $9.6 million, after deducting issuance costs. For the six months ended June 30, 2026, 3,518,472 shares were sold pursuant to the Leerink Sales Agreement for net proceeds to the Company of $31.6 million, after deducting issuance costs.

12. Stock-based Compensation

2025 Employment Inducement Award Plan

On February 3, 2025, the Company's board of directors adopted the 2025 Employment Inducement Plan (the "Inducement Plan") pursuant to which the Company reserved 500,000 shares of its common stock to be used exclusively for grants of awards to individuals who were not previously employees or directors, as an inducement material to the individual's entry into employment with the Company within the meaning of Rule 5635(c)(4) of the Marketplace Rules of the Nasdaq Stock Market. The Inducement Plan provides for the grant of stock options, restricted stock units, and other stock-based awards. In January 2026, the Company's board of directors adopted an amendment to the Inducement Plan to reserve an additional 1,000,000 shares of common stock under the Inducement Plan. As of June 30, 2026, there were 872,350 shares available for future grants under the Inducement Plan.

2020 Incentive Award Plan

In December 2020, the Company adopted the 2020 Incentive Award Plan ("2020 Plan"), which became effective on December 10, 2020. The 2020 Plan initially reserved 2,606,546 shares of common stock for the issuance of stock options, stock appreciation rights, restricted stock awards, restricted stock units, performance bonus awards, performance stock units, dividend equivalents or other stock or cash based award granted to employees, directors and consultants of the Company. The number of shares reserved for future issuance under the 2020 Plan will increase annually on the first day of each fiscal year beginning in 2021 and ending in 2030 by the lesser of (i) 5% of the shares of common stock outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (ii) such number of shares of common stock as determined by the Company's board of directors, provided, however, no more than 18,000,000 shares of the Company's common stock may be issued upon the exercise of incentive stock options. As a result of the operation of the automatic annual increase provision of the 2020 Plan, an additional 2,289,625 shares of common stock became available for issuance on February 28, 2025 and an additional 2,880,394 shares of common stock became available for issuance on March 18, 2026 under the 2020 Plan. All stock options are exercisable over a period not to exceed the contractual term of ten years from the date the stock options were issued. As of June 30, 2026, there were 1,735,472 shares available for grant under the 2020 Plan.

Following the effectiveness of the 2020 Plan, the Company will not make any further grants under the 2015 Equity Incentive Plan (the "2015 Plan"). However, the 2015 Plan continues to govern the terms of stock options that remain outstanding under the 2015 Plan.

2015 Equity Incentive Plan

The 2015 Plan provided for grants of stock options, stock appreciation rights, restricted stock and restricted stock unit awards to employees, directors and consultants of the Company. As of June 30, 2026, stock options to purchase 1,112,990 shares of common stock were outstanding under the 2015 Plan. All stock options are exercisable over a period not to exceed the contractual term of ten years from the date the stock options were issued and are granted at prices not less than the estimated fair market value of the Company's common stock on the grant date as determined by the board of directors.

No additional grants will be made under the 2015 Plan, and all outstanding grants under the 2015 Plan that are repurchased, forfeited, expire or are cancelled are returned to the 2015 Plan and are not available for grant under the 2020 Plan.

Employee Stock Purchase Plan

In December 2020, the Company adopted the 2020 Employee Stock Purchase Plan (the "2020 ESPP"). Under the 2020 ESPP, 252,337 shares of the Company's common stock were initially reserved for employee purchases of the Company's common stock under terms and provisions established by the Company's board of directors and approved by the Company's stockholders. The number of shares reserved for future issuance under the 2020 ESPP will increase annually on the first day of each fiscal year beginning in 2021 and ending in 2030 by the lesser of (i) 1% of the shares of common stock outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (ii) such number of shares of common stock as determined by the Company's board of directors, provided, however, no more than 15,000,000 shares of the Company's common stock may be issued under the 2020 ESPP. As a result of the operation of this annual increase provision of the 2020 ESPP, an additional 150,000 shares of common stock became available on February 28, 2025 and an additional 576,079 shares of common stock became available for issuance on March 18, 2026 under the 2020 ESPP.

Under the 2020 ESPP, the Company's employees may purchase common stock through payroll deductions at a price equal to 85% of the lower of the fair market value of the stock at the beginning of the offering period or at the end of each applicable purchase period. The 2020 ESPP provides for a series of overlapping 24-month offering periods comprising four six-month purchase periods. Contributions under the 2020 ESPP are limited to a maximum of 15% of an employee's eligible compensation.

Restricted Stock Units

The Company has granted restricted stock unit (RSU) awards under the 2020 Incentive Award Plan that vest over a period of four years. The following table summarizes the RSU activity:

	Number of Shares
Unvested balance at December 31, 2025	744,770
Awarded	1,290,476
Vested	(100,241)
Canceled/Forfeited	(118,263)
Unvested balance at June 30, 2026	1,816,742

Stock Options

The following table summarizes the stock options activity:

	Number of Shares Underlying Outstanding Options
Balances at December 31, 2025	9,412,808
Options granted	3,176,795
Options exercised	(217,393)
Options expired	(341,964)
Options forfeited	(293,098)
Balances at June 30, 2026	11,737,148
Options exercisable at June 30, 2026	6,081,392
Options vested and expected to vest at June 30, 2026	11,737,148

The Company estimates the fair value of stock options using the Black-Scholes option pricing model. The fair value of employee and nonemployee stock options is recognized on a straight-line basis over the requisite service period of the awards. The fair value of the Company's stock options was estimated using the following assumptions:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Expected term	5.9 - 6.1 years	5.9 years	5.9 - 6.1 years	5.9 - 6.1 years
Expected volatility	85.9% - 87.3%	86.5% - 88.9%	85.9% - 89.0%	84.9% - 88.9%
Risk-free interest rate	4.0% - 4.3%	4.1%	3.8% - 4.3%	4.1% - 4.6%
Expected dividend yield	—%	—%	—%	—%

Expected Term. The expected term for employee stock options is calculated using the simplified method as the Company does not have sufficient historical information to provide a basis for this estimate. The simplified method is based on the average of the vesting tranches and the contractual life of each grant. The expected term for nonemployee stock options is the contractual term of the stock options.

Expected Volatility. The expected volatility is based on a mix of the Company's historical volatility and the historical volatility of comparable companies with similar attributes to the Company, including industry, stage of life cycle, size and financial leverage. For each grant, the Company measured historical volatility over a period equivalent to the expected term.

Risk-free Interest Rate. The risk-free interest rate is based on the yield available on U.S. Treasury zero-coupon issues whose term is similar in duration to the expected term of the respective stock option.

Expected Dividend Yield. The Company has not paid and does not anticipate paying any dividends on its common stock in the future. Accordingly, the Company has estimated the dividend yield to be zero percent.

Stock-Based Compensation Expense

The following table is a summary of stock-based compensation expense incurred for employees and nonemployees by function (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Research and development	$ 2,720	$ 2,498	$ 4,652	$ 6,479
General and administrative	3,164	2,460	5,685	5,465
Total stock-based compensation expense	$ 5,884	$ 4,958	$ 10,337	$ 11,944

13. Common Stock Warrants

In May 2018, the Company issued a warrant for 23,669 shares of the Company's common stock to a service provider with an exercise price of $3.19 per share. The fair value of the warrant was determined at the issuance date using the Black-Scholes option pricing model. The warrant was fully vested upon issuance and was exercised in May 2025 through a cashless exchange under the terms of the original agreement.

In December 2020, the Company issued a warrant for 30,000 shares of the Company's common stock to a service provider with an exercise price of $18.00 per share. This warrant vests over a period of four years and expires in 2027. The fair value of the warrant was determined at the issuance date using the Black-Scholes option pricing model.

The Company recognized no expense related to the above warrant shares during the three and six months ended June 30, 2026 and 2025.

14. Pre-funded Warrants

In February 2024, the Company completed an underwritten public follow-on offering which included the sale of pre-funded warrants to purchase 3,583,476 shares of the Company's common stock at an offering price of $29.4999 (the "February 2024 Warrants"). The Company valued the February 2024 Warrants at issuance and recorded net proceeds of $99.4 million, after deducting underwriters' fees, during the year ended December 31, 2024 related to the sale of the February 2024 Warrants. In February 2025, two holders of the February 2024 Warrants gave notice of exercise to purchase an aggregate of 508,476 shares of the Company's common stock in a cashless exchange under the terms of the February 2024 Warrants.

In November and December 2024, the Company entered into exchange agreements (the "2024 Exchange Agreements") with each of Biotechnology Value Fund, L.P. and certain of its affiliates (collectively, "BVF") and RA Capital Healthcare Fund, L.P. ("RA Capital"), respectively. Pursuant to the 2024 Exchange Agreements, BVF and RA Capital exchanged 5,775,000 and 535,000 shares, respectively, of the Company's common stock for pre-funded warrants to acquire the same respective number of shares of the Company's common stock (the "2024 Exchange Warrants"). The fair value of the common stock exchanged approximated the fair value of the pre-funded warrants issued as of the transaction dates and no net proceeds were recorded in connection with the transactions. On December 22, 2025, BVF gave notice of exercise to purchase an aggregate of 178,280 shares of the Company's common stock in a cashless exchange under the terms of the 2024 Exchange Warrants.

In November 2025, the Company completed the 2025 Offering which included the sale of pre-funded warrants to purchase 1,128,949 shares of the Company's common stock at an offering price of $10.5099 per underlying share (the "November 2025 Warrants"). The Company valued the November 2025 Warrants at issuance and recorded net proceeds of $11.2 million, after deducting underwriters fees, during the year ended December 31, 2025.

On January 22, 2026, the Company entered into exchange agreements with RA Capital and BVF, pursuant to which RA Capital and BVF exchanged 4,850,000 and 1,750,000 shares, respectively, of the Company's common stock for pre-funded warrants to acquire the same respective number of shares of the Company's common stock (together with the February 2024 Warrants, the 2024 Exchange Warrants, the November 2025 Warrants, collectively, the "Pre-funded Warrants"). The fair value of the common stock exchanged approximated the fair value of the pre-funded warrants issued as of the transaction dates and no net proceeds were recorded in connection with the transactions.

The Pre-funded Warrants each have an exercise price of $0.0001 per underlying share of common stock, are exercisable at any time until they are fully exercised and will not expire until they are fully exercised. The Pre-funded Warrants are classified as a component of stockholders' equity within additional paid-in-capital. The number of shares of the Company's common stock issuable upon exercise of each Pre-funded Warrant is subject to appropriate adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting shares of the Company's common stock, as well as upon any distribution of assets, including cash, stock or other property, to the Company's stockholders.

15. Net Loss Per Share, Basic and Diluted

The following table sets forth the computation of basic and diluted net loss per share (in thousands, except share and per share data):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Numerator				
Net loss	$ (72,936)	$ (54,658)	$ (141,696)	$ (102,630)
Denominator				
Weighted-average shares outstanding used in computing net loss per share, basic and diluted	70,272,018	55,927,091	69,175,213	55,836,075
Net loss per share, basic and diluted	$ (1.04)	$ (0.98)	$ (2.05)	$ (1.84)

The Company has issued and sold Pre-funded Warrants to purchase shares of common stock at a nominal exercise price of $0.0001 (see Note 14, Pre-funded Warrants). The Pre-funded Warrants have an exercise price of $0.0001 per underlying share of common stock of the Company. The shares of common stock into which the Pre-funded Warrants may be exercised are considered outstanding for the purposes of computing earnings per share, because the shares may be issued for little or no consideration, they are fully vested and the Pre-funded Warrants are immediately exercisable upon their issuance date.

The following outstanding shares of potentially dilutive securities were excluded from the computation of diluted net loss per share for the periods presented because including them would have been antidilutive:

	June 30,	
	2026	2025
Stock options issued and outstanding	11,737,148	10,445,483
Restricted stock units subject to future vesting	1,816,742	725,101
2020 ESPP	303,189	549,661
Common stock warrants	30,000	30,000
Total	13,887,079	11,750,245

16. Derivative Liability

The Company identified an embedded derivative resulting from the change of control provision in the CFF Agreement. Embedded derivatives that are required to be bifurcated from the underlying host instrument are accounted for and valued as separate financial instruments. At the inception of the derivative in 2017, the Company recognized this derivative as a liability and revenue was reduced by the initial fair value of the derivative liability. The Company remeasures the derivative liability to fair value at each reporting period and records the change in fair value of the derivative liability as other income (expense), net. The Company uses a present value analysis with multiple scenarios, which incorporates assumptions and estimates to value the derivative instrument. The Company assesses these assumptions and estimates on a periodic basis as additional information impacting the assumptions is obtained. Estimates and assumptions impacting the fair value measurement include the change of control payment to CFF (range of zero to $18.9 million at June 30, 2026 and December 31, 2025), the probability of a change of control event (range of 5.0% to 50.0% at June 30, 2026 and December 31, 2025), the probability of the product achieving development or commercial status at time of change of control (range of 4.8% to 17.2% at June 30, 2026 and December 31, 2025) and the discount rate (15% at June 30, 2026 and December 31, 2025). The Company determined the estimated fair value of this liability as of the inception date of the CFF Agreement and concluded that the amount was immaterial. The Company determined the fair value of this derivative liability was $0.4 million as of each of June 30, 2026 and December 31, 2025. See Note 3, Fair Value Measurements and Marketable Securities, and Note 6, Research and Collaboration Arrangements for further discussion of the fair value of the embedded derivative.

17. California Institute for Regenerative Medicine Award

On April 12, 2026, the Company received a Notice of Award (the "Notice of Award") from the California Institute for Regenerative Medicine (“CIRM”) for a grant of approximately $5.9 million (the “CIRM Grant”), to support the early stage development of the proprietary adeno-associated virus (AAV) gene therapy candidate for the treatment of Alpha-1 Antitrypsin (AAT) Deficiency. The CIRM Grant is payable to the Company upon achievement of certain early stage developmental milestones. CIRM could permanently cease disbursements if milestones are not met within four months of the scheduled completion date. Additionally, if CIRM determines, in its sole discretion, that the Company has not complied with the terms and conditions of the CIRM Grant, CIRM may suspend or permanently cease disbursements. Funds received under the CIRM Grant may only be used for allowable project costs specifically identified with the CIRM-funded project. Project costs can include, but are not limited to, salary for personnel, supplies, consultants and clinical study costs. The Company will co-fund the research project in the amount of $1.4 million for such project costs under the terms of the CIRM Grant. Any unused funds must be returned to CIRM upon completion or termination of the project. The Company received an initial payment of $1.0 million from CIRM upon receipt of the Notice of Award.

Proceeds from the CIRM Grant are recognized over the period necessary to match the related research and development expense when it is probable that the Company has complied with the CIRM Grant conditions and will receive the proceeds pursuant to the milestones defined in the Notice of Award as reimbursement of those expenditures. The CIRM Grant proceeds, if any, received in advance of having incurred the related research and development expense are recorded in deferred grant reimbursements and recognized as an offset against research and development expense on the Company’s condensed statements of operations when the related research and development expenses are incurred.

During the three months ended June 30, 2026, the Company achieved the first developmental milestone and became entitled to a reimbursement of $3.1 million and recognized a grant receivable in prepaid and other current assets on its condensed balance sheet as of June 30, 2026. As of June 30, 2026, the Company recognized a deferred grant reimbursement of $4.0 million related to the CIRM grant on its condensed balance sheet, as the grant reimbursement exceeds the amount of grant reimbursement income recognized during the three and six months ended June 30, 2026. During the three and six months ended June 30, 2026, the Company recognized $0.1 million of grant reimbursements as a reduction of research and development expense related to the CIRM Grant on its condensed statement of operations.

18. Related Party Transactions

In March 2024, the Company entered into a research and option agreement (the “Reignite Agreement”) with Reignite Therapeutics Inc. (“Reignite”), which was founded by David Kirn, M.D., Chief Executive Officer of the Company. Reignite has the expertise to develop high-capacity, helper-dependent adenovirus capsids which the Company plans to utilize as it expands its therapeutic capsid evolution platform. Reignite and the Company plan to collaborate on a program to develop these high capacity, helper-dependent adenovirus capsids. Under the Reignite Agreement, the Company shall have the final authority to amend and make updates to the plan and budget of the program. Further, the Company is responsible for the funding of the related research which includes the budgeted full-time employees and CRO costs, equipment costs not to exceed $60 thousand and all other costs, in total not to exceed $1.5 million in any year of the program. The Company will have an option to acquire up to three capsids resulting from the program. The Company shall pay to Reignite an option exercise fee of $1.0 million per selected capsid for which the Company has exercised its option. The maximum total amount payable is $3.0 million.

During the three and six months ended June 30, 2026, the Company paid Reignite $0.3 million and $0.7 million, respectively, for research and development expenses. During the three and six months ended June 30, 2025, the Company paid Reignite $0.4 million and $0.5 million, respectively, for research and development expenses. As of June 30, 2026, the Company owes $0.1 million to Reignite for unpaid research and development expense. No option exercise fees were incurred during the three and six months ended June 30, 2026.

19. 401(k) Plan

In 2014, the Company adopted a 401(k) plan for all employees who have met certain eligibility requirements. The 401(k) plan allows employees to make pre-tax and post-tax contributions up to the maximum allowable amount set by the Internal Revenue Service. The Company made contributions to the 401(k) plan for all eligible participants and recorded contribution expenses of $0.6 million and $1.2 million for the three and six months ended June 30, 2026, respectively, and $0.5 million and $1.1 million for the three and six months ended June 30, 2025, respectively.

20. Segment Information

The Company operates in a single operating and reportable segment, which includes all activities related to discovery, development and commercialization of durable and disease-targeted therapeutics. The determination of a single business segment is consistent with the financial information regularly provided to the Company's chief operating decision maker (the "CODM") who manages the business activities on a consolidated basis. The Company's CODM is its Chief Executive Officer who assesses performance for the business and decides how to allocate resources based on net loss that also is reported on the statements of operations. In making this assessment, the CODM reviews and evaluates net loss to monitor budget versus actual results and to analyze cash flows for purposes of allocating resources and assessing financial performance.

In addition to the significant expense categories included within net loss presented in the Company's condensed statements of operations, the following table provides disaggregated amounts that comprise research and development expenses (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Direct research and development expenses for 4D-150	$ 43,557	$ 19,134	$ 86,280	$ 31,907
Unallocated personnel costs (including stock-based compensation)	15,996	17,871	30,526	35,099
All other costs	8,729	10,946	16,456	21,644
Total research and development expenses	$ 68,282	$ 47,951	$ 133,262	$ 88,650

Effective in the first quarter of 2026, the Company updated the presentation of segment operating expenses provided to the CODM. This change in the presentation reflects how segment information is currently reviewed by the CODM. Prior period segment information has been recast to conform to the current period presentation.

The measure of segment assets is reported on the balance sheets as total assets. As of and for the six months ended June 30, 2026 and 2025, all of the Company’s long-lived assets were located in the United States. The Company's revenues by geographic region, based on the location of the customer, are disclosed in Note 2, Summary of Significant Accounting Policies.

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

You should read the following discussion and analysis of our financial condition and results of operations together with our condensed financial statements and the related notes included elsewhere in this Quarterly Report on Form 10-Q (this "report"). This discussion and analysis and other parts of this report contain forward-looking statements based upon current beliefs, plans and expectations related to future events and our future financial performance that involve risks, uncertainties and assumptions, such as statements regarding our intentions, plans, objectives, expectations, forecasts and projections. Our actual results and the timing of selected events could differ materially from those anticipated in these forward-looking statements as a result of several factors, including those set forth under the section titled "Risk Factors" and elsewhere in this report.

Overview

We are a leading late-stage biotechnology company advancing durable and disease-targeted therapeutics with potential to transform treatment paradigms and provide unprecedented benefits to patients. Our primary focus is advancing 4D-150 for wet age-related macular degeneration ("wet AMD") and diabetic macular edema ("DME") through late-stage studies and potential commercialization. In addition, we are advancing our other pipeline programs, 4D-175 for geographic atrophy, 4D-710 for cystic fibrosis ("CF") lung disease, and 4D-725 for alpha-1-antitrypsin deficiency ("AATD") lung disease primarily through strategic funding alternatives. We believe we are well positioned to discover, develop, manufacture and if approved, commercialize targeted genetic medicines with the potential to transform the lives of patients suffering from debilitating diseases.

Our lead product candidate 4D-150 utilizes our proprietary R100 vector and a transgene encoding anti-VEGF biologics: aflibercept and an RNA interference (RNAi) approach targeting VEGF-C. The goal for our development and potential commercialization of 4D-150 is to transform the standard of care for large market retinal vascular diseases with a routine in-office lifelong backbone therapy that substantially reduces treatment burden to enable improved long-term vision outcomes. 4D-150 is initially being developed for the treatment of wet AMD and DME.

In March 2025, we initiated 4FRONT-1, our first Phase 3 trial of 4D-150 in wet AMD. Subsequently in February 2026, we announced enrollment completion within an approximately 11-month period, ahead of initial projections, with the clinical trial overenrolled and 523 patients randomized, reflecting strong interest from investigators and patients. We anticipate topline data for 4FRONT-1 in the second quarter of 2027.

Additionally, in June 2025, we initiated 4FRONT-2, our second Phase 3 trial of 4D-150 in wet AMD. 4FRONT-2 is a global clinical trial and enrolled both treatment-naïve and recently diagnosed, treatment-experienced patients. We completed enrollment for 4FRONT-2 in June 2026 ahead of schedule with >500 patients expected to be randomized. We anticipate topline data for 4FRONT-2 in the second half of 2027.

In November 2025 and July 2026, we announced positive long-term results from the ongoing 4D-150 PRISM Phase 1/2 clinical trial in wet AMD. 4D-150 demonstrated consistent and durable benefit across all three patient cohorts as evidenced by maintenance of visual acuity, control of retinal anatomy and clinically meaningful reduction of treatment burden at all time points with 2 years of follow-up. In addition, a consistent dose response was observed between 3E10 vg/eye, the selected Phase 3 dose, and the lower dose of 1E10 vg/eye. The Phase 3 dose achieved clinically meaningful reductions in treatment burden. No new cases of intraocular inflammation were reported during this follow-up period with up to approximately 4 years of follow-up.

In July 2025, we presented positive 60-week results from the 4D-150 SPECTRA clinical trial in DME where 4D-150 continued to be well tolerated with no intraocular inflammation observed at any timepoint or dose level. In addition, 4D-150 demonstrated durable and dose-dependent clinical activity with sustained gains in visual acuity and anatomic control between 3E10 vg/eye, the selected Phase 3 dose, and lower doses. The Phase 3 dose achieved clinically meaningful 78% reduction in treatment burden vs. projected on-label aflibercept 2mg Q8W. The FDA and EMA are aligned on a proposed single Phase 3 clinical trial being acceptable for possible future licensure for 4D-150 in DME.

In October 2025, we entered into a Collaboration and License Agreement (the “Otsuka Agreement”) with Otsuka Pharmaceutical Co., Ltd., ("Otsuka") pursuant to which we granted Otsuka exclusive rights to develop and commercialize 4D-150 for retinal vascular diseases, including wet AMD and DME, in Japan, Korea, China, Australia, and other Asia-Pacific markets (the "Otsuka Territory"). Otsuka has agreed to lead all regulatory and commercialization activities in the Otsuka Territory. We have agreed to continue to lead all Phase 3 clinical activity globally, including within the Otsuka Territory. Otsuka made an upfront cash payment of $85.0 million and agreed to provide certain cost sharing for global development activities. In addition, we are eligible for up to $335.5 million in potential regulatory and commercial milestone payments and tiered double-digit royalties depending on net sales in the Otsuka Territory. We retain full development and commercialization rights for 4D-150 outside the Otsuka Territory, including the United States, Latin America, and Europe.

Our other retina pipeline program is 4D-175, which utilizes the intravitreal R100 AAV vector and a codon-optimized transgene encoding a highly functional shortened form of human complement factor H (sCFH) for treatment of geographic atrophy. The sCFH payload is designed to restore normal complement regulation, which has the potential to slow progression of disease. We currently maintain an active IND and continue to evaluate strategic funding alternatives to advance the program into the clinic.

Our most advanced pulmonary pipeline program is 4D-710, which we believe is the first known genetic medicine to demonstrate successful delivery and durable expression of the cystic fibrosis transmembrane conductance regulator (“CFTR”) transgene in the lungs of people with cystic fibrosis ("CF") and is currently in Phase 2 development. We believe these results will translate into durable clinical improvements in people with CF, including improved lung function and quality of life. In October 2025, we announced a funding agreement with the Cystic Fibrosis Foundation ("CFF") to provide up to $11.0 million in additional funding, including $7.5 million in an initial tranche, which was completed in October 2025. The proceeds of this funding agreement enabled the start of the Phase 2 stage of the AEROW clinical trial, redosing, and Phase 3 readiness activities.

We have funded our operations primarily through the sale and issuance of equity securities, from borrowings under our loan facility with Hercules Capital, Inc. and, to a lesser extent, from cash received pursuant to our collaboration and license agreements.

We have incurred significant operating losses. Our net losses were $72.9 million and $54.7 million for the three months ended June 30, 2026 and 2025, respectively, and $141.7 million and $102.6 million for the six months ended June 30, 2026 and 2025, respectively. As of June 30, 2026, we had an accumulated deficit of $858.0 million. We do not expect positive cash flows from operations in the foreseeable future. Our net losses may fluctuate significantly from quarter-to-quarter and year-to-year, depending on the timing of our clinical trials and our expenditures on other research and development activities.

We do not have any products approved for sale and have not generated any revenue from product sales since our inception. Our ability to generate product revenue will depend on the successful development, regulatory approval and eventual commercialization of one or more of our product candidates, if approved.

We will require substantial additional funding to support our continuing operations and further the development of our product candidates. Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through the sale of equity, debt financings, or other capital sources, which could include income from collaborations, strategic partnerships, or other strategic arrangements, for the foreseeable future. Adequate funding may not be available when needed or on terms acceptable to us, or at all. Our ability to raise additional funds 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 conflicts in the Middle East, the war in Ukraine, rising interest rates, tariffs, inflation, government shutdowns and otherwise. If we fail to obtain necessary capital when needed on acceptable terms, or at all, it could force us to delay, limit, reduce or terminate our product development programs, commercialization efforts or other operations. Insufficient liquidity may also require us to relinquish rights to product candidates at an earlier stage of development or on less favorable terms than we would otherwise choose. We cannot assure you that we will ever be profitable or generate positive cash flow from operating activities.

Components of Results of Operations

Revenue

Our revenue to date has been generated through payments from our collaboration and license agreements, primarily from upfront and milestone payments and clinical trial cost sharing and expense reimbursement amounts. We have not generated any revenue from the sale of approved products and do not expect to do so for the foreseeable future.

In October 2025, we entered into the Otsuka Agreement where we granted Otsuka exclusive rights to develop and commercialize 4D-150 for retinal vascular diseases, including wet AMD and DME, in the Otsuka Territory. Otsuka made an upfront cash payment of $85 million which we recognized as revenue during the fourth quarter of 2025, and agreed to provide certain cost sharing for global development activities.

Future collaboration and license revenue is highly dependent on the successful development and commercialization of products by our collaboration partners, which is uncertain, and revenue may fluctuate significantly from period to period. Additionally, we may never receive the consideration from our license agreements that is contemplated for option fees, development and sales-based milestone payments or royalties on sales of licensed products, given the contingent nature of these payments.

Operating Expenses

Research and Development

Our research and development expenses primarily consist of costs incurred for the discovery and preclinical and clinical development of our product candidates. These expenses include salaries and personnel-related costs, including stock-based compensation of our clinical, medical, chemistry, manufacturing and controls and scientific personnel performing research and development activities; laboratory supplies; research materials; fees paid to CROs to execute preclinical studies and clinical trials; fees paid to CDMOs to manufacture materials for preclinical studies and clinical trials; fees related to obtaining technology licenses; consulting costs; costs related to seeking regulatory approval of our product candidates; and allocated facility-related costs, information technology costs, depreciation expense, and other overhead.

We expense all research and development costs in the periods in which they are incurred. We have entered into various agreements with CROs and CDMOs. Costs of certain activities are recognized based on an evaluation of the progress to completion of specific tasks. Payments made prior to the receipt of goods or services that will be used or rendered for future research and development activities are deferred and capitalized as prepaid expenses and other current assets on our balance sheet. The capitalized amounts are recognized as expense as the goods are delivered or the related services are performed.

We do not allocate our internal costs, such as salary and other personnel-related expenses, laboratory supplies and allocated overhead by product candidate. In particular, with respect to internal costs, several of our departments support multiple product candidate research and development programs and, therefore, the costs cannot be allocated to a particular product candidate or development program.

At this time, we cannot reasonably estimate or know the nature, timing or estimated costs of the efforts that will be necessary to complete the development of, and obtain regulatory approval for, any of our product candidates. The process of conducting the necessary clinical development to obtain regulatory approval is costly and time-consuming, and the successful development of our product candidates is highly uncertain. See the section titled “Risk Factors” for additional risks regarding regulatory development and approval.

General and Administrative

Our general and administrative expenses consist primarily of personnel-related expenses, including salaries, employee benefit costs and stock-based compensation expense for our personnel in executive, finance and accounting, legal, human resources, business development, and other administrative functions. General and administrative expenses also include professional fees for legal, patent, consulting, accounting and tax services, allocated overhead, including rent, equipment, depreciation, information technology costs and utilities, and other general operating expenses not otherwise classified as research and development expenses.

Other Income, Net

Our other income, net primarily consists of interest income earned on our cash equivalents and marketable securities and adjustments for the change in the fair value of our derivative liability which must be remeasured at each reporting date.

Results of Operations

Comparison of the Three and Six Months Ended June 30, 2026 and 2025

The following tables summarize our results of operations for the periods indicated (dollars in thousands):

	Three Months Ended June 30,			
	2026	2025	$ Change	% Change
Revenue				
Collaboration and license revenue	$ 3,781	$ 15	$ 3,766	*
Operating Expenses:				
Research and development	68,282	47,951	20,331	42%
General and administrative	12,524	11,520	1,004	9%
Total operating expenses	80,806	59,471	21,335	36%
Loss from operations	(77,025)	(59,456)	(17,569)	30%
Other Income, Net	4,089	4,798	(709)	(15)%
Net loss	$ (72,936)	$ (54,658)	$ (18,278)	33%

* not meaningful

	Six Months Ended June 30,			
	2026	2025	$ Change	% Change
Revenue				
Collaboration and license revenue	$ 6,828	$ 29	$ 6,799	*
Operating Expenses:				
Research and development	133,262	88,650	44,612	50%
General and administrative	24,212	24,456	(244)	(1)%
Total operating expenses	157,474	113,106	44,368	39%
Loss from operations	(150,646)	(113,077)	(37,569)	33%
Other Income, Net	8,950	10,447	(1,497)	(14)%
Net loss	$ (141,696)	$ (102,630)	$ (39,066)	38%

* not meaningful

Revenue

Revenue increased by $3.8 million from the three months ended June 30, 2025 to the three months ended June 30, 2026, and increased by $6.8 million from the six months ended June 30, 2025 to the six months ended June 30, 2026. The increase in revenue was primarily due to the clinical trial cost sharing and reimbursement amounts from Otsuka.

Research and Development Expenses

The following table provides a breakout of research and development expenses for the periods indicated (dollars in thousands):

	Three Months Ended June 30,			
	2026	2025	$ Change	% Change
Direct research and development expenses for 4D-150	$ 43,557	$ 19,134	$ 24,423	128%
Unallocated personnel costs (including stock-based compensation)	15,996	17,871	(1,875)	(10)%
All other costs	8,729	10,946	(2,217)	(20)%
Total research and development expenses	$ 68,282	$ 47,951	$ 20,331	42%

	Six Months Ended June 30,			
	2026	2025	$ Change	% Change
Direct research and development expenses for 4D-150	$ 86,280	$ 31,907	$ 54,373	170%
Unallocated personnel costs (including stock-based compensation)	30,526	35,099	(4,573)	(13)%
All other costs	16,456	21,644	(5,188)	(24)%
Total research and development expenses	$ 133,262	$ 88,650	$ 44,612	50%

Research and development expenses increased by $20.3 million, or 42%, from the three months ended June 30, 2025 to the three months ended June 30, 2026. The increase of $20.3 million was primarily due to an increase in clinical trial activity for wet AMD.

Research and development expenses increased by $44.6 million, or 50%, from the six months ended June 30, 2025 to the six months ended June 30, 2026. The increase of $44.6 million was primarily due to an increase in clinical trial activity for wet AMD.

General and Administrative Expenses

General and administrative expenses increased by $1.0 million, or 9%, from the three months ended June 30, 2025 to the three months ended June 30, 2026. General and administrative expenses decreased by $0.2 million, or 1%, from the six months ended June 30, 2025 to the six months ended June 30, 2026. The fluctuations in general and administrative expenses were immaterial for the three and six months ended June 30, 2026 compared to the three and six months ended June 30, 2025, respectively.

Other Income, Net

Other income, net, decreased by $0.7 million, or 15%, from the three months ended June 30, 2025 to the three months ended June 30, 2026. Other income, net, decreased by $1.5 million, or 14%, from the six months ended June 30, 2025 to the six months ended June 30, 2026. The decreases were primarily because of lower yields on our cash equivalents and marketable securities due to lower balances.

Liquidity and Capital Resources

Sources of Liquidity

As of June 30, 2026, we had cash, cash equivalents and marketable securities of $430.6 million. We have funded our operations primarily through the sale and issuance of our equity securities, including Follow-on Offerings and our “at-the-market” offering program, from borrowings under our Loan and Security Agreement and, to a lesser extent, from cash received pursuant to our collaboration and license agreements. Our recent sources of liquidity include the following transactions:

Follow-on Offerings

In November 2025, we completed an underwritten offering (the "2025 Offering") in which 8,385,809 shares of our common stock were sold at an offering price of $10.51 per share, as well as pre-funded warrants to purchase 1,128,949 shares of our common stock at an offering price of $10.5099 per underlying share. The net proceeds from the 2025 Offering were approximately $93.3 million, after deducting the underwriting discounts and commissions and other offering expenses.

At-the-Market Offering Program

In June 2024, we entered into a Sales Agreement (the “Leerink Sales Agreement”) with Leerink Partners LLC (“Leerink”) as sales agent to sell shares of our common stock, from time to time, with aggregate gross sales proceeds of up to $250.0 million pursuant to a Registration Statement on Form S-3 that we filed with the SEC in February 2024, and subsequently amended in February 2025, as an “at-the-market” offering under the Securities Act. For the year ended December 31, 2025, 1,175,000 shares of our common stock were sold pursuant to the Leerink Sales Agreement for net proceeds to us of $9.6 million, after deducting issuance costs. For the six months ended June 30, 2026, 3,518,472 shares were sold pursuant to the Leerink Sales Agreement for net proceeds to the Company of $31.6 million, after deducting issuance costs.

Collaboration and License Agreements

In October 2025, we entered into a Collaboration and License Agreement with Otsuka where we granted Otsuka exclusive rights to develop and commercialize 4D-150 for retinal vascular diseases, including wet AMD and DME, in the Otsuka Territory. Otsuka made an upfront cash payment of $85 million which we recognized as revenue during the fourth quarter of 2025, and agreed to provide certain cost sharing for global development activities.

Loan and Security Agreement

In June 2026, we entered into a Loan and Security Agreement (the "Loan and Security Agreement") with with Hercules Capital, Inc., providing for up to $200.0 million in term loan borrowings. At the closing on June 24, 2026, the Company had access to a $50.0 million tranche, of which it borrowed $20.0 million. The remaining $30.0 million is available, at the Company's option, through June 15, 2027. The Company may draw up to an additional $100.0 million in three separate tranches upon achievement of certain clinical, regulatory, financing and capitalization milestones. As of June 30, 2026, the Company had not met the requirements to access the funds under these tranches, as it had not achieved the related milestone. An additional fifth tranche of $50.0 million may be made available upon the Company's request and at Hercules' sole discretion and is not contingent upon the Company's achievement of the milestones applicable to the prior tranches. The Loan and Security Agreement matures on June 1, 2031. The initial borrowing of $20.0 million bears interest at a floating rate equal to the greater of (i) the prime rate plus 2.0% and (ii) 8.75%, and all future borrowings, including the available balance of $30.0 million of the $50.0 million tranche available as of June 24, 2026, bear interest at a floating rate equal to the greater of (i) the prime rate plus 2.5% and (ii) 9.25%. The floating interest rate is capped at 0.75% more than the interest rate at the time of the borrowing. The Company is required to make monthly interest-only payments for borrowings under the initial tranche of $50.0 million for a period of 29 months, which may be extended by up to an additional 30 months upon achievement of certain clinical, regulatory, financing and capitalization milestones.

The Loan and Security Agreement includes an end-of-term charge ranging from 3.70% to 6.50% of the aggregate principal amount, depending on the timing of the repayment. We may voluntarily prepay outstanding borrowings, subject to prepayment premiums ranging from 1.0% to 3.0% of the principal amount prepaid, depending on the timing of repayment. In connection with the Loan and Security Agreement, we paid a $0.5 million initial facility fee and incurred approximately $2.1 million of debt issuance costs, consisting primarily of lender fees and third-party legal and other transaction costs.

The Loan and Security Agreement contains financial covenants, including minimum cash and performance-based covenants, that are not yet subject to testing or effective as of June 30, 2026. Upon the occurrence of certain events and beginning no earlier than January 1, 2028, the Company may become subject to minimum cash and performance-based financial covenants. The Loan and Security Agreement contains customary events of default, including failure to make required payments or maintain compliance with covenants, breach, default, insolvency, attachment or judgment events and any circumstance which could reasonably be expected to have a material adverse effect on the Company. The Loan and Security Agreement also contains customary affirmative and restrictive covenants, representations and warranties associated with a secured loan facility, including certain limitations on indebtedness, liens, investments, distributions, mergers or acquisitions and corporate changes.

As of June 30, 2026, the outstanding principal under the Loan and Security Agreement was $20.0 million, bearing interest at a rate of 8.75% per annum.

Future Funding Requirements

We have experienced recurring net losses and had an accumulated deficit of $858.0 million as of June 30, 2026. Our transition to profitability is dependent upon the successful development, approval and commercialization of our product candidates and those of our collaboration partners and achieving a level of revenue adequate to support our cost structure. We expect to continue to incur losses for the foreseeable future.

We expect that our overall research and development and general and administrative expenses will increase. As a result, we will need significant additional capital to fund our operations, which we may obtain through one or more equity offerings, debt financings or other third-party funding, the Otsuka Agreement, and additional potential strategic alliances and licensing or collaboration arrangements.

Because of the numerous risks and uncertainties associated with the development and commercialization of gene therapy product candidates, we are unable to estimate the amount of increased capital we will need to raise to support our operations and the outlays and operating expenditures necessary to complete the development of our product candidates and build additional manufacturing capacity, and we may use our available capital resources sooner than we currently expect.

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

- the progress of our current and future product candidates through preclinical and clinical development;
- potential delays in our preclinical studies and clinical trials, whether current or planned;
- working with our contract manufacturers to scale up the manufacturing processes for our product candidates;
- continuing our research and discovery activities;
- continuing the development of our Therapeutic Vector Evolution platform;
- initiating and conducting additional preclinical, clinical or other studies for our product candidates;
- changing or adding additional contract manufacturers or suppliers;
- seeking regulatory approvals and marketing authorizations for our product candidates;
- establishing sales, marketing and distribution infrastructure to commercialize any products for which we obtain approval;
- acquiring or in-licensing product candidates, intellectual property and technologies;
- making milestone, royalty or other payments due under any current or future collaboration or license agreements;
- receiving milestone, royalty or other payments under any current or future collaboration or license agreements;
- obtaining, maintaining, expanding, protecting and enforcing our intellectual property portfolio;
- attracting, hiring and retaining qualified personnel;
- potential delays or other issues related to our operations;
- meeting the requirements and demands of being a public company;
- defending against any product liability claims or other lawsuits related to our products; and
- adverse macroeconomic conditions such as, but not limited to, higher inflation and increased interest rates, each of which may exacerbate the magnitude of the factors discussed above.

We believe that our existing cash, cash equivalents and marketable securities will allow us to fund our planned operations for at least one year from the date of the issuance of the condensed financial statements included in this report.

We have based our estimates as to how long we expect we will be able to fund our operations on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect, in which case we would be required to obtain additional financing sooner than currently projected, which may not be available to us on acceptable terms, or at all. Our failure to raise capital as and when needed would have a negative impact on our financial condition and our ability to pursue our business strategy. See the section titled “Risk Factors” for additional risks associated with our substantial capital requirements.

We have limited committed external sources of funds. Accordingly, we will be required to obtain further funding through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources to complete the clinical development for the product candidates for treatment of wet AMD, DME, geographic atrophy, cystic fibrosis lung disease, alpha-1 antitrypsin deficiency lung disease or any other indication we may pursue. If we raise additional funds by issuing equity securities, our stockholders may experience dilution. Any future debt financing into which we enter would result in fixed payment obligations and may involve agreements that include grants of security interests on our assets and restrictive covenants that limit our ability to take specific actions, such as incurring additional debt, making capital expenditures, granting liens over our assets, redeeming stock or declaring dividends, that could adversely impact our ability to conduct our business. Any debt financing or additional equity that we raise may contain terms that could adversely affect our common stockholders. Further, additional funds may not be available when we need them, on terms that are acceptable to us, 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 the war in Ukraine, conflicts in the Middle East, any expansion of these conflicts, rising interest rates and inflation, natural disasters and pandemics.

If we are unable to obtain additional funding, we expect to delay, reduce or eliminate some or all of our research and development programs, product portfolio expansion or investment in manufacturing capabilities, which could adversely affect our business. If we raise additional funds through collaborations or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to future revenue streams or product candidates or grant licenses on terms that may not be favorable to us.

Summary Statement of Cash Flows

The following is a summary of cash flows for the periods indicated below (in thousands):

	Six Months Ended June 30,	
	2026	2025
Net cash used in operating activities	$ (138,124)	$ (91,135)
Net cash provided by investing activities	94,432	18,096
Net cash provided by financing activities	53,823	862
Net increase (decrease) in cash and cash equivalents	$ 10,131	$ (72,177)

Net Cash Used in Operating Activities

Net cash used in operating activities was $138.1 million for the six months ended June 30, 2026. This was primarily due to the net loss of $141.7 million, adjusted for noncash charges of $12.4 million and net changes in operating assets and liabilities of $8.8 million. Noncash charges included $10.3 million of stock-based compensation expense, $2.5 million of depreciation and amortization, $1.6 million for the amortization of operating lease right-of-use assets and $0.1 million for the loss on disposal of property and equipment, partially offset by $2.1 million net accretion of discount on marketable securities. Net changes in operating assets and liabilities included decreases of $1.8 million in operating lease liabilities and $0.5 million in accounts payable and increases of $10.4 million in prepaid expenses and other current assets and $0.7 million in other non-current assets, partially offset by increases of $2.4 million in accrued and other liabilities and $2.2 million in deferred revenue.

Net cash used in operating activities was $91.1 million for the six months ended June 30, 2025. This was primarily due to the net loss of $102.6 million, adjusted for noncash charges of $13.1 million and net changes in operating assets and liabilities of $1.6 million. Noncash charges included $11.9 million of stock-based compensation expense, $2.2 million of depreciation and amortization and $1.4 million for the amortization of operating lease right-of-use assets, offset by $2.4 million net accretion of discount on marketable securities. Net changes in operating assets and liabilities included a $1.5 million decrease in operating lease liabilities and a $5.1 million increase in other non-current assets, offset by a $4.3 million increase in accounts payable and a $0.7 million increase in accrued and other liabilities.

Net Cash Provided by Investing Activities

Net cash provided by investing activities was $94.4 million for the six months ended June 30, 2026. This was due to $190.0 million in maturities of marketable securities, partially offset by purchases of marketable securities of $95.6 million

Net cash provided by investing activities was $18.1 million for the six months ended June 30, 2025. This was due to $268.3 million in maturities of marketable securities, offset by purchases of marketable securities of $249.5 million and purchases of property and equipment of $0.7 million.

Net Cash Provided by Financing Activities

Net cash provided by financing activities was $53.8 million for the six months ended June 30, 2026 which was due to proceeds from the issuance of common stock pursuant to the Leerink Sales Agreement of $31.6 million proceeds from the Loan and Security Agreement of $19.3 million, proceeds from the issuance of common stock from the exercise of stock options of $1.8 million and proceeds from the issuance of common stock from ESPP purchases of $1.1 million.

Net cash provided by financing activities was $0.9 million for the six months ended June 30, 2025 which was due to proceeds from the issuance of common stock from ESPP purchases of $0.9 million.

Contractual Obligations, Commitments and Contingencies

We enter into various agreements in the ordinary course of business, such as those with suppliers, CROs, CDMOs and clinical trial sites. These contracts generally provide for termination on notice or may have a potential termination fee if a purchase order is canceled within a specified time. The total value of non-cancellable obligations under contracts was $4.9 million and $4.0 million as of June 30, 2026 and December 31, 2025, respectively. This presentation of non-cancellable purchase obligations does not include any estimates of potential reduction of such liabilities related to mitigation obligations of the counter-parties in the event of cancellation under the terms of our engagements.

As of June 30, 2026, our principal commitments consisted of principal outstanding under the Loan and Security Agreement and obligations under our operating lease for our headquarters. Please see Note 8, Commitments and Contingencies and Note 9, Long-Term Debt, to our condensed financial statements included elsewhere in this report.

Critical Accounting Policies and Significant Judgments and Estimates

Our condensed financial statements have been prepared in accordance with generally accepted accounting principles in the United States. The preparation of our condensed financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of our condensed financial statements, as well as the reported revenue and expenses during the reported periods. We evaluate these estimates and assumptions on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

During the six months ended June 30, 2026, there were no changes to our critical accounting policies and significant judgments and estimates as disclosed in our Annual Report on Form 10-K for the year ended December 31, 2025.

Recent Accounting Pronouncements

See Note 2, Summary of Significant Accounting Policies, to our condensed financial statements included elsewhere in this report for information.

Off-Balance Sheet Arrangements

Since our inception, we have not engaged in any off-balance sheet arrangements as defined in the rules and regulations of the SEC.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Interest Rate Sensitivity and Effects of Inflation

The market risk inherent in our financial instruments and in our financial position represents the potential loss arising from adverse changes in interest rates. As of June 30, 2026, we had cash, cash equivalents and marketable securities of $430.6 million, consisting of bank deposits, interest-bearing money market funds, and marketable securities, for which the fair value would be affected by changes in the general level of U.S. interest rates. However, due to the short to medium-term maturities of our cash equivalents and marketable securities, an immediate 10% change in interest rates would not have a material effect on the fair value of our cash equivalents or marketable securities.

As of June 30, 2026, we had $20.0 million outstanding under our Loan and Security Agreement, which bears interest at a floating rate. A hypothetical 75 basis point increase in interest rates would increase our annual interest expense by approximately $0.2 million, assuming the outstanding principal balance remained constant for the full year. We currently believe this impact would not be material to our financial condition or results of operations.

We do not believe that inflation or interest rate changes have had a significant impact on our results of operations for any periods presented herein.

Item 4. Controls and Procedures.

Evaluation of our Disclosure Controls and Procedures

We maintain “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Exchange Act is (1) recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission’s rules and forms and (2) accumulated and communicated to our management, including our principal executive and principal financial and accounting officers, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their control objectives.

Our management, with the participation of our principal executive officer and principal financial and accounting officer, evaluated the effectiveness of our disclosure controls and procedures at the end of the period covered by this report. Based upon such evaluation, our principal executive officer and principal financial and accounting officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of such date.

Changes in Internal Control over Financial Reporting

There has been no change in our internal control over financial reporting during the quarter ended June 30, 2026, that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings.

The legal proceedings information set forth in Note 8, Commitments and Contingencies, of the notes to our condensed financial statements in Part I, Item 1 of this report is incorporated by reference.

Item 1A. Risk Factors.

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, as well as the other information in this report, including our condensed financial statements and the related notes and the section of this report "Management's Discussion and Analysis of Financial Condition and Results of Operations," before deciding whether to invest in our common stock. If any of the following risks actually occur, our business, reputation, financial condition, results of operations, revenue and future prospects could be seriously harmed. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties that we are unaware of, or that we currently believe are not material, may also become important factors that adversely affect our business. Unless otherwise indicated, references to our business being seriously harmed in these risk factors and elsewhere will include harm to our business, reputation, financial condition, results of operations, future prospects and stock price. If our business is seriously harmed, the market price of our common stock could decline, and you could lose part or all of your investment.

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

We are in the late stages of drug development for our lead program and have a limited operating history and no products approved for commercial sale, which may make it difficult to evaluate our current business and predict our future success and viability.

We are a leading late-stage biotechnology company advancing durable and disease-targeted therapeutics with the potential to transform treatment paradigms and provide unprecedented benefits to patients. We commenced operations in September 2013, have no products approved for commercial sale and have not generated any product revenue. Drug development is a highly uncertain undertaking and involves a substantial degree of risk. If our product candidates are not successfully developed and approved, we may never generate any product revenue. To date, we have not completed any clinical trials (including any pivotal clinical trial), obtained marketing approval for any product candidates, manufactured commercial scale quantities of any of our product candidates or arranged for a third party to do so on our behalf, or conducted sales and marketing activities necessary for successful product commercialization. Our limited operating history as a company and stage of drug development make any assessment of our future success and viability subject to significant uncertainty. We will encounter risks and difficulties frequently experienced by biopharmaceutical companies in rapidly evolving fields, and we have not yet demonstrated an ability to successfully overcome such risks and difficulties. If we do not address these risks and difficulties successfully, our business will be seriously harmed.

We have had recurring net losses, and we expect to continue to incur significant net losses for the foreseeable future.

We have incurred recurring net losses, including net losses of $72.9 million and $54.7 million for the three months ended June 30, 2026 and 2025, respectively, and $141.7 million and $102.6 million for the six months ended June 30, 2026 and 2025, respectively. As of June 30, 2026, we had an accumulated deficit of $858.0 million.

We have devoted substantially all of our financial resources and efforts on research and development activities. We do not expect to generate revenue from product sales for several years, if at all. We continue to incur significant research and development and other expenses related to our ongoing operations. The amount of our future net losses will depend, in part, on the level of our future expenditures and our ability to generate revenue. Moreover, our net losses may fluctuate significantly from quarter to quarter and year to year, such that a period-to-period comparison of our results of operations may not be a good indication of our future performance.

We expect to continue to incur significant expenses and operating losses for the foreseeable future. Our expenses may increase substantially if and as we:

- progress our current and any future product candidates through preclinical and clinical development;
- expand our manufacturing facilities and work with our contract manufacturers to scale up the manufacturing processes for our product candidates;
- continue our research and discovery activities;
- continue the development of our Therapeutic Vector Evolution platform;
- initiate and conduct additional preclinical, clinical or other studies for our product candidates;
- change or add additional contract manufacturers or suppliers;
- seek regulatory approvals and marketing authorizations for our product candidates;
- establish sales, marketing and distribution infrastructure to commercialize any products for which we obtain approval;
- acquire or in-license product candidates, intellectual property and technologies;
- make milestone, royalty or other payments due under any current or future collaboration or license agreements;
- obtain, maintain, expand, protect and enforce our intellectual property portfolio;
- attract, hire and retain qualified personnel;
- experience any delays or encounter other issues related to our operations;
- meet the requirements and demands of being a public company;
- are adversely impacted by general economic conditions, such as rising inflation, tariffs and increased interest rates;
- defend against any product liability claims or other lawsuits related to our products; and
- experience delays in our preclinical studies and clinical trials, whether current or planned, due to pandemics or public health emergencies.

Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' deficit and working capital. In any particular quarter or quarters, our operating results could be below the expectations of securities analysts or investors, which could cause our stock price to decline.

We will require substantial additional capital to finance our operations. If we are unable to raise such capital when needed, or on acceptable terms, we may be forced to delay, reduce and/or eliminate one or more of our research and drug development programs or future commercialization efforts.

Developing biopharmaceutical products, including conducting preclinical studies and clinical trials, is a very time consuming, expensive and uncertain process that takes years to complete. Our operations have required substantial amounts of cash since inception. To date, we have financed our operations primarily through the sale of equity securities and to a lesser extent from cash received pursuant to our collaboration and license agreements. We have initiated clinical trials, which are ongoing, and have additional product candidates in preclinical development that may enter clinical development. Developing our product candidates is expensive, and we expect to continue to spend substantial amounts as we fund our early-stage research projects, continue preclinical and clinical development of our product candidates and, in particular, advance our product candidates through clinical trials. Even if we are successful in developing our product candidates, obtaining regulatory approvals and launching and commercializing any product candidate will require substantial funding.

As of June 30, 2026, we had $430.6 million in cash and cash equivalents and marketable securities.

Based on our current operating plan, we believe that our existing cash, cash equivalents and marketable securities will allow us to fund our planned operations for at least one year from the date of the issuance of the condensed financial statements included in this report.

Additional funds may not be available when we need them, on terms that are acceptable to us, or at all. Our ability to raise additional capital may be adversely impacted by global economic conditions affecting credit and financial markets (including due to increased interest rates and high inflation rates) and product supply chains. If adequate funds are not available to us on a timely basis, we may be required to:

- delay, limit, reduce or terminate preclinical studies, clinical trials or other research and development activities or eliminate one or more of our development programs altogether; or
- delay, limit, reduce or terminate our efforts to establish manufacturing and sales and marketing capabilities or other activities that may be necessary to commercialize our product candidates, or reduce our flexibility in developing or maintaining our sales and marketing strategy.

We also could be required to seek funds through arrangements with collaborators or others that may require us to relinquish rights to, or jointly own some aspects of, our product candidates or technologies that we would otherwise pursue on our own. We do not expect to realize revenue from sales of products or royalties from licensed products in the foreseeable future, if at all, and unless and until a product candidate is clinically tested, approved for commercialization and successfully marketed.

We will be required to seek additional funding in the future and currently intend to do so through collaborations, public or private equity offerings or debt financings, credit or loan facilities or a combination of one or more of these funding sources. Our ability to raise additional funds will depend on financial, economic and other factors, many of which are beyond our control. Additional funds may not be available to us on acceptable terms or at all. If we raise additional funds by issuing equity securities, our stockholders will suffer dilution, and the terms of any financing may adversely affect the rights of our stockholders. In addition, as a condition to providing additional funds to us, future investors may demand, and may be granted, rights superior to those of existing stockholders. Debt financing, if available, is likely to involve restrictive covenants limiting our flexibility in conducting future business activities, and, in the event of insolvency, debt holders would be repaid before holders of our equity securities received any distribution of our corporate assets.

If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our product candidates or one or more of our other research and development initiatives. Any of the above events could seriously harm our business and cause the price of our common stock to decline.

Due to the significant resources required for the development of our product candidates, and depending on our ability to access capital, we must prioritize development of certain product candidates. Moreover, we may expend our limited resources on product candidates that do not yield a successful product and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Due to the significant resources required for the development of our product candidates, in particular our product candidates in IND-enabling studies and those in clinical trials, we must decide which product candidates and indications to pursue and advance and the amount of resources to allocate to each. Our decisions concerning the allocation of research, development, collaboration, management and financial resources toward particular product candidates or therapeutic areas may not lead to the development of any viable commercial product and may divert resources away from better opportunities. Similarly, our potential decisions to delay, terminate or collaborate with third parties in respect of certain product candidates may subsequently also prove to be less than optimal and could cause us to miss valuable opportunities. If we make incorrect determinations regarding the viability or market potential of any of our product candidates or misread trends in the biopharmaceutical industry, particularly in retina and pulmonology, our business could be seriously harmed. As a result, we may fail to capitalize on viable commercial products or profitable market opportunities, be required to forego or delay pursuit of opportunities with other product candidates or other diseases that may later prove to have greater commercial potential than those we choose to pursue, or relinquish valuable rights to such product candidates through collaboration, licensing or other royalty arrangements in cases in which it would have been advantageous for us to invest additional resources to retain sole development and commercialization rights.

The amount of our future losses is uncertain and our quarterly operating results may fluctuate significantly or may fall below the expectations of investors or securities analysts, each of which may cause our stock price to fluctuate or decline.

Our quarterly and annual operating results may fluctuate significantly, making it difficult for us to predict our future operating results. These fluctuations may occur due to a variety of factors, many of which are outside our control and may be difficult to predict, including:

- the timing and success or failure of preclinical studies and clinical trials for our product candidates or competing product candidates, or any other change in the competitive landscape of our industry, including consolidation among our competitors or collaboration partners;
- the timing, cost, and level of investment in research, development and commercialization activities, which may change from time to time;
- the timing of receipt of approvals from regulatory authorities in the United States and internationally;
- the timing and status of enrollment and safety and efficacy readouts for our clinical trials;
- the cost of manufacturing, as well as building out our supply chain, which may vary depending on the quantity of production, the cost of continuing to establish and scale up our manufacturing capabilities, and the terms of any agreements we enter into with third-party suppliers;
- the timing and amount of any option, milestone, royalty or other payments due under any current or future collaboration or license agreement;

- coverage and reimbursement policies with respect to our genetic medicine product candidates and potential future drugs that compete with our products, if approved;
- expenditures that we may incur to acquire, develop or commercialize additional products and technologies;
- the level of demand for our genetic medicine products, if approved, which may vary significantly over time;
- future accounting pronouncements or changes in our accounting policies; and
- the impact from general macroeconomic trends, such as higher inflation, tariffs and increased interest rates.

The cumulative effects of these factors could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance.

This variability and unpredictability could also result in our failing to meet the expectations of financial analysts or investors for any period. If our revenue or operating results fall below or if operating expenses or other costs are higher than the expectations of analysts or investors or below or above, as the case may be, any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated revenue or earnings guidance we may provide.

Our loan and security agreement with Hercules contains operating and financial covenants that may restrict our business and financing activities, is secured by substantially all of our assets, including our intellectual property, and we may be required to repay our outstanding indebtedness earlier than we expect, any of which could have a material adverse effect on our business.

In June 2026, we entered into a loan and security agreement (the "Loan Agreement") with Hercules Capital, Inc. (“Hercules”), which provides for term loans in an aggregate principal amount of up to $200.0 million, of which $20.0 million was funded at closing. The term loans bear interest at floating rates based on the prime rate, subject to specified floors, payable monthly in arrears, and mature on June 1, 2031. Increases in the prime rate would increase our debt service obligations, and servicing our indebtedness will require a substantial amount of cash and will reduce the funds available for our operations. In addition, of the amounts not funded at closing, $30.0 million is available at our election only until June 15, 2027, $100.0 million is available only upon the achievement of specified milestones and $50.0 million is available only in Hercules' sole discretion. Accordingly, we may never have access to the full amount of the facility, and we cannot be certain that the milestones will be achieved or that Hercules will elect to make discretionary amounts available to us.

The Loan Agreement contains customary affirmative and restrictive covenants that, among other things, limit our ability to transfer or dispose of assets, merge with other companies or consummate certain changes of control, make investments, incur additional indebtedness and liens and enter into new businesses. We therefore may not be able to engage in any of the foregoing transactions unless we obtain the consent of Hercules or terminate the Loan Agreement, which may limit our operating flexibility. It also contains financial covenants, including a minimum cash covenant that, beginning on the earlier of specified dates or aggregate borrowing thresholds, will require us to maintain cash equal to a specified percentage of our outstanding obligations under the Loan Agreement, except on any day on which our market capitalization exceeds seven times such obligations, as well as a requirement to maintain cash equal to at least 125% of our outstanding obligations if we effect a cash redemption of any permitted convertible debt. The Loan Agreement also contains a performance covenant that, beginning nine months after both FDA approval of our lead product candidate and aggregate borrowings equaling or exceeding $75.0 million, will require us to satisfy at least one of (1) a combination of a market capitalization test and a minimum cash test, (2) a minimum cash test, or (3) a net product revenue test. Because the applicability of the minimum cash covenant, and our ability to satisfy the market capitalization prong of the performance covenant, depend in part on our market capitalization, a decline in the trading price of our common stock, which may occur for reasons unrelated to our business or results of operations, could cause the minimum cash covenant to apply, or make the performance covenant more difficult to satisfy, at times when they otherwise would not. These covenants could restrict our ability to operate our business and pursue our business strategies, and we may not be able to comply with these covenants in the future. If the minimum cash covenant becomes applicable, a portion of our cash will effectively be unavailable to fund our operations, and any failure to comply with the covenants in the Loan Agreement could result in an event of default.

Our obligations under the Loan Agreement are secured by a security interest in substantially all of our assets, including our intellectual property, and certain of our future subsidiaries may be required to guarantee our obligations and pledge substantially all of their assets, including intellectual property, to secure such guarantees. Upon the occurrence of an event of default, Hercules may accelerate all of our outstanding obligations, including principal, interest and any applicable prepayment charges and end of term charges, and our obligations will be automatically accelerated upon certain insolvency, liquidation, bankruptcy or similar events. If our obligations are accelerated, we may not have sufficient cash to repay them, and Hercules could foreclose on the collateral, including intellectual property that is critical to our business. Any voluntary prepayment of the term loans is also subject to prepayment and end of term fees, which could make it more costly for us to refinance the facility. In addition, because our assets, including our intellectual property, are pledged to Hercules, our ability to obtain additional debt or other secured financing may be limited, and any future financing may be more difficult or costly to obtain.

Risks Related to the Research, Discovery, Development and Commercialization of Our Product Candidates

All of our product candidates are based on a novel AAV genetic medicine technology with which there is limited regulatory and clinical experience to date, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. Further, the regulatory approval process for novel product candidates such as ours can be more expensive and take longer than for other, better known or extensively studied therapeutic modalities.

All of our product candidates are based on genetic medicine technology, and our future success depends on the successful development of this novel therapeutic approach. We cannot assure you that any development problems we or other genetic medicine companies experience in the future related to genetic medicine technology will not cause significant delays or unanticipated costs in the development of our product candidates, or that such development problems can be solved. In addition, the clinical study requirements of the FDA and other regulatory agencies and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty and intended use and market of the potential products. The regulatory approval process for novel product candidates such as ours can be more expensive and take longer than for other, better known or extensively studied therapeutic modalities. Further, as we are developing novel treatments for diseases in which there is limited clinical experience with new endpoints and methodologies, there is heightened risk that the FDA, EMA or comparable foreign regulatory bodies may not consider the clinical trial endpoints to provide clinically meaningful results, and the resulting clinical data and results may be more difficult to analyze. To date, few genetic medicine products have been approved by the FDA or comparable foreign regulatory authorities, which makes it difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in the United States, the European Union ("EU") or other jurisdictions. Further, approvals by one regulatory agency may not be indicative of what other regulatory agencies may require for approval.

Regulatory requirements governing genetic medicine products have evolved and may continue to change in the future. For example, the FDA has established the Office of Therapeutic Products within its Center for Biologics Evaluation and Research ("CBER") to consolidate the review of genetic medicine and related products, and the Cellular, Tissue and Gene Therapies Advisory Committee to advise CBER on its review. These and other regulatory review agencies, committees and advisory groups and the requirements and 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.

The National Institutes of Health ("NIH") Guidelines for Research Involving Recombinant DNA Molecules ("NIH Guidelines") require supervision of human gene transfer trials, including evaluation and assessment 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, and such review may result in some delay before initiation of a clinical trial. 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.

We are subject to significant regulatory oversight by the FDA, and, in addition, the applicable IBC and Institutional Review Board ("IRB"), of each institution at which we or our collaborators conduct clinical trials of our product candidates, or a central IRB if appropriate, need to review and approve the proposed clinical trial.

Similar requirements apply in the EU. The EMA has a Committee for Advanced Therapies ("CAT") that is responsible for assessing the quality, safety and efficacy of advanced therapy medicinal products, or ATMP(s). ATMPs 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 an ATMP candidate that is submitted to the EMA. In the EU, the development and evaluation of an ATMP must be considered in the context of the relevant EU guidelines. The EMA may issue new guidelines concerning the development and marketing authorization for gene therapy medicinal products and require that we comply with these new guidelines. Similarly complex regulatory environments exist in other jurisdictions.

Changes in applicable regulatory guidelines may lengthen the regulatory review process, require us to perform additional studies or trials, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of our product candidates or lead to significant post-approval limitations or restrictions.

As we advance our product candidates, we will be required to consult with these regulatory and advisory groups and comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of such product candidates. 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 and could seriously harm our business.

Adverse public perception or regulatory scrutiny of genetic medicine technology may negatively impact the developmental progress or commercial success of product candidates that we develop alone or with collaborators.

The developmental and commercial success of our current product candidates, or any that we develop alone or with collaborators in the future, will depend in part on public acceptance of the use of genetic medicine technology, including the use of AAVs, for the prevention or treatment of human diseases. Adverse public perception of gene therapies may negatively impact our ability to raise capital or enter into strategic agreements for the development of product candidates.

Genetic medicine remains a novel technology. The commercial success of our genetic medicine product candidates, if successfully developed and approved, may be adversely affected by claims that genetic medicine is unsafe, unethical or immoral. This may lead to unfavorable public perception and the inability of any of our product candidates to gain the acceptance of the public or the medical community. Unfavorable public perceptions may also adversely impact our or our collaborators' ability to enroll clinical trials for our product candidates. Moreover, success in commercializing any product candidates that receive regulatory approval will depend upon physicians prescribing, and their patients being willing to receive, treatments that involve the use of such product candidates in lieu of, or in addition to, existing treatments with which they are already familiar and for which greater clinical data may be available.

Publicity of any adverse events in, or unfavorable results of, preclinical studies or clinical trials for any current or future product candidates, or with respect to the studies or trials of our competitors or of academic researchers utilizing similar technologies, even if not ultimately attributable to our technology or product candidates, could negatively influence public opinion. Negative public perception about the use of AAV technology in human therapeutics, whether related to our technology or a competitor's technology, could result in increased governmental regulation, delays in the development and commercialization of product candidates or decreased demand for the resulting products, any of which may seriously harm our business.

Our product candidates may cause undesirable side effects or have other properties that could halt their clinical development, prevent their regulatory approval, limit their commercial potential or result in significant negative consequences.

Adverse events or other undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign regulatory authorities.

During the conduct of clinical trials, patients report changes in their health, including illnesses, injuries, and discomforts, to their study doctor. Often, it is not possible to determine whether or not the product candidate being studied caused these conditions. It is possible that as we test our product candidates in larger, longer and more extensive clinical trials, or as use of these product candidates becomes more widespread if they receive regulatory approval, illnesses, injuries, discomforts and other adverse events that were observed in previous trials, as well as conditions that did not occur or went undetected in previous trials, will be reported by patients. Less common adverse effects may not become evident until investigational products are tested in large-scale, Phase 3 clinical trials or, in some cases, after they are made available to patients on a commercial scale after approval.

If any serious adverse events occur, clinical trials or commercial distribution of any product candidates or products we develop alone or with collaborators could be suspended or terminated, and our business could be seriously harmed. Treatment-related side effects could also affect patient recruitment and the ability of enrolled patients to complete the trial or result in potential liability claims. Regulatory authorities could order us or our collaborators to cease further development of, deny approval of, or require us to cease selling any product candidates or products for any or all targeted indications. If we or our collaborators elect, or are required, to delay, suspend or terminate any clinical trial or commercialization efforts, the commercial prospects of such product candidates or products may be harmed, and our ability to generate product revenue from them or other product candidates that we develop may be delayed or eliminated. Additionally, if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects or adverse events caused by such products, a number of potentially significant negative consequences could result, including but not limited to:

- regulatory authorities may suspend, limit or withdraw approvals of such product, or seek an injunction against its manufacture or distribution;
- regulatory authorities may require additional warnings on the label including “boxed” warnings, or issue safety alerts, Dear Healthcare Provider letters, press releases or other communications containing warnings or other safety information about the product;
- we may be required to change the way the product is administered or conduct additional clinical trials or post-approval studies;
- we may be required to create a Risk Evaluation and Mitigation Strategy (“REMS”), which could include a medication guide outlining the risks of such side effects for distribution to patients, a communication plan for healthcare providers and/or other elements to assure safe use;
- the product may become less competitive;
- we may be subject to fines, injunctions or the imposition of criminal penalties;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

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

Drug development is a highly uncertain undertaking and involves a substantial degree of risk. We have no products approved for commercial sale, and we have never generated any revenue from product sales, and we may never generate product revenue or be profitable.

We have no products approved for commercial sale and have not generated any revenue from product sales. We do not anticipate generating any revenue from product sales until after we have successfully completed clinical development and received regulatory approval for the commercial sale of a product candidate, which will not occur for several years, if ever.

Our ability to generate revenue and achieve profitability depends significantly on many factors, including:

- successfully completing research and preclinical and clinical development of our product candidates;
- obtaining regulatory approvals and marketing authorizations for product candidates for which we successfully complete clinical development and clinical trials;
- developing a sustainable and scalable manufacturing process for our product candidates, as well as establishing and maintaining commercially viable supply relationships with third parties that can provide adequate products and services to support clinical activities and any commercial demand for our product candidates;
- identifying, assessing, acquiring and/or developing new product candidates;
- negotiating favorable terms in any collaboration, licensing or other arrangements into which we may enter;
- the prevalence, duration and severity of potential side effects or other safety issues experienced with our product candidates or future approved products, if any;
- launching and successfully commercializing product candidates for which we obtain marketing approval, either by collaborating with a partner or, if launched independently, by establishing a sales, marketing and distribution infrastructure;
- obtaining and maintaining an adequate price for our product candidates, both in the United States and in foreign countries where our product candidates are commercialized;
- obtaining adequate reimbursement for our product candidates or procedures using our product candidates from payors;
- the convenience and durability of our treatment or dosing regimen;
- acceptance by physicians, payors and patients of the benefits, safety and efficacy of our product candidates, or any future product candidates, if approved, including relative to alternative and competing treatments;
- patient demand for any of our product candidates that may be approved;
- addressing any competing technological and market developments;
- the effects of any public health emergencies which may result in delays to patient enrollment, patients discontinuing their treatment or follow up visits or changes to trial protocols;
- maintaining, protecting, expanding and enforcing our portfolio of intellectual property rights, including patents, trade secrets and know-how; and
- attracting, hiring and retaining qualified personnel.

Because of the numerous risks and uncertainties associated with drug development, we are unable to predict the timing or amount of our expenses, or when we will be able to generate any meaningful revenue or achieve or maintain profitability, if ever. In addition, our expenses could increase beyond our current expectations if we are required by the FDA or foreign regulatory agencies to perform studies in addition to those that we currently anticipate, or if there are any delays in any of our or our collaborators' clinical trials or the development of any of our product candidates. Even if one or more of our product candidates are approved for commercial sale, we anticipate incurring significant costs associated with commercializing any approved product candidate and ongoing compliance efforts.

Even if we are able to generate revenue from the sale of any approved products, we may not become profitable, and we will need to obtain additional funding through one or more equity or debt financings in order to continue operations. Revenue from the sale of any product candidate for which regulatory approval is obtained 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 get reimbursement at any price and whether we own the commercial rights for that territory. If the number of addressable patients is not as large as we anticipate, the indication approved by regulatory authorities is narrower than we expect, the reasonably accepted population for treatment is narrowed by competition, physician choice or treatment guidelines or the price and available third-party reimbursement are lower than anticipated, we may not generate significant revenue from sales of such product candidate, even if approved. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis.

Our failure to become and remain profitable would decrease the value of our company and could impair our ability to raise capital, expand our business, maintain our research and development efforts, diversify our pipeline of product candidates or continue our operations and cause a decline in the value of our common stock, all or any of which may seriously harm our business.

We may encounter substantial delays in our clinical trials or may not be able to conduct or complete our clinical trials on the timelines we expect, if at all.

Clinical testing is expensive, time consuming, and subject to uncertainty. We cannot guarantee that any clinical trials will be initiated, conducted as planned or completed on schedule, if at all. We also cannot be sure that submission of an IND or a clinical trial application ("CTA") will result in the FDA or other regulatory authority, 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 delay, suspend or terminate such clinical trials. A failure of one or more clinical trials can occur at any stage of testing, and our future clinical trials may not be successful. In 2025, we initiated our wet AMD Phase 3 studies comparing a single dose of 4D-150 3E10 vg/eye to on-label aflibercept 2mg Q8 weeks. If we experience any delays in completing these trials, due to delays in enrollment or other factors, it could result in serious harm to our business. 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 agencies 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 contract research organizations ("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;
- refusal of the FDA to accept data from clinical trials in geographies outside the United States;
- delays in identifying, recruiting and training suitable clinical investigators;
- delays in identifying, recruiting, and enrolling patients who meet the requirements of our clinical trials;

- delays in obtaining required IRB approval or ethics committee opinion at each clinical trial site;
- 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;
- insufficient or inadequate supply or quality of product candidates or other materials necessary for use in clinical trials, or delays in sufficiently developing, characterizing or controlling a manufacturing process suitable for clinical trials;
- imposition of a temporary or permanent clinical hold by regulatory agencies for a number of reasons, including after review of an IND or amendment, CTA or amendment, or equivalent foreign application or amendment; as a result of a new safety finding that presents unreasonable risk to clinical trial participants; or a negative finding from an inspection of our clinical trial operations or study sites;
- developments on trials conducted by competitors for related technology that raise FDA or foreign regulatory authority concerns about risk to patients of the technology broadly; or if the FDA or a foreign regulatory authority finds that the investigational protocol or plan is clearly deficient to meet its stated objectives;
- delays caused by patients withdrawing from clinical trials or failing to return for post-treatment follow-up;
- difficulty collaborating with patient groups and investigators;
- 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 practice ("GCP") requirements or applicable regulatory guidelines in other countries;
- occurrence of adverse events associated with the product candidate that are viewed to outweigh its potential benefits;
- changes in regulatory requirements and guidance (including differing expectations across jurisdictions) that require amending or submitting new clinical protocols, expanding enrollment, modifying statistical assumptions (including non-inferiority margins), or submitting new or amended protocols, including for our Phase 3 trials of 4D-150;
- changes in the standard of care on which a clinical development plan was based, which may require new or additional trials;
- the cost of clinical trials of our product candidates being greater than we anticipate;
- clinical trials of our product candidates producing negative or inconclusive results, which may result in our deciding, or regulators requiring us, to conduct additional clinical trials or abandon development of such product candidates;
- transfer of manufacturing processes to larger-scale facilities operated by a CDMO or by us, and delays or failure by our CDMOs or us to make any necessary changes to such manufacturing process;
- third parties being unwilling or unable to satisfy their contractual obligations to us; and
- adverse public perception or regulatory scrutiny of genetic medicine technology may negatively impact the developmental progress or commercial success of products that we develop alone or with collaborators.

Patient enrollment, a determinative factor in the timing of clinical trials, is affected by many factors including the severity and difficulty of diagnosing the disease under investigation, knowledge of the disease in the medical community and availability of effective diagnostic methods, size and distribution of the patient population and process for identifying subjects. Enrollment is also affected by access of patients to medical professionals experienced in their disease, our ability to effectively disseminate information about our clinical trials to the patient population and access of patients to such information, eligibility and exclusion criteria for the trial in question, design of the trial protocol, availability, efficacy of, and our ability to compete with approved and standard of care therapies or other clinical trials for the disease or condition under investigation, perceived risks and benefits of the product candidate under trial or testing, availability of genetic testing for potential patients, efforts to facilitate timely enrollment in clinical trials, patient referral practices of physicians, ability to obtain and maintain subject consent, the risk that enrolled subjects will drop out before completion of the trial, the ability to monitor patients adequately during and after treatment, the time and financial commitments required of patients to enroll in our trials beyond the costs we cover, and the proximity and availability of and access to clinical trial sites for prospective patients. Furthermore, we rely on CROs and clinical trial sites to ensure the proper and timely conduct of our clinical trials, and while we have agreements governing their committed activities, we have limited influence over their actual performance.

Any inability to successfully initiate or complete clinical trials could result in additional costs to us or impair our ability to generate revenue. In addition, if we make manufacturing or formulation changes to our product candidates, we may be required, or we may elect to conduct additional studies to bridge our modified product candidates to earlier versions. Clinical trial delays could also shorten any periods during which our products have patent protection and may allow our competitors to bring products to market before we do, which could impair our ability to successfully commercialize our product candidates and may seriously harm our business.

We could also encounter delays if a clinical trial is suspended or terminated by us, by the data safety monitoring board for such trial or by the FDA or any other regulatory authority, or if the IRBs of the institutions in which such trials are being conducted suspend or terminate the participation of their clinical investigators and sites subject to their review. Such authorities may suspend or terminate a clinical trial due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a product candidate, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial.

Delays in the completion of any clinical trial of our product candidates will increase our costs, slow down our product candidate development and approval process and delay or potentially jeopardize our ability to commence product sales and generate revenue. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates and could seriously harm our business.

The limited number of patients who have the diseases for which many of our product candidates are being studied may make it more difficult for us to enroll or complete clinical trials or may result in findings in our clinical trials that do not reach levels of statistical significance sufficient for marketing approval.

Many of the conditions for which we plan to evaluate our current product candidates in clinical trials are rare genetic diseases. Accordingly, there are limited patient pools from which to draw for clinical trials. In addition to the rarity of these diseases, the eligibility criteria of our clinical trials will further limit the pool of available study participants as we will require that patients have specific characteristics that we can measure to assure their disease is either severe enough or not too advanced to include them in a trial. We or our collaborators may not be able to initiate or continue clinical trials on a timely basis or at all for any of our product candidates if we or our collaborators are unable to locate and enroll a sufficient number of eligible patients to participate in the trials as required by applicable regulations or as needed to provide appropriate statistical power for a given trial. Similarly, because many of the conditions we intend to treat are rare in nature, we plan to design and conduct clinical trials utilizing a small number of patients in order to evaluate the safety and therapeutic activity of our product candidates. Conducting trials in smaller subject populations increases the risk that any safety or efficacy issues observed in only a few patients could prevent such trials from reaching statistical significance or otherwise meeting their specified endpoints, which could require us to conduct additional clinical trials, or delay or prevent our product candidates from receiving regulatory approval, which would seriously harm our business.

Research and development of biopharmaceutical products is inherently risky. We cannot give any assurance that any of our product candidates will receive regulatory approval, which is necessary before they can be commercialized or if they will ever be successfully commercialized.

Aside from 4D-150, our product candidates are at an early stage of development. Our future success is dependent on our ability to successfully develop, obtain regulatory approval for, and then successfully commercialize our product candidates, and we may fail to do so for many reasons, including the following:

- our product candidates may not successfully complete preclinical studies or clinical trials;
- a product candidate may on further study be shown to have harmful side effects or other characteristics that indicate it does not meet applicable regulatory criteria;
- our competitors may develop therapeutics that render our product candidates obsolete or less attractive;
- our competitors may develop platform technologies that render our Therapeutic Vector Evolution platform technology obsolete or less attractive;
- the product candidates and Therapeutic Vector Evolution platform technology that we develop may not be sufficiently covered by intellectual property for which we hold exclusive rights or may be covered by third-party patents or other intellectual property or exclusive rights;
- the market for a product candidate may change so that the continued development of that product candidate is no longer reasonable or commercially attractive;
- a product candidate may not be capable of being produced in commercial quantities at an acceptable cost, or at all;
- if a product candidate obtains regulatory approval, we may be unable to establish sales and marketing capabilities, or successfully market such approved product candidate;
- delays in our clinical development plans due to public health emergencies; and
- a product candidate may not be accepted as safe and effective by patients, the medical community or third-party payors.

If any of these events occur, we or our collaborators may be forced to abandon our development efforts for a product candidate or candidates, which would seriously harm our business. Failure of a product candidate may occur at any stage of preclinical or clinical development, and, because most of our product candidates and our Therapeutic Vector Evolution platform technology are in an early stage of development, there is a relatively higher risk of failure, and we may never succeed in developing marketable products or generating product revenue.

We may not be successful in our efforts to further develop our Therapeutic Vector Evolution platform technology and current product candidates. We are not permitted to market or promote any of our product candidates before we receive regulatory approval from the FDA or comparable foreign regulatory authorities, and we may never receive such regulatory approval for any of our product candidates. Aside from 4D-150, each of our product candidates is in the early stages of development and will require significant additional clinical development, management of preclinical, clinical, and manufacturing activities, regulatory approval, adequate manufacturing supply, a commercial organization, and significant marketing efforts before we generate any revenue from product sales, if at all. Any clinical trials that we may conduct may not demonstrate the efficacy and safety necessary to obtain regulatory approval to market our product candidates. If the results of our ongoing or future clinical trials are inconclusive with respect to the efficacy of our product candidates or if we do not meet the clinical endpoints with statistical significance or if there are safety concerns or adverse events associated with our product candidates, we may be prevented or delayed in obtaining marketing approval for our product candidates.

If any of our product candidates successfully complete clinical trials, we generally plan to seek regulatory approval to market our product candidates in the United States, the EU, and in additional foreign countries where we believe there is a viable commercial opportunity. We have never commenced, compiled or submitted an application seeking regulatory approval to market any product candidate, which may impede our ability to secure approval and successfully launch our therapies. We may never receive regulatory approval to market any product candidates even if such product candidates successfully complete clinical trials, which would seriously harm our business. To obtain regulatory approval in countries outside the United States, we must comply with numerous and varying regulatory requirements of such other countries regarding safety, efficacy, purity, potency, chemistry, manufacturing and controls, clinical trials, commercial sales, pricing and distribution of our product candidates. We may also rely on our collaborators or collaboration partners to conduct the required activities to support an application for regulatory approval, and to seek approval, for one or more of our product candidates. We cannot be sure that our collaborators or collaboration partners will conduct these activities successfully or do so within the timeframe we desire. Even if we (or our collaborators or collaboration partners) are successful in obtaining approval in one jurisdiction, we cannot assure you that we will obtain approval in any other jurisdictions. Failure to obtain approval for our product candidates in multiple jurisdictions will seriously harm our business.

Even if we receive regulatory approval to market any of our product candidates, we cannot assure you that any such product candidate will be successfully commercialized, widely accepted in the marketplace or more effective than other commercially available alternatives. Any approval we may obtain could be for indications or patient populations that are not as broad as intended or desired or may require labeling that includes significant use or distribution restrictions or safety warnings. We may also be required to perform additional or unanticipated clinical trials to obtain approval or be subject to additional post-marketing testing requirements to maintain approval. In addition, regulatory authorities may withdraw their approval of a product or impose restrictions on its distribution, such as in the form of a REMS. The failure to obtain timely regulatory approval of product candidates, any product marketing limitations or a product withdrawal would seriously harm our business.

Investment in biopharmaceutical product development involves significant risk that any product candidate will fail to demonstrate adequate efficacy or an acceptable safety profile, gain regulatory approval, and become commercially viable. We cannot assure you that we will be able to successfully advance any of our product candidates through the development process or, if approved, successfully commercialize any of our product candidates.

Public health crises such as pandemics or similar outbreaks have affected and could continue to seriously and adversely affect our preclinical and clinical trials, business, financial condition and results of operations.

Public health crises, such as pandemics or similar outbreaks, could result in public health guidance measures, including in the locations of our offices, clinical trial sites, key vendors and partners. We expect that our clinical development program timelines could be negatively affected by such pandemics, any public health orders or measures implemented in response to such pandemics, or residual effects thereof, which could seriously harm our business.

Disruptions at the FDA and other government agencies caused by funding shortages, staffing limitations or policy changes could hinder their ability to hire, retain or deploy key leadership and other personnel, or otherwise prevent new or modified products from being developed, approved or commercialized in a timely manner or at all.

The ability of the FDA and foreign regulatory authorities to review and/or approve new products can be affected by a variety of factors, including government budget, personnel, and funding levels, statutory, regulatory, and policy changes, the FDA's and foreign regulatory authorities' ability to hire and retain key personnel and accept the payment of user fees, and other events that may otherwise affect the FDA's or foreign regulatory authorities' ability to perform routine functions. Average review times at the FDA and foreign regulatory authorities have fluctuated in recent years as a result. In addition, government funding of other government agencies that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable. Disruptions at the FDA and other agencies may also slow the time necessary for new drugs and biologics to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. For example, over the last several years, the U.S. government has shut down several times and certain regulatory agencies, such as the FDA, have had to furlough critical FDA employees and stop critical activities. In addition, the current U.S. Presidential administration has issued certain policies and Executive Orders directed towards reducing the employee headcount and costs associated with U.S. administrative agencies, including the FDA, which have resulted in substantial personnel changes, and it remains unclear the degree to which these efforts may limit or otherwise adversely affect the FDA's ability to conduct routine activities.

If a prolonged government shutdown occurs, or if funding shortages, staffing limitations, or policy changes prevent the FDA or other regulatory authorities from conducting their regular inspections, reviews, or other regulatory activities, such events could significantly impact the ability of the FDA or such other regulatory authorities to timely review and process our regulatory submissions, which could seriously harm our business.

Our clinical trials may fail to demonstrate substantial evidence of the safety and efficacy of our product candidates, which would prevent, delay or limit the scope of regulatory approval and commercialization, which could seriously harm our business.

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

Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. The results of preclinical studies of our product candidates may not be predictive of the results of early-stage or later-stage clinical trials, and results of early clinical trials of our product candidates may not be predictive of the results of later-stage clinical trials. The results of clinical trials in one set of patients or disease indications may not be predictive of those obtained in another. In some instances, there can be significant variability in safety or efficacy results between different clinical trials of the same product candidate due to numerous factors, including changes in trial procedures set forth in protocols, differences in the size and type of the patient populations, changes in and adherence to the dosing regimen and other clinical trial protocols and the rate of dropout among clinical trial participants. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy profile despite having progressed through preclinical studies and initial clinical trials. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or unacceptable safety issues, notwithstanding promising results in earlier trials. Most product candidates that begin clinical trials are never approved by regulatory authorities for commercialization.

We have limited experience in designing clinical trials and may be unable to design and execute a clinical trial to support marketing approval. We cannot be certain that our ongoing and planned clinical trials or any other future clinical trials will be successful. Additionally, any safety concerns observed in any one of our clinical trials in our targeted indications could limit the prospects for regulatory approval of our product candidates in those and other indications, which could seriously harm our business.

Further, even if such clinical trials are successfully completed, we cannot assure you that the FDA or foreign regulatory authorities will interpret the results as we do, and more trials could be required before we submit our product candidates for approval. To the extent that the results of the trials are not satisfactory to the FDA or foreign regulatory authorities for support of a marketing application, we may be required to expend significant additional resources, which may not be available to us, to conduct additional trials in support of potential approval of our product candidates. Even if regulatory approval is secured for any of our product candidates, the terms of such approval may limit the scope and use of our product candidate, which may also limit its commercial potential.

In addition, the FDA's and other regulatory authorities' policies with respect to clinical trials may change, and additional government regulations may be enacted. For instance, the regulatory landscape related to clinical trials in the EU recently evolved. The EU Clinical Trials Regulation ("CTR"), which was adopted in April 2014 and repealed the EU Clinical Trials Directive, became applicable on January 31, 2022, with a three-year transition period. The CTR provides for a centralized process and only requires the submission of a single application for multi-center trials. The CTR allows sponsors to make a single submission to both the competent authority and an ethics committee in each member state, leading to a single decision per member state. The assessment procedure of the CTA has been harmonized as well, including a joint assessment by all member states concerned, and a separate assessment by each member state with respect to specific requirements related to its own territory, including ethics rules. Each member state's decision is communicated to the sponsor via the centralized EU portal. Once the CTA is approved, clinical study development may proceed. As of February 1, 2025, all clinical trials (including those which are ongoing) in the EU are subject to the provisions of the CTR. Compliance with the CTR requirements by us and our third-party service providers, such as CROs, may impact our development plans in the EU.

Interim, "top-line" and preliminary data from studies or trials that we announce or publish from time to time may change as more data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we publicly disclose top-line or preliminary data from 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 related to the particular study or trial. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. As a result, the top-line or preliminary results that we report may differ from future results of the same studies, or different conclusions or considerations may qualify such results, once additional data have been received and fully evaluated. Preliminary or "top-line" data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, top-line and preliminary data should be viewed with caution until the final data are available.

From time to time, we also disclose interim data from our preclinical studies and clinical trials. Interim data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Adverse differences between preliminary, top-line or interim data and final data could seriously harm our business.

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 program, the approvability or commercialization of the particular product candidate or product and our company in general. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial is based on what we determine to be material information, and you or others may not agree with what we determine is the material or otherwise appropriate information to include in our disclosure. Any information we determine not to disclose may ultimately be deemed significant by you or others with respect to future decisions, conclusions, views, activities or otherwise regarding a particular product candidate or our business. If the top-line or interim data that we report differ from final results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, product candidates may be harmed, which could seriously harm our business.

We may not be successful in our efforts to continue to create a pipeline of product candidates or to develop commercially successful products. If we fail to successfully identify and develop additional product candidates, our commercial opportunity may be limited, which could seriously harm our business.

One of our strategies is to identify and pursue preclinical and clinical development and commercialization of additional product candidates through our Therapeutic Vector Evolution platform technology. Our Therapeutic Vector Evolution platform technology may not produce a pipeline of viable product candidates, or our competitors may develop platform technologies that render our Therapeutic Vector Evolution platform technology obsolete or less attractive. Our research methodology may be unsuccessful in identifying potential product candidates or our potential product candidates may be shown to have harmful side effects or may have other characteristics that may make them unmarketable or unlikely to receive marketing approval. Identifying, developing and obtaining regulatory approval and commercializing additional product candidates will require substantial funding and is prone to the risks of failure inherent in drug development. If we are unable to successfully identify, acquire, develop and commercialize additional product candidates, our commercial opportunity may be limited, which could seriously harm our business.

We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.

The development and commercialization of new drug products is highly competitive. We may face competition with respect to any product candidates that we seek to develop or commercialize in the future from major pharmaceutical companies and biotechnology companies worldwide. Potential competitors also include academic institutions, government agencies, and other public and private research organizations that conduct research, seek patent protection, and establish collaborative arrangements for research, development, manufacturing, and commercialization.

There are a number of large pharmaceutical and biotechnology companies that are currently pursuing the development of products for the treatment of the indications for which we have product candidates, including wet AMD, DME, GA and cystic fibrosis. Certain of our competitors have commercially approved products for the treatment of the diseases that we are pursuing or may pursue in the future, including Apellis Pharmaceuticals Inc., Astellas Pharma Inc., Regeneron Pharmaceuticals Inc., Roche and Vertex Pharmaceuticals Incorporated. These drugs are well established therapies and are widely accepted by physicians, patients and third-party payors, which may make it difficult to convince these parties to switch to our product candidates. Companies that we are aware are developing therapeutics in the retina and pulmonology disease areas include large companies with significant financial resources, such as AbbVie Inc., Astellas Pharma Inc., Eli Lilly and Company, Johnson & Johnson, Merck & Company Inc., Regeneron Pharmaceuticals Inc., Roche, Sanofi and Vertex Pharmaceuticals Incorporated, and biopharmaceutical companies such as Apellis Pharmaceuticals Inc., Arcturus Therapeutics Holdings Inc., EyePoint Inc., Kodiak Sciences Inc., Krystal Biotech Inc., Ocular Therapeutix Inc., Recode Therapeutics Inc., REGENXBIO Inc. and Sionna Therapeutics Inc. In addition to competition from other companies targeting retina and pulmonology, any products we may develop may also face competition from other types of therapies, such as gene-editing therapies and drug delivery devices.

Many of our current or potential competitors, either alone or with their strategic partners, 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 industries 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 and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our product candidates. Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient, or are less expensive than any products that we may develop. Furthermore, currently approved products could be discovered to have application for treatment of retina and pulmonology indications, which could give such products significant regulatory and market timing advantages over any of our product candidates. Our competitors also may obtain FDA, EMA or other regulatory approval for their products more rapidly than we may obtain approval for ours. Additionally, products or technologies developed by our competitors may render our potential product candidates uneconomical or obsolete, and we may not be successful in marketing against competitors any product candidates we may develop.

If, in the future, we are unable to establish sales and marketing capabilities or enter into agreements with third parties to sell and market any product candidates we may develop, we may not be successful in commercializing those product candidates if and when they are approved.

We do not have a sales or marketing infrastructure and have no experience in the sale, marketing or distribution of pharmaceutical products. To achieve commercial success for any approved product for which we retain sales and marketing responsibilities, we must either develop a sales and marketing organization or outsource these functions to third parties. In the future, we may choose to build a focused sales, marketing and commercial support infrastructure to sell, or participate in sales activities with our collaborators for some of our product candidates if and when they are approved.

There are risks involved with both establishing our own commercial capabilities and entering into arrangements with third parties to perform these services. For example, recruiting and training a sales force or reimbursement specialists is expensive and time consuming and could delay any product launch. If the commercial launch of a product candidate for which we recruit a sales force and establish marketing and other commercialization capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses. This may be costly, and our investment would be lost if we cannot retain or reposition our commercialization personnel.

Factors that may inhibit our efforts to commercialize any approved product on our own include:

- our inability to recruit and retain adequate numbers of effective sales, marketing, reimbursement, compliance, customer service, medical affairs and other support personnel;
- our inability to recruit and build a commercial infrastructure;
- the inability of sales personnel to obtain access to physicians or persuade adequate numbers of physicians to prescribe any future approved products;
- the inability of reimbursement professionals to negotiate arrangements for formulary access, reimbursement, and other acceptance by payors;
- the inability to price our products at a sufficient price point to ensure an adequate and attractive level of profitability;
- restricted or closed distribution channels that make it difficult to distribute our products to segments of the patient population;
- the lack of complementary products to be offered by sales personnel, which may put us at a competitive disadvantage relative to companies with more extensive product lines; and
- unforeseen costs and expenses associated with creating an independent commercialization organization.

If we enter into arrangements with third parties to perform sales, marketing, commercial support and distribution services, our product revenue or the profitability of product revenue may be lower than if we were to market and sell any products we may develop ourselves. In addition, we may not be successful in entering into arrangements with third parties to commercialize our product candidates or may be unable to do so on terms that are favorable to us. We may have little control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our products effectively. If we do not establish commercialization capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing our product candidates if approved and our business would be seriously harmed.

Even if any product candidates we develop receive marketing approval, they may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

The commercial success of any of our product candidates will depend upon its degree of market acceptance by physicians, patients, third-party payors and others in the medical community. Even if any product candidates we may develop receive marketing approval, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors and others in the medical community. The degree of market acceptance of any product candidates we may develop, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and safety of such product candidates as demonstrated in pivotal clinical trials and published in peer-reviewed journals;
- the potential and perceived advantages compared to alternative treatments;
- the ability to offer our products for sale at competitive prices;

- the ability to offer appropriate patient access programs, such as co-pay assistance;
- sufficient third-party coverage or reimbursement;
- the extent to which physicians recommend our products to their patients;
- convenience and ease of dosing and administration compared to alternative treatments;
- the clinical indications for which the product candidate is approved by FDA, EMA or other regulatory agencies;
- product labeling or product insert requirements of the FDA, EMA or other comparable foreign regulatory authorities, including any limitations, contraindications or warnings contained in a product's approved labeling;
- restrictions on how the product is distributed;
- the timing of market introduction of competitive products;
- publicity concerning our products or competing products and treatments;
- the strength of marketing and distribution support; and
- the prevalence and severity of any side effects.

If any product candidates we develop do not achieve an adequate level of acceptance, we may not generate significant product revenue, and we may not become profitable and our business could be seriously harmed.

Risks Related to Manufacturing

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

We currently manufacture and test clinical trial material for our products both internally at our cGMP facility, and externally at our partner CDMOs. Our product candidates require processing steps that are more complex than those required for most chemical and protein pharmaceuticals. Moreover, unlike chemical pharmaceuticals, the physical and chemical properties of a biologic such as ours generally cannot be fully characterized. As a result, assays of the finished product may not be sufficient to ensure that the product will perform in the intended manner. Accordingly, we employ multiple steps to control our manufacturing process to assure that the process works and the product candidate is made strictly and consistently in compliance with the process. Problems with the manufacturing process, even minor deviations from the normal process, could result in product defects or manufacturing failures that result in lot failures, product recalls, product liability claims or insufficient inventory, which could delay or prevent the initiation of clinical trials or receipt of regulatory approvals. We may encounter problems achieving adequate quantities and quality of clinical-grade materials that meet FDA, or other comparable applicable foreign standards or specifications with consistent and acceptable production yields and costs.

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

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

Any problems in our manufacturing process or the facilities with which we contract could make us a less attractive collaborator for potential partners, including larger pharmaceutical companies, which could limit our access to additional attractive development programs. Problems in manufacturing processes or facilities also could restrict our ability to meet market demand for our products. Additionally, should our supply needs exceed our internal capabilities and supply agreements with other parties with whom we have manufacturing agreements be terminated for any reason, there are a limited number of manufacturers who would be suitable replacements, and it would take a significant amount of time to transition the manufacturing to an alternative manufacturing organization.

Delays in obtaining regulatory approval of our manufacturing process or disruptions in our manufacturing process may delay or disrupt our commercialization efforts.

Before we can begin to commercially manufacture our product candidates in third-party or our own facilities, we must obtain regulatory approval from the FDA to market our product using the manufacturing process and facility we proposed in our marketing application. In addition, we must successfully complete a pre-approval inspection of our manufacturing facility by the FDA before any of our product candidates can obtain marketing approval, if ever. In order to obtain approval of a Biologics License Application ("BLA") for our product candidates, we will need to ensure that all of our manufacturing processes, methods and equipment are compliant with cGMP, and perform extensive audits of vendors, contract laboratories and suppliers. If any of our vendors, contract laboratories or suppliers is found to be out of compliance with cGMP, we may experience delays or disruptions in manufacturing while we work with these third parties to remedy the violation or while we work to identify suitable replacement vendors. The cGMP requirements govern quality control of the manufacturing process and documentation policies and procedures. In complying with cGMP, we will be obligated to expend time, money and effort in production, record keeping and quality control to assure that the product meets applicable specifications and other requirements. If we fail to comply with these requirements, we would be subject to possible regulatory action and may not be permitted to sell any products that we may develop. Similar risks may exist in foreign jurisdictions.

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

We have approximately 17,000 square feet of laboratory and manufacturing space at our headquarters in Emeryville, California, a large portion of which we plan to devote to manufacturing activities for our clinical trials under cGMP. We may face delays in the production of clinical supply at our manufacturing facility and cannot guarantee when our facility will be able to produce sufficient quantities of product candidates needed to support our planned clinical trials. Any delays in developing our internal manufacturing capabilities may disrupt or delay the supply of our product candidates if we have not maintained a sufficient back-up supply of such product candidates through third-party manufacturers. Moreover, changing manufacturing facilities during the clinical development process may also require that we or our collaborators conduct additional studies, make notifications to regulatory authorities, make additional filings to regulatory authorities, and obtain regulatory authority approval for the new facilities, which may be delayed or which we may never receive. We will further need to comply with the FDA's and applicable foreign regulatory authorities' cGMP requirements for the production of product candidates for clinical trials and, if approved, commercial supply, and will be subject to FDA and comparable foreign regulatory authority inspection. These requirements include the qualification and validation of our manufacturing equipment and processes. We may not be able to develop or acquire the internal expertise and resources necessary for compliance with these requirements.

In order to develop internal manufacturing expertise, we may be forced to devote greater resources and management time than anticipated, particularly in areas relating to operations, quality, regulatory, facilities and information technology. We also may encounter problems hiring and retaining the experienced scientific, quality control and manufacturing personnel needed to operate our manufacturing processes. If we experience unanticipated employee shortage or turnover in any of these areas, we may not be able to effectively manage our ongoing manufacturing operations and we may not achieve the operating efficiencies that we anticipate from developing these capabilities, which may negatively affect our product development timeline or result in difficulties in maintaining compliance with applicable regulatory requirements. Any such problems could result in the delay, prevention or impairment of clinical development and commercialization of our product candidates and would seriously harm our business.

We currently rely and expect to continue to rely on third parties to conduct product manufacturing for certain of our product candidates, and these third parties may not perform satisfactorily.

We currently rely, and expect to continue to rely, on third parties for the production of some of our planned clinical trial drugs and commercial drug materials and, therefore, we can control only certain aspects of their activities. The facilities used by our contract manufacturers to manufacture certain of our product candidates must be reviewed by the FDA pursuant to inspections that will be conducted after we submit a BLA to the FDA. We do not control the manufacturing process of, and are completely dependent on, our contract manufacturing partners for compliance with the cGMP or similar foreign requirements for manufacture of our products. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or others, we will not be able to obtain and/or maintain regulatory approval for our products as manufactured at their manufacturing facilities. Further, our CDMOs may use different facilities to manufacture our product candidate(s), and we and our CDMOs will be required to meet certain regulatory conditions, such as establishing comparability between the product candidates manufactured at each facility. Our failure, or failure by our CDMOs, to demonstrate sufficient comparability between a product candidate manufactured at different facilities may cause a delay in using a manufacturing facility for production, extend our clinical trial timelines and adversely impact our regulatory approval process. In addition, we have no control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved.

In addition, we rely on additional third parties to manufacture plasmids used in the manufacture of our product candidates and to perform quality testing, and reliance on these third parties entails risks to which we would not be subject if we manufactured the plasmids ourselves, including:

- reduced control over certain aspects of manufacturing activities;
- termination or nonrenewal of manufacturing and service agreements with third parties in a manner or at a time that is costly or damaging to us; and
- disruptions to the operations of our third-party manufacturers and service providers caused by conditions unrelated to our business or operations, including the bankruptcy of the manufacturer or service provider.

Any of these events could lead to clinical trial delays or failure to obtain regulatory approval, or impact our ability to successfully commercialize future product candidates. Some of these events could be the basis for FDA or EU member state competent authority action, including injunction, recall, seizure or total or partial suspension of product manufacture.

Any contamination in our manufacturing process, shortages of raw materials or failure of any of our key suppliers to deliver necessary components could result in delays in our research studies, preclinical, and clinical development or marketing schedules.

Given the nature of biologics manufacturing, there is a risk of contamination during manufacturing. Any contamination could materially harm our ability to produce product candidates on schedule and could harm our results of operations and cause reputational damage.

Some of the raw materials required in our manufacturing process, such as plasmids, 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 seriously harm our business.

We depend on third-party suppliers for key raw materials used in our manufacturing processes, and the loss of these third-party suppliers or their inability to supply us with adequate raw materials could seriously harm our business.

We rely on third-party suppliers for the raw materials required for the production of our product candidates. Third-party suppliers could increase their prices or be unable to supply us with adequate raw materials, on a timely basis or at all, for a variety of reasons, including potential restrictions on trade or tariffs. Our dependence on these third-party suppliers and the challenges we may face in obtaining adequate supplies of raw materials involve several risks, including limited control over pricing, availability, quality and delivery schedules. As a small company, our negotiation leverage is limited, and we are likely to get lower priority than our competitors who are larger than we are. We cannot be certain that our suppliers will continue to provide us with the quantities of these raw materials that we require or satisfy our anticipated specifications and quality requirements. Any interruption in supply of 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 supplier 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 seriously harm our business.

Risks Related to Regulatory Approval and Other Legal Compliance Matters

The regulatory approval processes of the FDA, EMA and comparable foreign regulatory authorities are lengthy, expensive, time consuming, and inherently unpredictable. If we are ultimately unable to obtain regulatory approval for our product candidates, we will be unable to generate product revenue and our business will be substantially harmed.

We and any collaborators are not permitted to commercialize, market, promote or sell any product candidate in the United States without obtaining marketing approval from the FDA. Foreign regulatory authorities impose similar requirements. The time required to obtain approval by the FDA and comparable foreign regulatory authorities is unpredictable, typically takes many years following the commencement of clinical trials and depends upon numerous factors, including the type, complexity and novelty of the product candidates involved. In addition, approval policies, regulations or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions, which may cause delays in the approval or the decision not to approve an application. 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 studies. We have not submitted for or obtained regulatory approval for any product candidate. We and any collaborators must complete additional preclinical or nonclinical studies and clinical trials to demonstrate the safety and efficacy of our product candidates in humans to the satisfaction of the regulatory authorities before we will be able to obtain these approvals, and it is possible that none of our existing product candidates or any product candidates we may seek to develop in the future will ever obtain regulatory approval.

Applications for our product candidates could fail to receive regulatory approval for many reasons, including but not limited to the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design, implementation or results of our or our collaborators' clinical trials;
- the FDA or comparable foreign regulatory authorities may determine that our product candidates are not safe and effective, only moderately effective or have undesirable or unintended side effects, toxicities or other characteristics that preclude our obtaining marketing approval or prevent or limit commercial use of our products;
- the population studied in the clinical program may not be sufficiently broad or representative to assure efficacy and safety in the full population for which we seek approval;
- we or our collaborators may be unable to demonstrate to the FDA, or comparable foreign regulatory authorities that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our or our collaborators' interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of a BLA or other submission or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes, test procedures and specifications, 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 or our collaborators' clinical data insufficient for approval.

This lengthy approval process, as well as the unpredictability of the results of clinical trials, may result in our failing to obtain regulatory approval to market any of our product candidates, which would seriously harm our business.

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

We may attempt to secure approval from the FDA or comparable foreign regulatory authorities through the use of accelerated approval pathways. If we are unable to obtain such approval, we may be required to conduct additional clinical trials beyond those that we contemplate, which could increase the expense of obtaining, and delay the receipt of, necessary marketing approvals. Even if we receive accelerated approval from the FDA, if our confirmatory trials do not verify clinical benefit, or if we do not comply with rigorous post-marketing requirements, the FDA may seek to withdraw accelerated approval.

We may in the future seek an accelerated approval for one or more of our product candidates. Under the accelerated approval program, the FDA may grant accelerated approval to a product candidate designed to treat a serious or life-threatening condition that provides meaningful therapeutic benefit over available therapies upon a determination that the product candidate has an effect on a surrogate endpoint or intermediate clinical endpoint that is reasonably likely to predict clinical benefit. The FDA considers a clinical benefit to be a positive therapeutic effect that is clinically meaningful in the context of a given disease, such as irreversible morbidity or mortality. For the purposes of accelerated approval, a surrogate endpoint is a marker, such as a laboratory measurement, radiographic image, physical sign, or other measure that is thought to predict clinical benefit but is not itself a measure of clinical benefit. An intermediate clinical endpoint is a clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit. The accelerated approval pathway may be used in cases in which the advantage of a new drug over available therapy may not be a direct therapeutic advantage but is a clinically important improvement from a patient and public health perspective. If granted, accelerated approval is usually contingent on the sponsor's agreement to conduct, in a diligent manner, confirmatory studies to verify and describe the drug's clinical benefit. If such confirmatory studies fail to confirm the drug's clinical benefit, or if the sponsor fails to conduct required confirmatory studies in a timely manner, the FDA may withdraw its approval of the drug on an expedited basis. In addition, in December 2022, the Food and Drug Omnibus Reform Act of 2022 provided FDA additional statutory authority to mitigate potential risks to patients from continued marketing of ineffective drugs previously granted accelerated approval. Under these provisions, the FDA may require a sponsor of a product seeking accelerated approval to have a confirmatory trial underway prior to such approval being granted.

Prior to seeking accelerated approval for any of our product candidates, we intend to seek feedback from the FDA and will otherwise evaluate our ability to seek and receive accelerated approval. There can be no assurance that after our evaluation of the feedback and other factors we will decide to pursue or submit a BLA for accelerated approval or any other form of expedited development, review or approval. Furthermore, if we decide to submit an application for accelerated approval for any of our product candidates, there can be no assurance that such submission or application will be accepted or that any expedited development, review or approval will be granted on a timely basis, or at all. The FDA or other comparable foreign regulatory authorities could also require us to conduct further studies prior to considering our application or granting approval of any type. A failure to obtain accelerated approval or any other form of expedited development, review or approval for our product candidate would result in a longer time period to commercialization of such product candidate, if any, could increase the cost of development of such product candidate and could harm our competitive position in the marketplace.

Even if we or our collaborators obtain regulatory approval for a product candidate, our products will remain subject to regulatory scrutiny.

If one of our product candidates is approved, it will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping, conduct of post-marketing studies, and submission of safety, efficacy, and other post- market information, including both federal and state requirements in the United States and requirements of comparable foreign regulatory authorities.

Manufacturers and manufacturers' facilities are required to comply with extensive FDA and comparable foreign regulatory authority requirements, including ensuring that quality control and manufacturing procedures conform to cGMP regulations or similar foreign requirements. As such, we and our contract manufacturers will be subject to continual review and inspections to assess compliance with cGMP or similar foreign requirements and adherence to commitments made in any approved marketing application. Accordingly, we and others with whom we work must continue to expend time, money and effort in all areas of regulatory compliance, including manufacturing, production, and quality control.

We will have to comply with requirements concerning advertising and promotion for our products. Promotional communications with respect to prescription drugs and biologics are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved label. As such, we may not promote our products "off-label" for indications or uses for which they do not have approval, though we may share truthful and not misleading information that is otherwise consistent with our product's approved labeling. The holder of an approved application must submit new or supplemental applications and obtain approval for certain changes to the approved product, product labeling, or manufacturing process. We could also be asked to conduct post-marketing clinical studies to verify the safety and efficacy of our products in general or in specific patient subsets. An unsuccessful post-marketing study or failure to complete such a study could result in the withdrawal of marketing approval or label restrictions.

If a regulatory agency discovers previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, or disagrees with the promotion, marketing or labeling of a product, such regulatory agency may impose restrictions on that product or us, including requiring withdrawal of the product from the market. If we fail to comply with applicable regulatory requirements, a regulatory agency or enforcement authority may, among other things:

- issue warning letters;
- impose civil or criminal penalties;
- suspend or withdraw regulatory approval;
- suspend any of our clinical trials;
- refuse to approve pending applications or supplements to approved applications submitted by us;
- impose restrictions on our operations, including closing our manufacturing facility or our contract manufacturers' facilities; or
- seize or detain products, or require a product recall.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response and could generate negative publicity. Any failure to comply with ongoing regulatory requirements may adversely affect our ability to commercialize and generate revenue from our products. If regulatory sanctions are applied or if regulatory approval is withdrawn, our business will be seriously harmed.

Moreover, the policies of the FDA and of other regulatory authorities may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. 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 be subject to enforcement action and we may not achieve or sustain profitability.

We have received orphan drug designation for 4D-710 for cystic fibrosis, and we may seek orphan drug designation for certain future product candidates. However, 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 in the United States for 4D-710 for the treatment of cystic fibrosis. 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 biologic 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. Orphan designation is granted by the European Commission ("EC") based on a scientific opinion of the EMA's Committee for Orphan Medicinal Products ("COMP"). A medicinal product may be designated as orphan if its sponsor can establish that (i) the product is intended for the diagnosis, prevention, or treatment of a life-threatening or chronically debilitating condition; (ii) either (a) such condition affects no more than five in 10,000 persons in the EU when the application is made, or (b) the product, without the benefits derived from orphan status, would not generate sufficient return in the EU to justify investment; and (iii) there exists no satisfactory method of diagnosis, prevention or treatment of such condition authorized for marketing in the EU, or if such a method exists, the medicinal product will be of significant benefit to those affected by the condition. The application for orphan designation must be submitted before the application for marketing authorization.

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 disease or condition 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 approved use or indication within such rare disease or condition 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 a disease or condition broader than the orphan designated disease or condition and may be lost if the FDA later determines that the request for designation was materially defective. In the EU, orphan designation entitles a party to financial incentives such as reduction of fees, fee waivers, protocol assistance, and access to the centralized marketing authorization procedure. Moreover, upon grant of a marketing authorization and assuming the requirement for orphan designation are also met at the time the marketing authorization is granted, orphan medicinal products are entitled to a ten-year period of market exclusivity for the approved therapeutic indication. The period of market exclusivity is extended by two years for orphan medicinal products that have also complied with an agreed Pediatric Investigation Plan ("PIP"). The European exclusivity period can be reduced to six years, if, at the end of the fifth year a medicine no longer meets the criteria for orphan designation (i.e. the prevalence of the condition has increased above the orphan designation threshold or it is judged that the product is sufficiently profitable so as not to justify maintenance of market exclusivity).

Even if we obtain orphan drug designation, 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 a product candidate, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same uses or indications within the same rare disease or condition. Even after an orphan drug is approved, the FDA and foreign regulatory authorities can subsequently approve the same drug for the same approved use or indication within the same rare disease or condition if the FDA or foreign regulatory authorities 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 Regenerative Medicine Advanced Therapy ("RMAT") and PRIority MEdicines ("PRIME") designation for 4D-150 for the treatment of wet AMD and RMAT designation for 4D-150 for treatment of DME. We may seek RMAT and PRIME designations for certain future product candidates, however we may not be able to obtain such designations, and there is no guarantee that 4D-150 will experience a faster regulatory review or obtain regulatory approval.

The FDA has granted RMAT designation for 4D-150 for the treatment of neovascular (wet) age-related macular degeneration and diabetic macular edema, and may seek additional RMAT designations for 4D-150 or for our other product candidates. A biological product candidate is eligible for RMAT designation if: (1) it meets the definition of a regenerative medicine therapy, which the FDA defines 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) the candidate is intended to treat, modify, reverse, or cure a serious disease or condition; and (3) preliminary clinical evidence indicates that the candidate has the potential to address unmet medical needs for such disease or condition. 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 of BLAs. Product candidates 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 through reliance upon data obtained from a meaningful number of sites, including through expansion of clinical trials to a sufficient number of sites, as appropriate. RMAT-designated product candidates that receive accelerated approval may, as appropriate, be able to fulfill their post-approval requirements through the submission of clinical evidence, clinical studies, patient registries, or other sources of real-world evidence (such as electronic health records), through the collection of larger confirmatory data sets, or via post-approval monitoring of patients treated with the therapy prior to approval.

RMAT designation is within the sole discretion of the FDA. Accordingly, even if we believe one of our product candidates meets the criteria for RMAT designation, the FDA may disagree and instead determine not to make such designation. RMAT designation does not change the standards for product approval, and there is no assurance that such designation or eligibility for 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.

In the EU, 4D-150 was accepted into the PRIME scheme by the EMA's Committee for Medicinal Products for Human Use ("CHMP") for the treatment of wet AMD. In the EU, innovative products that target an unmet medical need and are expected to be of major public health interest may be eligible for a number of expedited development and review programs, such as the PRIME scheme, which was launched by the EMA in 2016 and provides incentives similar to the Breakthrough Therapy designation in the United States. PRIME is a voluntary scheme aimed at enhancing the EMA's support for the development of medicines that target an unmet medical need. It is based on increased interaction and early dialogue with companies developing promising medicines, to optimize their product development plans and speed up their evaluation to help them reach patients earlier. The benefits of a PRIME designation include the appointment of a rapporteur before submission of a marketing authorization application, early dialogue and scientific advice at key development milestones, and the potential to qualify products for accelerated review earlier in the application process.

Product developers that benefit from PRIME designation may be eligible for accelerated assessment (in 150 days instead of 210 days), which may be granted for medicinal products of major interest from a public health perspective or that target an unmet medical need, but this is not guaranteed.

Receipt of these designations does not increase the likelihood that FDA or EC will approve 4D-150 for any indication. In addition, the FDA or foreign competent authorities may rescind the designations if they believe that the designation is no longer supported by data from our clinical development program.

We have obtained a rare pediatric disease designation for 4D-710, however, there is no guarantee that FDA approval of 4D-710 will result in issuance of a priority review voucher.

In 2012, Congress authorized the FDA to award priority review vouchers to sponsors of certain rare pediatric disease product applications. This program is designed to encourage development of new drug and biological products for prevention and treatment of certain rare pediatric diseases. Specifically, under this program, a sponsor who receives an approval for a drug or biologic for a "rare pediatric disease" that meets certain criteria may qualify for a voucher that can be redeemed to receive a priority review of a subsequent marketing application for a different product. The sponsor of a rare pediatric disease drug product receiving a priority review voucher may transfer (including by sale) the voucher to another sponsor. The voucher may be further transferred any number of times before the voucher is used, as long as the sponsor making the transfer has not yet submitted the application. The FDA may also revoke any priority review voucher if the rare pediatric disease drug for which the voucher was awarded is not marketed in the U.S. within one year following the date of approval.

We have obtained a rare pediatric disease designation for 4D-710 for the treatment of cystic fibrosis, however, there is no guarantee that we will be able to obtain a priority review voucher, even if 4D-710 is approved by the FDA for this indication. For example, the FDA may determine that a BLA, even if ultimately approved, does not meet the eligibility criteria for a priority review voucher, including for the following reasons:

- the product no longer meets the definition of a rare pediatric disease;
- the product contains an active ingredient (including any ester or salt of the active ingredient) that has been previously approved in another marketing application;
- the application does not rely on clinical data derived from studies examining a pediatric population and dosages of the drug intended for that population;
- the application is approved for a different adult indication than the rare pediatric disease for which the product is designated

Moreover, Congress included a sunset provision in the statute authorizing the rare pediatric disease priority review voucher program. Under the current statutory sunset provisions, FDA may only award a voucher for an approved rare pediatric disease product application if the sponsor has rare pediatric disease designation for the product candidate, and the product candidate is approved within the designated rare pediatric disease by September 30, 2029. After September 30, 2029, FDA may not award vouchers under the program, regardless of any designation.

If the product candidates that we or our collaborators may develop receive regulatory approval in the United States or another jurisdiction, they may never receive approval in other jurisdictions, which would limit market opportunities for such product candidates and seriously harm our business.

Approval of a product candidate in the United States by the FDA or by the requisite regulatory agencies in any other jurisdiction does not ensure approval of such product candidate by regulatory authorities in other countries or jurisdictions. The approval process varies among countries and may limit our or our collaborators' ability to develop, manufacture, promote and sell product candidates internationally. Failure to obtain marketing approval in international jurisdictions would prevent the product candidates from being marketed outside of the jurisdictions in which regulatory approvals have been received. In order to market and sell product candidates in the EU and many other jurisdictions, we and our collaborators must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and may involve additional preclinical studies or clinical trials both before and after approval. In many countries, any product candidate for human use must be approved for reimbursement before it can be approved for sale in that country. In some cases, the intended price for such product is also subject to approval. Further, while regulatory approval of a product candidate in one country does not ensure approval in any other country, a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory approval process in others. If we or our collaborators fail to comply with the regulatory requirements in international markets or to obtain all required marketing approvals, the target market for a particular potential product will be reduced, which would limit our ability to realize the full market potential for the product and seriously harm our business.

Enacted and future healthcare legislation or regulation may increase the difficulty and cost for us to obtain marketing approval of and to commercialize our product candidates and may affect the prices we may set.

In the United States, the EU and other jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes to the healthcare system that could, among other things, restrict our ability to profitably sell our product candidates and could affect our future results of operations. In particular, there have been and continue to be a number of initiatives at the U.S. federal and state levels that seek to reduce healthcare costs and improve the quality of healthcare with the stated goals of containing healthcare costs, improving quality and/or expanding access. In the United States and elsewhere, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative and regulatory initiatives. We expect that current laws, as well as other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we may receive for any product candidates approved for sale. New and changing laws and regulations may also create uncertainty about how such laws and regulations will be interpreted and applied. If we are found to have violated laws and regulations, it could materially adversely affect our business, results of operations and financial condition.

For example, in 2010, the Patient Protection and Affordable Care Act (the "ACA") was enacted, which substantially changed the way healthcare is financed by both governmental and private payors. Among the provisions of the ACA of importance to our business, including, without limitation, our ability to commercialize and to obtain adequate prices for any product candidates approved for sale, are the following:

- an annual, non-deductible fee payable by any entity that manufactures or imports certain branded prescription drugs and biologic agents (other than those designated as orphan drugs), which is apportioned among these entities according to their market share in certain government healthcare programs;

- expansion of manufacturers' rebate liability under the Medicaid Drug Rebate Program by increasing the minimum rebate for both branded and generic drugs, revising the "average manufacturer price" definition, and extending rebate liability from fee-for-service Medicaid utilization to include the utilization of Medicaid managed care organizations as well; and
- establishment of a Center for Medicare & Medicaid Innovation ("CMMI") at the Centers for Medicare & Medicaid Services ("CMS") to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

Since its enactment, there have been judicial, U.S. Congressional and executive branch challenges to certain aspects of the ACA. On June 17, 2021, the U.S. Supreme Court dismissed the most recent judicial challenge to the ACA brought by several states without specifically ruling on the constitutionality of the ACA.

In addition, other legislative changes have been proposed and adopted in the United States since the ACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, led to aggregate reductions of Medicare payments to providers. In January 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. Additionally, on March 11, 2021, the American Rescue Plan Act of 2021 was signed into law, which eliminated the statutory cap on drug manufacturers' Medicaid drug rebate program liability for single source and innovator multiple source drugs, beginning January 1, 2024. The rebate was previously capped at 100% of a drug's average manufacturer price.

In 2022, the Inflation Reduction Act of 2022 ("IRA") was signed into law. Among other things, the IRA requires manufacturers of certain drugs to engage in price negotiations with Medicare, with prices that can be negotiated subject to a cap; imposes rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation (first due in 2023); redesigns the Medicare Part D benefit (beginning in 2024); and replaces the Part D coverage gap discount program with a new manufacturer discount program (beginning in 2025). CMS has published the negotiated prices for the initial ten drugs, which went into effect in 2026, and the subsequent 15 drugs, which will first be effective in 2027, as well as the next set of 15 drugs that will be subject to negotiation. The IRA permits the Secretary of the Department of Health and Human Services ("HHS") to implement many of these provisions through guidance, as opposed to regulation, for the initial years. HHS has and will continue to issue and update guidance as these programs are implemented, although the Medicare drug price negotiation program is currently subject to legal challenges. The impact of the IRA on us and the pharmaceutical industry cannot yet be fully determined, but is likely to be significant.

The One Big Beautiful Bill Act, which was enacted in July 2025, imposes significant reductions in the funding of the Medicaid program. Such reductions are expected to decrease the number of persons enrolled in Medicaid and reduce the services covered by Medicaid, which could adversely affect our sales of any other product candidate that we commercialize.

The Trump administration is pursuing a two-fold strategy to reduce drug costs in the U.S. While it is unclear whether and how the Trump administration's proposals will be implemented, the Trump administration's policies are likely to have a negative impact on the pharmaceutical industry and on our ability to receive adequate revenues for our product candidates, if approved. On the one hand, the Trump administration threatened to impose significant tariffs on pharmaceutical manufacturers that do not adopt pricing policies such as most favored nation pricing, which would tie the price for drugs in the U.S. to the lowest price in a group of other countries. In response, multiple manufacturers entered into confidential pricing agreements with the federal government. Subsequently, in April 2026, the Trump administration issued a proclamation imposing tariffs under Section 232 of the Trade Expansion Act on imports of brand pharmaceuticals, biologics and associated pharmaceutical ingredients, beginning July 31, 2026. Exempted from these tariffs, among others, are companies that have executed or are negotiating agreements with the federal government regarding most favored nation pricing and onshoring of production and research and development. On the other hand, the Trump administration is pursuing traditional regulatory pathways to impose drug pricing policies, although final regulations have not yet been published. Even regulatory proposals or executive actions that are ultimately deemed unlawful could negatively impact the U.S. pharmaceutical sector and our business. In addition, pharmaceutical pricing and marketing has long been the subject of considerable discussion in Congress and among policymakers, and it is possible that Congress could enact additional laws that negatively affect the pharmaceutical industry.

Moreover, payment methodologies may be subject to changes in healthcare legislation and regulatory initiatives. For example, CMS may develop new payment and delivery models, such as bundled payment models. In addition, recently there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several U.S. Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under government payor programs, and review the relationship between pricing and manufacturer patient assistance programs. We also expect that additional U.S. federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that the U.S. federal government will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures and could seriously harm our business.

Individual states in the United States have also increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure, drug price reporting and other transparency measures. Some states have enacted legislation creating so-called prescription drug affordability boards, which ultimately may attempt to impose price limits on certain drugs in these states, while some states are also seeking to implement general, across the board price caps for pharmaceuticals, or are seeking to regulate drug distribution. Some measures are designed to encourage importation from other countries. Legally mandated price controls on payment amounts by third-party payors or other restrictions could seriously harm our business. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. This could reduce the ultimate demand for our product candidates or put pressure on our product pricing. Furthermore, there has been increased interest by third-party payors and governmental authorities in reference pricing systems and publication of discounts and list prices. Prescription drugs and biological products that are in violation of these requirements will be included on a public list. These reforms could reduce the ultimate demand for our product candidates or put pressure on our product pricing and could seriously harm our business.

We expect that these and other healthcare reform measures that may be adopted in the future may result in more rigorous coverage and payment criteria and in additional downward pressure on the price that we receive for any approved drug. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability, or commercialize our drugs. We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures. We cannot predict with certainty what impact any federal or state health reforms will have on us, but such changes could impose new or more stringent regulatory requirements on our activities or result in reduced reimbursement for our products, any of which could adversely affect our business, results of operations and financial condition.

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

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

The successful commercialization of any product candidates for which we obtain approval will depend in part on the extent to which governmental authorities, private health insurers, and other third-party payors provide coverage and adequate reimbursement. Failure to obtain or maintain coverage and adequate reimbursement for our product candidates, if any and if approved, could limit our ability to market those products and decrease our ability to generate revenue.

Our ability to successfully commercialize any products that we may develop also 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.

The regulations that govern marketing approvals, pricing and reimbursement for new drugs vary widely from country to country. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain marketing approval for a product in a particular country, but then be subject to price regulations that delay our commercial launch of the product, possibly for lengthy time periods, and negatively impact the revenue we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if any product candidates we may develop obtain marketing approval.

A primary trend in the U.S. healthcare industry and elsewhere is cost containment. Government authorities and other third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Government authorities currently impose mandatory discounts for certain patient groups, such as Medicare, Medicaid and Veterans Affairs ("VA") hospitals, and may seek to increase such discounts at any time. Future regulation may negatively impact the price of our products, if approved. Increasingly, other third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. For genetic medicine and other products administered under the supervision of a physician, obtaining coverage and adequate reimbursement may be particularly difficult because of the higher prices often associated with such drugs. We cannot be sure that reimbursement will be available for any product candidate that we commercialize and, if reimbursement is available, that the level of reimbursement will be sufficient.

Reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. In order to obtain reimbursement, physicians may need to show that patients have superior treatment outcomes with our products compared to standard of care drugs, including lower-priced generic versions of standard of care drugs. If reimbursement is not available or is available only at limited levels, we may not be able to successfully commercialize any product candidate for which we obtain marketing approval. In the United States, no uniform policy of coverage and reimbursement for products exists among third-party payors and coverage and reimbursement levels for products can differ significantly from payor to payor. As a result, the coverage determination process is often a time consuming and costly process that may require us to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance.

There may be significant delays in obtaining reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the medicine is approved by the FDA, EMA or other comparable foreign regulatory authorities. Moreover, eligibility for reimbursement does not imply that any drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale, and distribution. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. Our inability to promptly obtain coverage and profitable payment rates from both government-funded and private payors for any approved products we may develop could seriously harm our business.

Even if we obtain FDA approval for any of our product candidates, we may never obtain approval or commercialize such products outside of the United States, which would limit our ability to realize their full market potential.

In order to market any products outside of the United States, we must establish and comply with numerous and varying regulatory requirements of other countries regarding safety and efficacy. Clinical trials conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory approval in one country does not mean that regulatory approval will be obtained in any other country. Approval procedures vary among countries and can involve additional product testing and validation and additional administrative review periods. Seeking foreign regulatory approvals could result in significant delays, difficulties and costs for us and may require additional preclinical studies or clinical trials which would be costly and time consuming. Regulatory requirements can vary widely from country to country and could delay or prevent the introduction of our products in those countries. Satisfying these and other regulatory requirements is costly, time consuming, uncertain and subject to unanticipated delays. In addition, our failure to obtain regulatory approval in any country may delay or have negative effects on the process for regulatory approval in other countries. We do not have any product candidates approved for sale in any jurisdiction, including international markets, and we do not have experience in obtaining regulatory approval in international markets. If we fail to comply with regulatory requirements in international markets or to obtain and maintain required approvals, our ability to realize the full market potential of our products will be harmed.

We currently have no sales organization. If we are unable to establish sales capabilities on our own or through third parties, we may not be able to market and sell any products effectively, if approved, or generate product revenue.

We currently do not have a marketing or sales organization. In order to commercialize any product, if approved, in the United States and foreign jurisdictions, we must build our marketing, sales, distribution, managerial and other non-technical capabilities or make arrangements with third parties to perform these services, and we may not be successful in doing so. In advance of any of our product candidates receiving regulatory approval, we expect to establish a sales organization with technical expertise and supporting distribution capabilities to commercialize each such product candidate, which will be expensive and time-consuming. We have no prior experience in the marketing, sale and distribution of pharmaceutical products, and there are significant risks involved in building and managing a sales organization, including our ability to hire, retain, and incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel, and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities would adversely impact the commercialization of these products. We may choose to collaborate with third parties that have direct sales forces and established distribution systems, either to augment our own sales force and distribution systems or in lieu of our own sales force and distribution systems. If we are unable to enter into such arrangements on acceptable terms or at all, we may not be able to successfully commercialize our product candidates. If we are not successful in commercializing products, either on our own or through arrangements with one or more third parties, we may not be able to generate any future product revenue and we would incur significant additional losses and our business would be seriously harmed.

Our business operations and current and future relationships 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 and seriously harm our business.

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

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing any remuneration (including any kickback, bribe, or certain rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, lease, order or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, under any U.S. federal healthcare program, such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- the U.S. federal civil and criminal false claims and civil monetary penalties laws, including the civil federal False Claims Act, which can be enforced through civil whistleblower or *qui tam* actions, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, to the U.S. federal government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. federal government. Pharmaceutical manufacturers can cause false claims to be presented to the U.S. federal government by engaging in impermissible marketing practices, such as the off-label promotion of a product for an indication for which it has not received FDA approval. In addition, the government may assert that a claim including items and services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- the federal Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), which imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the healthcare fraud statute implemented under HIPAA or specific intent to violate it in order to have committed a violation;
- the FDCA, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;
- the U.S. Public Health Service Act, which prohibits, among other things, the introduction into interstate commerce of a biological product unless a biologics license is in effect for that product;

- the U.S. Physician Payments Sunshine Act and its implementing regulations, which require certain manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid, or the Children's Health Insurance Program, with specific exceptions, to report annually to CMS information related to certain payments and other transfers of value to physicians (as defined by statute), certain other non-physician practitioners (including physician assistants, nurse practitioners, clinical nurse specialists, certified nurse anesthetists, anesthesiology assistants, and certified nurse midwives) and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members;
- analogous U.S. state laws and regulations, including: state anti-kickback and false claims laws, which may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by any third-party payor, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information, which requires tracking gifts and other remuneration and items of value provided to healthcare professionals and entities; and state and local laws requiring the registration of pharmaceutical sales representatives; and
- similar healthcare laws in the EU and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers.

We may also be subject to additional federal laws, such as the U.S. Foreign Corrupt Practices Act of 1977, as amended, which prohibits, among other things, U.S. companies and their employees and agents from authorizing, promising, offering, or providing, directly or indirectly, corrupt or improper payments or anything else of value to foreign government officials, employees of public international organizations and foreign government owned or affiliated entities, candidates for foreign political office, and foreign political parties or officials thereof, and federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers.

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

We use and generate materials that may expose us to material liability.

Our research programs involve the use of hazardous materials and chemicals. We are subject to foreign, federal, state and local environmental and health and safety laws and regulations governing, among other matters, the use, manufacture, handling, storage and disposal of hazardous materials and waste products such as human tissue samples that may have the potential to transmit diseases. We may incur significant costs to comply with these current or future environmental and health and safety laws and regulations. In addition, we cannot completely eliminate the risk of contamination or injury from hazardous materials and may incur material liability as a result of such contamination or injury. In the event of an accident, an injured party may seek to hold us liable for any damages that result. Any liability could exceed the limits or fall outside the coverage of our workers' compensation, property and business interruption insurance and we may not be able to maintain insurance on acceptable terms, if at all. We currently carry no insurance specifically covering environmental claims.

Compliance with governmental regulations regarding the treatment of animals used in research could increase our operating costs, which would adversely affect the commercialization of our products.

The Animal Welfare Act ("AWA") is the federal law that covers the treatment of certain animals used in research. Currently, the AWA imposes a wide variety of specific regulations that govern the humane handling, care, treatment and transportation of certain animals by producers and users of research animals, most notably relating to personnel, facilities, sanitation, cage size, and feeding, watering and shipping conditions. Third parties with whom we contract are subject to registration, inspections and reporting requirements under the AWA. Furthermore, some states have their own regulations, including general anti-cruelty legislation, which establish certain standards in handling animals. Comparable rules, regulations, and/or obligations exist in many foreign jurisdictions. If we or our contractors fail to comply with regulations concerning the treatment of animals used in research, we may be subject to fines and penalties and adverse publicity, and our operations could be adversely affected.

Risks Related to Our Reliance on Third Parties

We expect to rely on third parties to conduct our clinical trials and some aspects of our research and preclinical testing, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials, research or testing.

We currently rely and expect to continue to rely on third parties, such as CROs, CDMOs, clinical data management organizations, clinical data assessments and analysis organizations, medical institutions and clinical investigators, to conduct some aspects of our manufacturing, research, preclinical testing and clinical trials. Any of these third parties may terminate their engagements with us or be unable to fulfill their contractual obligations. If we need to enter into alternative arrangements, it would delay our product development activities.

Our reliance on these third parties for research and development activities reduces our control over these activities, but does not relieve us of our responsibilities. For example, we 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 GCP for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible, reproducible and accurate and that the rights, integrity and confidentiality of trial participants are protected. We are also required to register ongoing clinical trials and to post the results of completed clinical trials on a government-sponsored database within certain timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions. Similar risks may exist in foreign jurisdictions.

If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our clinical trials in accordance with regulatory requirements or our stated protocols, we will not be able to obtain, or may be delayed in obtaining, marketing approvals for any product candidates we may develop and will not be able to, or may be delayed in our efforts to, successfully commercialize our medicines.

We also expect to rely on other third parties to manufacture, store and distribute drug supplies for our clinical trials. Any performance failure on the part of our manufacturers or distributors could delay clinical development, marketing approval or commercialization of any product candidates, producing additional losses and depriving us of potential product revenue.

We may depend on collaborations with third parties for the research, development and commercialization of certain of the product candidates we may develop. If any such collaborations are not successful, we may not be able to realize the market potential of those product candidates.

We have sought, and may in the future seek, third-party collaborators for the research, development and commercialization of certain product candidates we may develop. Our likely collaborators for any other collaboration arrangements include large and mid-size pharmaceutical companies, regional, national and international pharmaceutical companies, biotechnology companies and academic institutions. If we enter into any such arrangements with any third parties, we will likely have shared or limited control over the amount and timing of resources that our collaborators dedicate to the development or potential commercialization of any product candidates we may seek to develop with them. Our ability to generate revenue from these arrangements with commercial entities will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements. We cannot predict the success of any collaboration that we enter into.

Collaborations involving our product candidates we may develop, pose the following risks to us:

- collaborators generally have significant discretion in determining the efforts and resources that they will apply to these collaborations;
- collaborators may not properly obtain, maintain, enforce or defend intellectual property or proprietary rights relating to our product candidates or may use our proprietary information in such a way as to expose us to potential litigation or other intellectual property related proceedings, including proceedings challenging the scope, ownership, validity and enforceability of our intellectual property;
- collaborators may own or co-own intellectual property covering our product candidates that result from our collaboration with them, and in such cases, we may not have the exclusive right to commercialize such intellectual property or such product candidates;
- disputes may arise with respect to the ownership of intellectual property developed pursuant to collaborations;
- we may need the cooperation of our collaborators to enforce or defend any intellectual property we contribute to or that arises out of our collaborations, which may not be provided to us;
- collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability;
- disputes may arise between the collaborators and us that result in the delay or termination of the research, development or commercialization of our product candidates or that result in costly litigation or arbitration that diverts management attention and resources;

- collaborators may decide not to pursue development and commercialization of any product candidates we develop or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in the collaborator's strategic focus or available funding or external factors such as an acquisition that diverts resources or creates competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials, or require a new formulation of a product candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our product candidates if the collaborators believe that competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours;
- collaborators with marketing and distribution rights to one or more product candidates may not commit sufficient resources to the marketing and distribution of such product candidates;
- we may lose certain valuable rights under circumstances identified in our collaborations, including if we undergo a change of control;
- collaborators may undergo a change of control and the new owners may decide to take the collaboration in a direction which is not in our best interest;
- collaborators may become party to a business combination transaction and the continued pursuit and emphasis on our development or commercialization program by the resulting entity under our existing collaboration could be delayed, diminished or terminated;
- collaborators may become bankrupt, which may significantly delay our research or development programs, or may cause us to lose access to valuable technology, devices, materials, know-how or intellectual property of the collaborator relating to our products and product candidates;
- key personnel at our collaborators may leave, which could negatively impact our ability to productively work with our collaborators;
- collaborations may require us to incur short and long-term expenditures, issue securities that dilute our stockholders, or disrupt our management and business;
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates or our Therapeutic Vector Evolution platform technology; and
- collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner or at all.

We may face significant competition in seeking appropriate collaborations. Recent business combinations among biotechnology and pharmaceutical companies have resulted in a reduced number of potential collaborators. In addition, the negotiation process is time-consuming and complex, and we may not be able to negotiate collaborations on a timely basis, on acceptable terms, or at all. If we are unable to do so, we may have to curtail the development of the product candidate for which we are seeking to collaborate or delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we may not be able to further develop product candidates or bring them to market and generate product revenue which could seriously harm our business.

If we enter into collaborations to develop and potentially commercialize any product candidates, we may not be able to realize the benefit of such transactions if we or our collaborator elect not to exercise the rights granted under the agreement or if we or our collaborator are unable to successfully integrate a product candidate into existing operations and company culture. In addition, if our agreement with any of our collaborators terminates, our access to technology and intellectual property licensed to us by that collaborator may be restricted or terminate entirely, which may delay our continued development of our product candidates utilizing the collaborator's technology or intellectual property or require us to stop development of those product candidates completely. We may also find it more difficult to find a suitable replacement collaborator or attract new collaborators, and our development programs may be delayed or the perception of us in the business and financial communities could be adversely affected. Any collaborator may also be subject to many of the risks relating to product development, regulatory approval, and commercialization described in this "Risk Factors" section, and any negative impact on our collaborators may adversely affect us.

Our reliance on Chinese biotechnology companies may subject us to additional risks.

Certain Chinese biotechnology companies, CROs and contract development and manufacturing organizations may become subject to trade restrictions, sanctions, other regulatory requirements, or proposed legislation by the U.S. government, which could potentially impact services available for our research and development or our ability to secure the materials we need for our product candidates. For example, the U.S. BIOSECURE Act, which was enacted in December 2025, prohibits federal agencies from procuring or using any biotechnology equipment or services from "biotechnology companies of concern", or entering into, extending, or renewing any contracts with entities that use such biotechnology equipment or services from "biotechnology companies of concern". Congress has interpreted a "biotechnology company of concern" as an entity that is under the control of a foreign adversary and that poses a risk to national security based on its research or multiomic data collection (e.g., collection of genomic information). While the U.S. BIOSECURE Act has a grandfathering period of five years for existing contracts, and has carveouts for manufacture of drugs for supply under Medicaid and Medicare Part B, subject to the Secretary of Veteran Affairs' discretion, the impact of the U.S. BIOSECURE Act on the biotechnology industry is uncertain. If the Chinese or other foreign CROs and CDMOs we rely on become subject to trade restrictions, sanctions, increased tariffs or other regulatory requirements by the U.S. government (including designation as a "biotechnology company of concern" under the U.S. BIOSECURE Act), or if the U.S. or Chinese government take retaliatory actions due to recent or increased tensions between the U.S. and China, it may have the potential to severely restrict the ability of U.S. biopharmaceutical companies like us to purchase services or products from, or otherwise collaborate with, certain "biotechnology companies of concern" without losing the ability to contract with, or otherwise receive funding from, the U.S. government. It is possible that some of our contractual counterparties could be impacted by the legislation described above. Such counterparties may be subject to U.S. legislation, sanctions, trade restrictions and other foreign regulatory requirements which could increase the cost or reduce the supply of material available to us, delay the procurement or supply of such material or have an adverse effect on our ability to secure significant commitments from governments to purchase our potential therapies. Such disruption could have adverse effects on the development of our product candidates.

Risks Related to Our Intellectual Property

Our success depends on our ability to protect our intellectual property and our proprietary technologies.

Our commercial success depends in part on our ability to obtain and maintain patent protection and trade secret protection for our product candidates, proprietary technologies and their uses as well as our ability to operate without infringing upon the proprietary rights of others. We generally seek to protect our proprietary position by filing patent applications in the United States and abroad related to our product candidates, proprietary technologies and their uses that are important to our business. Our patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless, and until, patents issue from such applications, and then only to the extent the issued claims cover the technology. There can be no assurance that our patent applications or those of our licensors will result in additional patents being issued or that issued patents will afford sufficient protection against competitors with similar technology, nor can there be any assurance that the patents issued will not be infringed, designed around or invalidated by third parties. Even issued patents may later be found invalid or unenforceable or may be modified or revoked in proceedings instituted by third parties before various patent offices or in courts. Further, our licensed patents and applications include six granted patents (U.S. patent nos. 12,630,805, 12,310,997, 12,180,254, 11,136,557, 11,634,691 and 10,988,519) and two pending patent applications (U.S. patent application nos. 19/652,446 and 18/924,426), that were made with government support, that may be subject, under certain circumstances, to march-in-rights under 35 U.S.C. 203, which is a right that allows the government, in certain limited circumstances, to force a party with a license to intellectual property funded, at least in part, by the government, to grant a license to such property to another entity. U.S. patent nos. 11,136,557 and 11,634,691 were made with the support of U.C. Berkeley and relate to our A101 vector of our 4D-710 and 4D-725 product candidates. U.S. patent nos. 10,988,519 and 12,180,254 were made with the support of University of Pennsylvania and relate to our short-form human complement factor H (sCFH) payload of our 4D-175 product candidate. The degree of future protection for our proprietary rights is uncertain. Only limited protection may be available and may not adequately protect our rights or permit us to gain or keep any competitive advantage. If we do not adequately protect our intellectual property and proprietary technology, competitors may be able to use our product candidates and proprietary technologies and erode or negate any competitive advantage we may have, which could seriously harm our business.

We and our licensors have applied, and we intend to continue applying, for patents covering aspects of our product candidates, proprietary technologies and their uses that we deem appropriate. However, we may not be able to apply for patents on certain aspects of our current or future product candidates, proprietary technologies and their uses in a timely fashion, at a reasonable cost, in all jurisdictions, or at all, and any potential patent coverage we obtain may not be sufficient to prevent substantial competition.

The patent application process is subject to numerous risks and uncertainties, and there can be no assurance that we or any of our actual or potential future collaborators or licensors will be successful in protecting our product candidates, proprietary technologies and their uses by obtaining and defending patents. These risks and uncertainties include the following:

- the U.S. Patent and Trademark Office (“USPTO”) and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process, the noncompliance with which can result in abandonment or lapse of a patent or patent application, and partial or complete loss of patent rights in the relevant jurisdiction;
- patent applications may not result in any patents being issued;
- patents that may be issued or in-licensed may be challenged, invalidated, modified, revoked, circumvented, found to be unenforceable or otherwise may not provide any competitive advantage;

- our competitors, many of whom have substantially greater resources than we do and many of whom have made significant investments in competing technologies, may seek or may have already obtained patents that will limit, interfere with or eliminate our ability to make, use and sell our potential product candidates;
- other parties may have designed around our claims or developed technologies that may be related or competitive to our platform, may have filed or may file patent applications and may have received or may receive patents that overlap or conflict with our patent applications, either by claiming the same methods or devices or by claiming subject matter that could dominate our patent position;
- any successful opposition to any patents owned by or licensed to us could deprive us of rights necessary for the practice of our technologies or the successful commercialization of any products or product candidates that we may develop;
- because patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we or our licensors were the first to file any patent application related to our product candidates, proprietary technologies and their uses;
- an interference proceeding can be provoked by a third party or instituted by the USPTO to determine who was the first to invent any of the subject matter covered by the patent claims of our licensors' patent applications for any patent application with an effective filing date before March 16, 2013;
- there may be significant pressure on the U.S. government and international governmental bodies to limit the scope of patent protection both inside and outside the United States for disease treatments that prove successful, as a matter of public policy regarding worldwide health concerns; and
- countries other than the United States may have patent laws less favorable to patentees than those upheld by U.S. courts, allowing foreign competitors a better opportunity to create, develop and market competing product candidates.

The patent prosecution process is also expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. Although we enter into non-disclosure and confidentiality agreements with parties who have access to patentable aspects of our research and development output, such as our employees, corporate collaborators, outside scientific collaborators, CROs, contract manufacturers, consultants and other third parties, any of these parties may breach such agreements and disclose such output before a patent application is filed, thereby jeopardizing our ability to seek patent protection.

The patent position of biopharmaceutical companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. Moreover, the issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our patents, if issued, patents obtained by our collaborators or the patent rights that we license from others, may be challenged in the courts or patent offices in the United States and abroad. Once granted, patents may remain open to opposition, interference, re-examination, post-grant review, inter partes review, nullification or derivation action in court or before patent offices or similar proceedings for a given period after allowance or grant, during which time third parties can raise objections against such initial grant. Such challenges may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical products or product candidates, or limit the duration of the patent protection of our product candidates. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our intellectual property may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

Our ability to enforce our patent rights depends on our ability to detect infringement. It may be difficult to detect infringers who do not advertise the components or methods that are used in connection with their products and services. Moreover, it may be difficult or impossible to obtain evidence of infringement in a competitor's or potential competitor's product or service. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded if we were to prevail may not be commercially meaningful.

In addition, proceedings to enforce or defend our patents could put our patents at risk of being invalidated, held unenforceable or interpreted narrowly. Such proceedings could also provoke third parties to assert claims against us, including that some or all of the claims in one or more of our patents are invalid or otherwise unenforceable. If any of our patents covering our product candidates are invalidated or found unenforceable, or if a court found that valid, enforceable patents held by third parties covered one or more of our product candidates, our competitive position could be harmed or we could be required to incur significant expenses to enforce or defend our rights. If we initiate lawsuits to protect or enforce our patents, or litigate against third-party claims, such proceedings would be expensive and would divert the attention of our management and technical personnel.

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

- any of our patents, or any of our pending patent applications, if issued, or those of our licensors, will include claims having a scope sufficient to protect our product candidates;
- any of our pending patent applications or those of our licensors may issue as patents;
- others will not or may not be able to make, use, offer to sell, or sell products that are the same as or similar to our own but that are not covered by the claims of the patents that we own or license;
- we will be able to successfully commercialize our product candidates on a substantial scale, if approved, before the relevant patents that we own or license expire;
- we or our licensors were the first to make the inventions covered by each of the patents and pending patent applications that we own or license;
- we or our licensors were the first to file patent applications for these inventions;
- others will not develop similar or alternative technologies that do not infringe the patents we own or license;
- any of the patents we own or license will be found to ultimately be valid and enforceable;
- any patents issued to us or our licensors will provide a basis for an exclusive market for our commercially viable products or will provide us with any competitive advantages;

- a third party may not challenge the patents we own or license and, if challenged, a court would hold that such patents are valid, enforceable and infringed;
- we may develop or in-license additional proprietary technologies that are patentable;
- the patents of others will not have an adverse effect on our business;
- our competitors do not conduct research and development activities in countries where we do not have enforceable patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we will develop additional proprietary technologies or product candidates that are separately patentable; or
- our commercial activities or products will not infringe upon the patents of others.

Where we obtain licenses from or collaborate with third parties, in some circumstances, we may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, covering technology that we license from third parties, or such activities, if controlled by us, may require the input of such third parties. We may also require the cooperation of our licensors and collaborators to enforce any licensed patent rights, and such cooperation may not be provided. Therefore, these patents and patent applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. Moreover, if we do obtain necessary licenses, we will likely have obligations under those licenses, and any failure to satisfy those obligations could give our licensor the right to terminate the license. Termination of a necessary license, or expiration of licensed patents or patent applications, could seriously harm our business.

Furthermore, our owned and in-licensed intellectual property rights may be subject to a reservation of rights by one or more third parties. For example, the research resulting in certain of our in-licensed patent rights and technology was funded in part by the U.S. government. As a result, the government may have certain rights, or march-in rights, to such patent rights and technology. When new technologies are developed with government funding, the government generally obtains certain rights in any resulting patents, including a non-exclusive license authorizing the government to use the invention for non-commercial purposes. These rights may permit the government to disclose our confidential information to third parties and to exercise march-in rights to use or allow third parties to use our licensed technology. The government can exercise its march-in rights if it determines that action is necessary because we fail to achieve practical application of the government-funded technology, because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations, or to give preference to U.S. industry. In addition, our rights in such inventions may be subject to certain requirements to manufacture products embodying such inventions in the United States. Any exercise by the government of such rights could seriously harm our business.

The lives of our patents may not be sufficient to effectively protect our product candidates and business.

Patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after its first effective non-provisional filing date. Although various extensions may be available, the life of a patent, and the protection it affords, are limited. Even if patents covering our product candidates, proprietary technologies and their uses are obtained, once the patent life has expired, we may be open to competition. In addition, although upon issuance in the United States a patent's life can be extended based on certain delays caused by the USPTO and clinical development, this extension can be reduced or eliminated based on certain delays caused by the patent applicant during patent prosecution. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. If we do not have sufficient patent life to protect our product candidates, proprietary technologies and their uses, our business would be seriously harmed.

If we do not obtain patent term extension for our product candidates, our business may be seriously harmed.

Depending upon the timing, duration and specifics of FDA marketing approval of any of our product candidates, one or more of our U.S. patents may be eligible for limited patent term restoration under the Drug Price Competition and Patent Term Restoration Act of 1984, also known as the Hatch-Waxman Amendments. The Hatch-Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. The Hatch-Waxman Act allows a maximum of one patent to be extended per FDA approved product as compensation for the patent term lost during the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only those claims covering such approved drug product, a method for using it or a method for manufacturing it may be extended. Patent term extension may also be available in certain foreign countries upon regulatory approval of our product candidates. However, we may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we are unable to obtain patent term extension or restoration or the term of any such extension is less than we request, our competitors may obtain approval of competing products following our patent expiration of the applicable product, and our business may be seriously harmed.

Changes in patent law in the United States or in other countries could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

Our patent rights may be affected by developments or uncertainty in the U.S. or foreign patent statutes, patent case laws, USPTO rules and regulations or in the rules and regulations of foreign patent offices.

On September 16, 2011, the Leahy-Smith America Invents Act ("Leahy-Smith Act") was signed into law. There remains many subsisting issued patents and some pending patent applications in the U.S. that were filed prior to its enactment and are therefore subject to the pre-Leahy-Smith Act U.S. patent laws and that may have relevance to our freedom-to-operate or ability to obtain patent issuances. The Leahy-Smith Act includes a number of significant changes to the U.S. patent law. These include provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. In particular, under the Leahy-Smith Act, the United States transitioned in March 2013 to a "first to file" system in which the first inventor to file a patent application will be entitled to the patent. Third parties are allowed to submit prior art before the issuance of a patent by the USPTO, and may become involved in post-grant proceedings including opposition, derivation, reexamination, inter partes review or interference proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope or enforceability of, or invalidate, our patent rights, which could adversely affect our competitive position. This could have a negative impact on some of our intellectual property and could increase uncertainties surrounding obtaining and enforcement or defense of our issued patents. In addition, Congress may pass patent reform legislation that is unfavorable to us. The Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents we might obtain in the future. Similarly, statutory or judicial changes to the patent laws of other countries may increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents. Complying with these laws and regulations could limit our ability to obtain new patents in the future that may be important for our business.

Additionally, on June 1, 2023, the European Union Patent Package (EU Patent Package) regulations were implemented with the goal of providing a single pan-European Unitary Patent and a new European Unified Patent Court (UPC) for litigation involving European patents. As a result, all European patents, including those issued prior to ratification of the EU Patent Package, now by default automatically fall under the jurisdiction of the UPC. Our European patent applications, if issued, could be challenged in the UPC. During the first seven years of the UPC's existence, the UPC legislation allows a patent owner to opt its European patents out of the jurisdiction of the UPC. Thus far, we have elected to opt all of our European patents out of jurisdiction of the UPC, and we may elect to opt out our future European patents from the UPC, but doing so may preclude us from realizing the benefits of the UPC. Moreover, if we do not meet all of the formalities and requirements for opt-out under the UPC, our future European patents could remain under the jurisdiction of the UPC. The UPC will provide our competitors with a new forum to centrally revoke our European patents, and allow for the possibility of a competitor to obtain a pan-European injunction. Such a loss of patent protection could have a material adverse impact on our business and our ability to commercialize our technology and product candidates and, resultantly, on our business, financial condition, prospects and results of operations.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending all current and future patents in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection but enforcement is not as strong as that in the United States. These products may compete with our product candidates, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Moreover, geo-political actions in the U.S. and in foreign countries could increase the uncertainties and costs surrounding the prosecution or maintenance of our patent applications or those of any current or future licensors and the maintenance, enforcement or defense of our issued patents or those of any current or future licensors. For example, the U.S. and foreign government actions related to Russia's conflict with Ukraine may limit or prevent filing, prosecution, and maintenance of patent applications in Russia. Government actions may also prevent maintenance of issued patents in Russia. For example, a decree was adopted by the Russian government in March 2022, allowing Russian companies and individuals to exploit inventions owned by patentees from the U.S. without consent or compensation. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and may export otherwise infringing products to territories where we have patent protection, but enforcement rights are not as strong as those in the United States. These products may compete with our product candidates and our patents or other IP rights may not be effective or sufficient to prevent them from competing.

The legal systems of many foreign countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights. For example, some foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, some countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license. If we or any of our licensors is forced to grant a license to third parties with respect to any patents relevant to our business, our business may be seriously harmed.

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

Our agreements with employees and consultants provide that any inventions conceived by an individual in the course of rendering services to us shall be our exclusive property. Although our policy is to have all such individuals complete these agreements, we may not obtain these agreements in all circumstances, and individuals with whom we have these agreements may not comply with their terms. The assignment of intellectual property may not be self-executing and despite such agreement, such inventions may become assigned to third parties. In the event of unauthorized use or disclosure of our trade secrets or proprietary information, these agreements, even if obtained, may not provide meaningful protection, particularly for our trade secrets or other confidential information. We may also be subject to claims that former employees, consultants, or other third parties have an ownership interest in our patents or other intellectual property. In addition, we may face claims by third parties that our agreements with employees or consultants obligating them to assign intellectual property to us are ineffective or in conflict with prior or competing contractual obligations of assignment, which could result in ownership disputes regarding intellectual property we have developed or will develop and interfere with our ability to capture the commercial value of such intellectual property. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. Such an outcome could seriously harm our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and distraction to our management and other employees.

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

The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process. Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to be paid to the USPTO and various governmental patent agencies outside of the United States in several stages over the lifetime of the patents and/or applications. We employ reputable professionals and rely on such third parties to help us comply with these requirements and effect payment of these fees with respect to the patents and patent applications that we own, and if we license intellectual property we may have to rely upon our licensors to comply with these requirements and effect payment of these fees with respect to any patents and patent applications that we license. In many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. However, there are situations in which noncompliance can result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, competitors might be able to enter the market earlier than would otherwise have been the case. There could also be delays at the USPTO caused by staffing cuts and other U.S. government actions as a result of the U.S. Department of Government Efficiency or other executive actions to reduce the size of the U.S. government.

If we are unable to protect the confidentiality of our trade secrets, our business would be seriously harmed.

We rely on the protection of our trade secrets, including unpatented know-how, technology and other proprietary information to maintain our competitive position. We have taken steps to protect our trade secrets and unpatented know-how, including entering into confidentiality agreements with third parties, and confidential information and inventions agreements with employees and consultants. In addition to contractual measures, we try to protect the confidential nature of our proprietary information using commonly accepted physical and technological security measures. Despite these efforts, we cannot provide any assurances that all such agreements have been duly executed, and any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. In addition, such security measures may not provide adequate protection for our proprietary information, for example, in the case of misappropriation of a trade secret by an employee, consultant or third party with authorized access. Our security measures may not prevent an employee, consultant, collaborator or third party from misappropriating our trade secrets and providing them to a competitor, and recourse we take against such misconduct may not provide an adequate remedy to protect our interests fully. Monitoring unauthorized uses and disclosures is difficult, and we do not know whether the steps we have taken to protect our proprietary technologies will be effective. Unauthorized parties may also attempt to copy or reverse engineer certain aspects of our product candidates that we consider proprietary. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret can be difficult, expensive and time-consuming, and the outcome is unpredictable. Even though we use commonly accepted security measures, the criteria for protection of trade secrets can vary among different jurisdictions.

In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets. Moreover, third parties may still obtain this information or may come upon this or similar information independently, and we would have no right to prevent them from using that technology or information to compete with us. Trade secrets will over time be disseminated within the industry through independent development, the publication of journal articles and the movement of personnel skilled in the art from company to company or academic to industry scientific positions. Further, we may need to share our trade secrets and confidential know-how 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 actors in other countries, and those affiliated with or controlled by state actors.

Though our agreements with third parties typically restrict the ability of our employees, collaborators, licensors, third-party contractors and consultants to publish data potentially relating to our trade secrets, our agreements may contain certain limited publication rights. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position. Because from time to time we have relied on, and in future expect to rely on third parties in the development, manufacture, and distribution of our product candidates and provision of our services, we must, at times, share trade secrets with them. Despite employing the contractual and other security precautions described above, the need to share trade secrets increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. If any of these events occurs or if we otherwise lose protection for our trade secrets, the value of this information may be greatly reduced and our competitive position would be harmed. If we do not apply for patent protection prior to such publication or if we cannot otherwise maintain the confidentiality of our proprietary technology and other confidential information, then our ability to obtain patent protection or to protect our trade secret information may be jeopardized.

Our rights to develop and commercialize our product candidates are subject in part to the terms and conditions of licenses granted to us by others, and the patent protection, prosecution and enforcement for some of our product candidates may be dependent on our licensors.

We currently are reliant upon licenses of certain patent rights and proprietary technology from third parties that are important or necessary to the development of our technology, including technology related to our product candidates. For example, we rely on our exclusive license agreements with (i) U.C. Berkeley for certain rights with respect to the intellectual property covering certain compositions of matter and methods of use of certain AAV variants related to our 4D-710 and 4D-725 product candidates, and (ii) University of Pennsylvania for certain rights with respect to the intellectual property covering certain compositions of matter and methods of use of the short-form human complement factor H (sCFH) payload related to our 4D-175 product candidate. These and other licenses we may enter into in the future may not provide adequate rights to use such intellectual property and technology in all relevant fields of use or in all territories in which we may wish to develop or commercialize our technology and product candidates in the future. As a result, we may not be able to develop and commercialize our technology and product candidates in fields of use and territories for which we are not granted rights pursuant to such licenses.

Licenses to additional third-party technology that may be required for our development programs may not be available in the future or may not be available on commercially reasonable terms, which could seriously harm our business.

In some circumstances, we may not have the right to control the preparation, filing, prosecution and enforcement of patent applications, or to maintain the patents, covering technology that we license from third parties. In addition, some of our agreements with our licensors require us to obtain consent from the licensor before we can enforce patent rights, and our licensor may withhold such consent or may not provide it on a timely basis. Therefore, we cannot be certain that our licensors or collaborators will prosecute, maintain, enforce and defend such intellectual property rights in a manner consistent with the best interests of our business, including by taking reasonable measures to protect the confidentiality of know-how and trade secrets, or by paying all applicable prosecution and maintenance fees related to intellectual property registrations for any of our product candidates. We also cannot be certain that our licensors have drafted or prosecuted the patents and patent applications licensed to us in compliance with applicable laws and regulations, which may affect the validity and enforceability of such patents or any patents that may issue from such applications. If they fail to do so, this could cause us to lose rights in any applicable intellectual property that we in-license, and as a result our ability to develop and commercialize products or product candidates may be adversely affected and we may be unable to prevent competitors from making, using and selling competing products.

Our current licenses, and our future licenses, likely will impose various royalty payments, milestones, and other obligations on us. If we fail to comply with any of these obligations, we may be required to pay damages and the licensor may have the right to terminate the license. Termination by the licensor would cause us to lose valuable rights, and could prevent us from developing and commercializing our product candidates and proprietary technologies. Our business would be seriously harmed if any current or future licenses terminate, if the licensors fail to abide by the terms of the license, if the licensors fail to enforce licensed patents against infringing third parties, if the licensed patents or other rights are found to be invalid or unenforceable, or if we are unable to enter into necessary licenses on acceptable terms. Furthermore, if any current or future licenses terminate, or if the underlying patents fail to provide the intended exclusivity, competitors or other third parties may gain the freedom to seek regulatory approval of, and to market, products identical to ours. Moreover, our licensors may own or control intellectual property that has not been licensed to us and, as a result, we may be subject to claims, regardless of their merit, that we are infringing or otherwise violating the licensor's rights. In addition, while we cannot currently determine the amount of royalty obligations we would be required to pay on the sales of future products, if any, the amounts may be significant. The amount of our future royalty obligations will depend on the technology and intellectual property we use in product candidates that we successfully develop and commercialize, if any. Therefore, even if we successfully develop and commercialize any product candidates, we may be unable to achieve or maintain profitability.

If our trademarks and trade names, whether registered in the future or unregistered now, are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

Any trademarks we may register in the future or any current registered or unregistered trademarks or trade names may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition among potential partners or customers in our markets of interest. At times, competitors may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other trademarks or trademarks that incorporate variations of our registered or unregistered trademarks or trade names. Over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected. We may license our trademarks and trade names, to the extent any are registered, to third parties, such as distributors. Though these license agreements may provide guidelines for how our trademarks and trade names may be used, a breach of these agreements or misuse of our trademarks and trade names by our licensees may jeopardize our rights in or diminish the goodwill associated with our trademarks and trade names. Our efforts to enforce or protect our proprietary rights related to trademarks, trade names, trade secrets, domain names, copyrights or other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could seriously harm our business.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage.

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

- others may be able to make genetic medicine products that are similar to our product candidates or utilize similar genetic medicine technology but that are not covered by the claims of the patents that we own or have exclusively licensed;
- we or our licensors or future collaborators might not have been the first to make the inventions covered by the issued patents or pending patent applications that we own or have exclusively licensed;

- we or our licensors or future collaborators might not have been the first to file patent applications covering certain of our inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- it is possible that our pending patent applications will not lead to issued patents;
- issued patents that we own or have exclusively licensed may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may not develop additional proprietary technologies that are patentable; and
- the patents of others may have an adverse effect on our business.

Should any of these events occur, they could seriously harm our business.

Our existing collaborations and any collaboration arrangements that we may enter into in the future may not be successful, which could adversely affect our ability to develop and commercialize our products.

Our existing collaborations, such as our collaboration with Otsuka Pharmaceutical Co., Ltd. and any future collaborations that we enter into may not be successful. The success of our collaboration arrangements will depend heavily on the efforts and activities of our collaborators. Collaborations are subject to numerous risks, which may include that:

- collaborators have significant discretion in determining the efforts and resources that they will apply to collaborations;
- collaborators may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs based on trial or test results, changes in their strategic focus due to the acquisition of competitive products, availability of funding or other external factors, such as a business combination that diverts resources or creates competing priorities;
- collaborators could independently develop, or develop with third parties, products and product candidates that compete directly or indirectly with our product candidates;
- a collaborator with marketing, manufacturing and distribution rights to one or more products and product candidates may not commit sufficient resources to or otherwise not perform satisfactorily in carrying out these activities;
- we could grant exclusive rights to our collaborators that would prevent us from collaborating with others;
- collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;
- disputes may arise between us and a collaborator that causes the delay or termination of the research, development or commercialization of our current or future product candidates or that results in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated, and, if terminated, may adversely affect the price of our common stock and may result in a need for additional capital to pursue further development or commercialization of the applicable current or future product candidates;

- collaborators may own or co-own intellectual property covering our product candidates that results from our collaborating with them, and in such cases, we would not have the exclusive right to develop or commercialize such intellectual property; and
- a collaborator's sales and marketing activities or other operations may not be in compliance with applicable laws resulting in civil or criminal proceedings.

Reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.

Reliance on third parties to conduct clinical trials, assist in research and development and to manufacture our product candidates, will at times require us to share trade secrets with them. We seek to protect our proprietary technology by in part entering into confidentiality agreements and, if applicable, material transfer agreements, consulting agreements or other similar agreements with our advisors, employees, third-party contractors and consultants prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, including our trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's independent discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may seriously harm our business.

We may fail to comply with any of our obligations under existing or future agreements pursuant to which we license or have otherwise acquired intellectual property rights or technology, which could result in the loss of rights or technology that are material to our business.

We are party to various agreements that we depend on to operate our business. Our rights to use currently licensed intellectual property, or intellectual property to be licensed in the future, are or will be subject to the continuation of and our compliance with the terms of these agreements. These agreements are complex, and certain provisions in such agreements may be susceptible to multiple interpretations which could lead to disputes, including but not limited to those regarding:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- the extent to which our proprietary technology and product candidates infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- the sublicensing of patent and other rights;
- diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the ownership of inventions and know-how resulting from the creation or use of intellectual property by us or our counterparties, alone or jointly;
- the scope and duration of our payment obligations;
- rights upon termination of such agreement; and
- the scope and duration of exclusivity obligations of each party to the agreement.

The resolution of any contractual interpretation dispute that may arise, if unfavorable to us, could seriously harm our business. Such resolution could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, increase what we believe to be our financial or other obligations under the relevant agreement, or decrease the third party's financial or other obligations under the relevant agreement.

If disputes over intellectual property rights that we have licensed or acquired from third parties prevent or impair our ability to maintain our current license agreements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates. If we fail to comply with our obligations under current or future license agreements, these agreements may be terminated or the scope of our rights under them may be reduced and we might be unable to develop, manufacture or market any product that is licensed under these agreements.

Litigation or other proceedings or third-party claims of intellectual property infringement could require us to spend significant time and money and could prevent us from selling our products.

Our commercial success depends significantly on our ability to operate without infringing the patents and other proprietary rights of third parties. However, our research, development and commercialization activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. Claims by third parties that we infringe their proprietary rights may result in liability for damages or prevent or delay our developmental and commercialization efforts. We cannot assure you that our operations do not, or will not in the future, infringe existing or future patents or other proprietary rights of third parties.

Third parties may have or obtain patents or other proprietary rights that could limit our ability to make, use, sell, offer for sale or import our product candidates and future approved products, if any, or impair our competitive position. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, oppositions, reexaminations, inter partes review proceedings and post-grant review proceedings before the USPTO and/or corresponding foreign patent offices. Numerous third-party U.S. and foreign issued patents and pending patent applications exist in the fields in which we are developing product candidates. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates.

Furthermore, 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 and can involve other factors such as expert opinion. Our interpretation of the relevance or the scope of claims in a patent or a pending application may be incorrect, which may negatively impact our ability to market our products. Further, we may incorrectly determine that our technologies or product candidates are not covered by a third-party patent or may incorrectly predict whether a third party's pending patent 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, which may negatively impact our ability to develop and market our product candidates.

As the biotechnology industry expands and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the patent rights of third parties. Our competitors in both the United States and abroad, many of which have substantially greater resources and have made substantial investments in patent portfolios and competing technologies, may have applied for or obtained or may in the future apply for and obtain, patents that will prevent, limit or otherwise interfere with our ability to make, use and sell our product candidates. We do not always conduct independent reviews of pending patent applications of and patents issued to third parties. Patent applications in the United States and elsewhere are typically published approximately 18 months after the earliest filing for which priority is claimed, with such earliest filing date being commonly referred to as the priority date. Certain U.S. patent applications that will not be filed outside the United States can remain confidential until patents issue. In addition, patent applications in the United States and elsewhere can be pending for many years before issuance, or unintentionally abandoned patents or applications can be revived. Furthermore, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our technologies, our product candidates or the use of our product candidates. As such, there may be applications of others now pending or recently revived patents of which we are unaware. These applications may later result in issued patents, or the revival of previously abandoned patents, that will prevent, limit or otherwise interfere with our ability to make, use or sell our product candidates. As a result, we may be unaware of third-party patents that may be infringed by commercialization of our product candidates, and cannot be certain that we were the first to file a patent application related to a product candidate or technology. Moreover, because patent applications can take many years to issue, there may be currently pending patent applications that may later result in issued patents that our product candidates may infringe. In addition, identification of third-party patent rights that may be relevant to our technology is difficult because patent searching is imperfect due to differences in terminology among patents, incomplete databases and the difficulty in assessing the meaning of patent claims. Any claims of patent infringement asserted by third parties would be time consuming and could:

- result in costly litigation;
- divert the time and attention of our technical personnel and management;
- cause development delays;
- prevent us from commercializing our product candidates until the asserted patent expires or is held finally invalid or not infringed in a court of law;
- require us to develop non-infringing technology, which may not be possible on a cost-effective basis;
- require us to pay damages to the party whose intellectual property rights we may be found to be infringing, which may include treble damages if we are found to have been willfully infringing such intellectual property;
- require us to pay the attorney's fees and costs of litigation to the party whose intellectual property rights we may be found to be infringing; and/or
- require us to enter into royalty or licensing agreements, which may not be available on commercially reasonable terms, or at all.

Although no third party has asserted a claim of patent infringement against us as of the date of this report, others may hold proprietary rights that could prevent our product candidates or any future products from being marketed. Any patent-related legal action against us claiming damages and seeking to enjoin commercial activities relating to our product candidates or proprietary technologies could subject us to potential liability for damages, including treble damages if we were determined to willfully infringe, and require us to obtain a license to manufacture or market our product candidates or any future products. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be time-consuming and a substantial diversion of management and employee resources from our business. We cannot predict whether we would prevail in any such actions or that any license required under any of these patents would be made available on commercially acceptable terms, if at all. Even if such licenses are available, we could incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our gross margins, and the rights may be non-exclusive, which could give our competitors access to the same technology or intellectual property rights licensed to us. In addition, we cannot be certain that we could redesign our product candidates or proprietary technologies to avoid infringement, if necessary, or on a cost-effective basis. Accordingly, an adverse determination in a judicial or administrative proceeding, or the failure to obtain necessary licenses, could prevent us from developing and commercializing our product candidates or any future products which could seriously harm our business. In addition, intellectual property litigation, regardless of its outcome, may cause negative publicity and could prohibit us from marketing or otherwise commercializing our product candidates and technology.

If we collaborate with third parties in the development of technology in the future, our collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to litigation or potential liability. Further, collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability. Also, we may be obligated under our agreements with our collaborators, licensors, suppliers and others to indemnify and hold them harmless for damages arising from intellectual property infringement by us.

We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time consuming, and unsuccessful. Further, our issued patents could be found invalid or unenforceable if challenged.

Competitors may infringe our intellectual property rights or those of our licensors. To prevent infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in a patent infringement proceeding, a court or administrative tribunal may decide that a patent we own or license is not valid, is unenforceable and/or is not infringed. If we or any of our potential future collaborators were to initiate legal proceedings against a third party to enforce a patent directed at one of our product candidates, the defendant could counterclaim that our patent is invalid and/or unenforceable in whole or in part. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge include an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could include an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO or made a misleading statement during prosecution. Third parties may also raise similar claims before the USPTO, even outside the context of litigation. Similar mechanisms for challenging the validity and enforceability of a patent exist in foreign patent offices and may result in the revocation, cancellation, or amendment of any foreign patents we hold in the future. The outcome following legal assertions of invalidity and unenforceability is unpredictable, and prior art could render our patents or those of our licensors invalid. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we could lose at least part, and perhaps all, of the patent protection on an affected product candidate. Such a loss of patent protection would seriously harm our business.

Interference or derivation proceedings provoked by third parties or brought by us or declared by the USPTO, or equivalent actions brought in foreign jurisdictions, may be necessary to determine the priority of inventions with respect to our patents or patent applications or those of our licensors. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be seriously harmed if the prevailing party does not offer us a license on commercially reasonable terms or at all, or if a non-exclusive license is offered and our competitors gain access to the same technology. Our defense of litigation or interference proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. In addition, the uncertainties associated with litigation could have a material adverse effect on our ability to raise the funds necessary to continue our clinical trials, continue our research programs, license necessary technology from third parties or enter into development or manufacturing partnerships that would help us bring our product candidates to market.

Even if resolved in our favor, litigation or other legal proceedings relating to our intellectual property rights may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. We may not have sufficient financial or other resources to conduct such litigation or proceedings adequately. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could compromise our ability to compete in the marketplace and seriously harm our business.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock.

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

We currently have rights to the intellectual property, through licenses from third parties and under patents that we own, to develop our product candidates. Because our programs may require the use of proprietary rights held by third parties, the growth of our business will depend in part on our ability to acquire, license or use these proprietary rights. We may be unable to acquire or license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify as necessary for our product candidates. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of more established companies are also pursuing strategies to license or acquire third-party intellectual property rights that we may consider attractive. These established companies may have a competitive advantage over us due to their size, cash 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 our investment.

We have collaborated with a U.S. academic institution and may in the future collaborate with U.S. and foreign academic institutions to accelerate our preclinical research or development under written agreements with these institutions. These institutions may provide us with an option to negotiate a license to any of the institution's rights in technology resulting from the collaboration. Regardless of such option, we may be unable to negotiate a license within the specified timeframe or under terms that are acceptable to us. If we are unable to do so, the institution may offer the intellectual property rights to other parties, potentially blocking our ability to pursue our program.

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 that program and our business could be seriously harmed.

We may be subject to claims that we have wrongfully hired an employee from a competitor or that we, our employees or consultants have wrongfully used or disclosed alleged confidential information or trade secrets of their former or concurrent employers or former or current clients.

As is common in the biotechnology and biopharmaceutical industries, in addition to our employees, we engage the services of consultants to assist us in the development of our product candidates. Many of these consultants, and many of our employees, were previously employed at, or may have previously provided or may be currently providing consulting services to, other biotechnology or biopharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees and consultants do not use the proprietary information or know-how of others in their work for us, we may become subject to claims that we, our employees or a consultant inadvertently or otherwise used or disclosed trade secrets or other information proprietary to their former employers or their former or current clients. We may also be subject to claims that patents and applications we have filed to protect inventions of our employees or consultants, even those related to one or more of our product candidates, are rightfully owned by their former or concurrent employer or former or current client. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, which could seriously harm our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to our management and other employees.

Risks Related to Our Operations

We are highly dependent on our key personnel, and if we are not successful in attracting, motivating 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, motivate and retain highly qualified managerial, scientific and medical personnel. The loss of the services provided by any of our executive officers, other key employees, and other scientific and medical advisors, and our inability to find suitable replacements, could result in delays in the development of our product candidates and harm our business.

We conduct our operations at our facilities in Emeryville, California, in a region that is headquarters to many other biopharmaceutical companies and many academic and research institutions. Competition for skilled personnel is intense and the turnover rate can be high, which may limit our ability to hire and retain highly qualified personnel on acceptable terms or at all. We expect that we may need to recruit talent from outside of our region, and doing so may be costly and difficult.

To induce valuable employees to remain at our company, in addition to salary and cash incentives, we have provided equity grants. The value to employees of these equity grants that vest over time may be significantly affected by movements in our stock price that are beyond our control, and may at any time be insufficient to counteract more lucrative offers from other companies. In addition, our employees are employed at-will, which means that any of our employees could leave our employment at any time, with or without notice. If we are unable to attract, incentivize and retain quality personnel on acceptable terms, or at all, it could seriously harm our business.

We will need to grow the size and capabilities of our organization, and we may experience difficulties in managing this growth.

As our development plans and strategies evolve, we must add a significant number of additional managerial, operational, financial and other personnel. Future growth will impose significant added responsibilities on members of management, including:

- identifying, recruiting, integrating, retaining and motivating additional employees;
- managing our internal development efforts effectively, including the clinical and FDA review process for our current and future product candidates, while complying with our contractual obligations to contractors and other third parties;
- expanding our operational, financial and management controls, reporting systems and procedures; and
- managing increasing operational and managerial complexity.

Our future financial performance and our ability to continue to develop and, if approved, commercialize our product candidates will depend, in part, on our ability to effectively manage any future growth. Our management may also have to divert a disproportionate amount of its attention away from day-to-day activities in order to manage these growth activities.

We currently rely, and for the foreseeable future will continue to rely, in substantial part on certain independent organizations, advisors and consultants to provide certain services. There can be no assurance that the services of these independent organizations, advisors and consultants will continue to be available to us on a timely basis when needed, or that we can find qualified replacements. In addition, if we are unable to effectively manage our outsourced activities or if the quality or accuracy of the services provided by consultants is compromised for any reason, our clinical trials may be extended, delayed, or terminated, and we may not be able to obtain regulatory approval of our product candidates or otherwise advance our business. There can be no assurance that we will be able to manage our existing consultants or find other competent outside contractors and consultants on economically reasonable terms, if at all.

If we are not able to effectively expand our organization by hiring new employees and expanding our groups of consultants and contractors, we may not be able to successfully implement the tasks necessary to further develop our product candidates and, accordingly, may not achieve our research, development and commercialization goals.

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

Our results of operations could be adversely affected by general conditions in the global economy and in the global financial markets. Portions of our future clinical trials may be conducted outside of the United States and unfavorable economic conditions resulting in the weakening of the U.S. dollar would make those clinical trials more costly to operate. Furthermore, a severe or prolonged economic downturn, including a recession or depression resulting from factors such as increased inflation or closure of or liquidity issues at financial institutions or other macro factors such as a pandemic or geopolitical tensions could result in a variety of risks to our business, including weakened demand for our product candidates or any future product candidates, if approved, and our ability to raise additional capital when needed on acceptable terms, if at all. A weak or declining economy or political disruption, including any international trade disputes, could also strain our manufacturers or suppliers, possibly resulting in supply disruption, or cause our customers to delay making payments for our potential products. Any of the foregoing could seriously harm our business, and we cannot anticipate all of the ways in which the political or economic climate and financial market conditions could seriously harm our business.

If we engage in acquisitions or strategic partnerships, this may increase our capital requirements, dilute our stockholders, cause us to incur debt or assume contingent liabilities and subject us to other risks.

We may engage in various acquisitions and strategic partnerships in the future, including licensing or acquiring complementary products, intellectual property rights, technologies or businesses. Any acquisition or strategic partnership may entail numerous risks, including:

- increased operating expenses and cash requirements;
- the assumption of indebtedness or contingent liabilities;
- the issuance of our equity securities which would result in dilution to our stockholders;
- assimilation of operations, intellectual property, products and product candidates of an acquired company, including difficulties associated with integrating new personnel;
- the diversion of our management's attention from our existing product candidates and initiatives in pursuing such an acquisition or strategic partnership;
- retention of key employees, the loss of key personnel, and uncertainties in our ability to maintain key business relationships;
- risks and uncertainties associated with the other party to such a transaction, including the prospects of that party and their existing products or product candidates and regulatory approvals; and
- our inability to generate revenue from acquired intellectual property, technology and/or products sufficient to meet our objectives or even to offset the associated transaction and maintenance costs.

In addition, if we undertake such a transaction, we may incur large one-time expenses and acquire intangible assets that could result in significant future amortization expense.

Our information technology systems, or those used by our third-party research institution collaborators, CROs or other contractors or consultants, may fail or suffer security breaches and other disruptions.

We collect and maintain information in digital form that is necessary to conduct our business, and we are increasingly dependent on information technology systems and infrastructure to operate our business. In the ordinary course of our business, we collect, store and transmit large amounts of confidential information, including intellectual property, clinical trial data, proprietary business information and personal information of our employees and contractors (collectively, "Confidential Information"). It is critical that we do so in a secure manner to maintain the confidentiality and integrity of such confidential information. Despite the implementation of security measures, our internal information technology systems and those of our collaborators, future CROs and other contractors and consultants may be vulnerable to attack, damage and interruption from computer viruses and malware (e.g. ransomware), malicious code, misconfigurations, "bugs" or other vulnerabilities, natural disasters, terrorism, war, telecommunication and electrical failures, hacking, cyberattacks, phishing attacks and other social engineering schemes, denial or degradation of service attacks, and sophisticated nation-state and nation-state supported actors.

The risk of a security breach or disruption, particularly through cyberattacks or cyber intrusion, including by computer hackers, foreign governments and cyber terrorists, has generally increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased. We and our third party service providers and partners may also face increased cybersecurity risks due to our reliance on internet technology and the number of our employees who are working remotely, which may create additional opportunities for cybercriminals to exploit vulnerabilities. Furthermore, because the techniques used to obtain unauthorized access to, or to sabotage, systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or implement adequate preventative measures. We may experience security breaches that may remain undetected for an extended period. Even if identified, we may be unable to adequately investigate or remediate incidents or breaches due to attackers increasingly using tools and techniques, including artificial intelligence, that are designed to circumvent controls, to avoid detection, and to remove or obfuscate forensic evidence. Our third party service providers and partners are also subject to these heightened risks. The costs to us to investigate and mitigate network security problems, bugs, viruses, worms, malicious software programs and security vulnerabilities could be significant, and while we have implemented security measures to protect our data security and information technology systems, our efforts to address these problems may not be successful, and these problems could result in unexpected interruptions, delays, cessation of service, negative publicity and other harm to our business and our competitive position. There can also be no assurance that our and our collaborators', future CROs' and other contractors' and consultants' cybersecurity risk management program and processes, including policies, controls or procedures, will be fully implemented, complied with or effective in protecting our systems, networks and Confidential Information.

We and certain of our service providers have experienced certain cyberattacks and security incidents from time to time. Although to our knowledge we have not experienced any significant system failure or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations, whether due to a loss, corruption or unauthorized disclosure of our Confidential Information or other similar disruptions. For example, the loss of clinical trial data from completed, ongoing or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. If a security breach or other incident were to result in the unauthorized access to or unauthorized use, disclosure, release or other processing of clinical trial data or personal data, it may be necessary to notify individuals, governmental authorities, supervisory bodies, the media, and other parties pursuant to privacy and security laws.

Likewise, we rely on our third-party research institution collaborators for research and development of our product candidates and other third parties for the manufacture of our product candidates and to conduct clinical trials, and similar events relating to their information technology systems could also seriously harm our business. Any security compromise affecting us, our partners or our industry, whether real or perceived, could harm our reputation, erode confidence in the effectiveness of our security measures, and lead to regulatory scrutiny. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or systems, or inappropriate disclosure of Confidential Information, we could incur liability, our competitive position could be harmed, and the further development and commercialization of our product candidates could be delayed. Any losses, costs or liabilities may not be covered by, or may exceed the coverage limits of, any applicable insurance policies.

Furthermore, federal, state and international laws and regulations can expose us to enforcement actions and investigations by regulatory authorities, and potentially result in regulatory penalties, fines and significant legal liability, if our information technology security efforts fail. Any adverse impact to the availability, integrity or confidentiality of our or third-party systems or Confidential Information can result in legal claims or proceedings (such as class actions), regulatory investigations and enforcement actions, fines and penalties, negative reputational impacts that cause us to lose existing or future customers, and/or significant incident response, system restoration or remediation and future compliance costs. We may also be exposed to a risk of loss or litigation and potential liability, which could materially and adversely affect our business, results of operations or financial condition.

Business disruptions could seriously harm our business.

Our operations, and those of our CROs, CDMOs, suppliers, and other contractors and consultants, could be subject to earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics and other natural or man-made disasters or business interruptions, for which we are partly uninsured. In addition, we rely on our third-party research institution collaborators for conducting research and development of our product candidates, and they may be affected by government shutdowns or withdrawn funding. The occurrence of any of these business disruptions could seriously harm our business.

All of our operations including our corporate headquarters are located in multiple facilities in Emeryville, California. Damage or extended periods of interruption to our corporate, development or research facilities due to fire, earthquake and other natural disaster, power loss, communications failure, unauthorized entry or other events could cause us to cease or delay development of some or all of our product candidates. Although we maintain property damage and business interruption insurance coverage on these facilities, our insurance might not cover all losses under such circumstances and our business could be seriously harmed by such delays and interruption.

Actual or perceived failures to comply with applicable data protection, privacy and security laws, regulations, standards and other requirements could adversely affect our business, results of operations, and financial condition.

The global data protection landscape is rapidly evolving, and we are or may become subject to numerous state, federal and foreign laws, requirements and regulations governing the collection, use, disclosure, retention, and security of personal data, such as information that we may collect in connection with clinical trials in the United States and abroad. Implementation standards and enforcement practices are likely to remain uncertain for the foreseeable future, and we cannot yet determine the impact future laws, regulations, standards, or perception of their requirements may have on our business. This evolution may create uncertainty in our business, affect our ability to operate in certain jurisdictions or to collect, store, transfer use and share personal information, necessitate the acceptance of more onerous obligations in our contracts, result in liability or impose additional costs on us. The cost of compliance with these laws, regulations and standards is high and is likely to increase in the future. Any failure or perceived failure by us to comply with federal, state or foreign laws or regulation, our internal policies and procedures or our contracts governing our processing of personal information could result in negative publicity, government investigations and enforcement actions, claims by third parties and damage to our reputation, any of which could seriously harm our business.

As our operations and business grow, we may become subject to or affected by new or additional data protection laws and regulations and face increased scrutiny or attention from regulatory authorities. In the United States, HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and regulations implemented thereunder (collectively, “HIPAA”), imposes, among other things, certain standards on certain health care providers, health plans, and health care clearinghouses, known as covered entities, as well as their business associates that perform certain services that involve creating, receiving, maintaining or transmitting individually identifiable health information for or on behalf of such covered entities, and their covered subcontractors. We may obtain health information from third parties (including research institutions from which we obtain clinical trial data) that are subject to privacy and security requirements under HIPAA. Depending on the facts and circumstances, we could be subject to significant penalties if we violate HIPAA.

Certain states have also adopted comparable privacy and security laws and regulations, which govern the privacy, processing and protection of health-related and other personal information. Such laws and regulations will be subject to interpretation by various courts and other governmental authorities, thus creating potentially complex compliance issues for us and our future customers and strategic partners. For example, the California Consumer Privacy Act, as amended by the California Privacy Rights Act (collectively, the "CCPA") requires covered businesses that process the personal information of California residents to, among other things: (i) provide certain disclosures to California residents regarding the business's collection, use, and disclosure of their personal information; (ii) receive and respond to requests from California residents to access, delete, and correct their personal information, or to opt out of certain disclosures of their personal information; and (iii) enter into specific contractual provisions with service providers that process California resident personal information on the business's behalf. Similar laws have passed in other states, reflecting a trend toward more stringent privacy legislation in the United States. The enactment of such laws could have potentially conflicting requirements that would make compliance challenging. In the event that we are subject to or affected by HIPAA, the CCPA or other domestic privacy and data protection laws, any liability from failure to comply with the requirements of these laws could adversely affect our financial condition.

Furthermore, in 2024, the National Security Division of the U.S. Department of Justice ("DOJ") issued a new rule—referred to as the "Data Security Program" ("DSP")—to implement Executive Order 14117 aimed at preventing access to "bulk U.S. sensitive personal data" and "government-related data" by "countries of concern" (including China, Russia, Iran, North Korea, Cuba, and Venezuela) and "covered persons" (as all such terms are defined in the DSP). Effective as of April 8, 2025, and fully enforceable as of July 9, 2025, the DSP imposes stringent obligations on companies within its scope and prohibits or restricts "covered data transactions" that grant countries of concern or covered persons access to bulk U.S. sensitive personal data or any amount of government-related data. The DSP is new, complex and has yet to be enforced, and as such, there is a risk that our interpretation of its applicability, scope, and requirements is incorrect, incomplete, or misapplied. Compliance with the DSP may require us to invest heavily in data security and compliance measures, such as implementing and complying with the Cybersecurity and Infrastructure Security Agency's guidelines and other burdensome recordkeeping, reporting, and auditing requirements. It may also require us to implement new processes, stop or restrict certain data transfers, alter the geographic scope of our operations, cease doing business with certain third parties or using certain tools or vendors, or change how data flows throughout our business, any of which could materially impact our business operations or hinder our ability to grow our business. Finally, non-compliance with the DSP could result in significant civil or criminal penalties, which could materially adversely affect our business, results of operations, and financial condition.

In Europe, the European Union General Data Protection Regulation (the "EU GDPR") and the United Kingdom General Data Protection Regulation and Data Protection Act 2018 (collectively, the "UK GDPR") (the EU GDPR and UK GDPR together referred to as the "GDPR") impose strict requirements for processing the personal data of individuals within the European Economic Area ("EEA") and in the United Kingdom, respectively. Companies that must comply with the GDPR face increased compliance obligations and risk, including more robust regulatory enforcement of data protection requirements and potential fines for noncompliance of up to €20 million / £17.5 million or 4% of the annual global revenue of the noncompliant undertaking, whichever is greater. Since we are subject to the supervision of relevant data protection authorities under multiple legal regimes (including under both the EU GDPR and the UK GDPR), we could be fined under each of those regimes independently in respect of the same breach. In addition to fines, a breach of the GDPR may result in regulatory investigations, reputational damage, orders to cease or change our data processing activities, enforcement notices, assessment notices (for a compulsory audit) and/or civil claims (including class actions). Among other requirements, the GDPR regulates transfers of personal data subject to the GDPR to third countries that have not been found to provide adequate protection to such personal data, including the United States, and the efficacy and longevity of current transfer mechanisms between the EEA and the United States remains uncertain. Case law from the Court of Justice of the European Union ("CJEU") states that reliance on the standard contractual clauses - a standard form of contract approved by the European Commission as an adequate personal data transfer mechanism - alone may not necessarily be sufficient in all circumstances and that transfers must be assessed on a case-by-case basis. We expect the existing legal complexity and uncertainty regarding international personal data transfers to continue. As the regulatory guidance and enforcement landscape in relation to data transfers continue to develop, including circumstances where the SCCs cannot be used, and/or start taking enforcement action, we could suffer additional costs, complaints and/or regulatory investigations or fines, and/or if we are otherwise unable to transfer personal data between and among countries and regions in which we operate, it could affect the manner in which we operate our business, the geographical location or segregation of our relevant systems and operations, and could adversely affect our financial results.

Additionally, the Securities and Exchange Commission (the "SEC") has adopted rules that enhance and standardize disclosures regarding cybersecurity risk management, strategy, and governance, as well as material cybersecurity incidents. Under these new rules, we are required to make annual disclosures describing our processes for assessing, identifying and managing material risks from cybersecurity threats, management's role in assessing and managing such risks and our board of directors' oversight of risks from cybersecurity threats. We are also required to disclose, in a Current Report on Form 8-K, the material aspects of the nature, scope and timing of any material cybersecurity incident and its material impact or reasonably likely material impact on us.

As we continue to expand into other foreign countries and jurisdictions, we may be subject to additional laws and regulations that may affect how we conduct business.

Although we work to comply with applicable laws, regulations and standards, our contractual obligations and other legal obligations, these requirements are evolving and may be modified, interpreted and applied in an inconsistent manner from one jurisdiction to another, and may conflict with one another or other legal obligations with which we must comply. Any failure or perceived failure by us or our employees, representatives, contractors, consultants, CROs, collaborators, or other third parties to comply with such requirements or adequately address privacy and security concerns, even if unfounded, could result in additional cost and liability to us, damage our reputation, and seriously harm our business.

Our business may be affected by the evolving regulatory framework for AI Technologies.

We use artificial intelligence ("AI"), machine learning, and automated decision-making technologies, (collectively, "AI Technologies") in our business. We expect that increased investment will be required in the future to continuously improve our use of AI Technologies. As with many technological innovations, there are significant risks involved in developing, maintaining and deploying these technologies, including that AI-generated content, analyses, or recommendations we utilize could be deficient, that our competitors may more quickly or effectively adopt AI capabilities, or that our use of AI or other emerging technologies increases regulatory, cybersecurity and other significant risks. There can be no assurance that the usage of or our investments in such technologies will always enhance our products or services or be beneficial to our business, including our efficiency or profitability.

In particular, if the models underlying our AI Technologies are: incorrectly designed or implemented; trained or reliant on incomplete, inadequate, inaccurate, biased or otherwise poor quality data, or on data to which we do not have sufficient rights or in relation to which we and/or the providers of such data have not implemented sufficient legal compliance measures; used without sufficient oversight and governance to ensure their responsible use; and/or adversely impacted by unforeseen defects, technical challenges, cybersecurity threats or material performance issues, the performance of our products, services and business, as well as our reputation, could suffer or we could incur liability resulting from the violation of laws or contracts to which we are a party or civil claims.

We are in varying stages of development in relation to our products and internal business processes involving AI Technologies. The continuous development, maintenance and operation of our AI Technologies is expensive and complex, and may involve unforeseen difficulties including material performance problems, undetected defects or errors. For instance, the models underlying AI Technologies can experience decay (also known as "model drift") in which its performance and accuracy decreases over time without further human intervention to correct such decay.

We may not be successful in our ongoing development and maintenance of these technologies in the face of novel and evolving technical, reputational and market factors. Our efforts to develop proprietary AI models could increase our operating costs. Our ability to develop proprietary AI models may be limited by our access to processing infrastructure or training data, and we may be dependent on third-party providers for such resources.

The regulatory framework for AI Technologies is rapidly evolving as many federal, state, and foreign government bodies and agencies have introduced or are currently considering additional laws and regulations. Additionally, existing laws and regulations may be interpreted in ways that would affect the operation of our AI Technologies. As a result, implementation standards and enforcement practices are likely to remain uncertain for the foreseeable future, and we cannot yet determine the impact future laws, regulations, standards, or market perception of their requirements may have on our business and may not always be able to anticipate how to respond to these laws or regulations. Failure to appropriately respond to this evolving landscape may result in reputational, competitive and business harm as well as litigation and regulatory action and fines, penalties and expenses related thereto.

It is possible that new laws and regulations will be adopted in the U.S. and in other non-U.S. jurisdictions, or that existing laws and regulations, including competition and antitrust laws, may be interpreted in ways that would limit our ability to use AI Technologies for our business, or require us to change the way we use AI Technologies in a manner that negatively affects the performance of our products, services, and business and the way in which we use AI Technologies. We may need to expend resources to adjust our products or services in certain jurisdictions if the laws, regulations, or decisions are not consistent across jurisdictions. Further, the cost to comply with such laws, regulations, or decisions and/or guidance interpreting existing laws, could be significant and would increase our operating expenses (such as by imposing additional reporting obligations regarding our use of AI Technologies). Such an increase in operating expenses, as well as any actual or perceived failure to comply with such laws and regulations, could adversely affect our business, financial condition and results of operations.

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

Under Sections 382 and 383 of the United States Internal Revenue Code of 1986, as amended (the "Code"), if a corporation undergoes an "ownership change" (generally defined as a greater than 50-percentage-point cumulative change (by value) in the equity ownership of certain stockholders over a rolling three-year period), the corporation's ability to use its pre-change net operating loss carryforwards ("NOLs") and other pre-change tax attributes to offset its post-change taxable income or taxes may be limited. If finalized, Treasury Regulations currently proposed under Section 382 of the Code may further limit our ability to utilize our pre-change NOLs or other pre-change tax attributes if we undergo a future ownership change. We have experienced ownership changes in the past. We may also experience ownership changes as a result of any future shifts in our stock ownership, some of which are outside our control. As a result, our ability to use our NOLs and other pre-change tax attributes to offset post-change taxable income or taxes may be subject to limitation. We will be unable to use our NOLs or other tax attributes if we do not attain profitability sufficient to offset our available NOLs or other tax attributes prior to their expiration, to the extent subject to expiration.

Changes in tax laws or regulations that are applied adversely to us or our customers may seriously harm our business.

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time, which could affect the tax treatment of any of our future domestic and foreign earnings. Any new taxes could adversely affect our domestic and international business operations, and our business and financial performance. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to us.

Risks Related to Ownership of Our Common Stock

The market price of our common stock may be volatile, which could result in substantial losses for investors.

Some of the factors that may cause the market price of our common stock to fluctuate include:

- results from, and any delays in, our clinical trials for our clinical-stage product candidates or any other future clinical development programs;
- the success of existing or new competitive products or technologies;
- commencement or termination of collaborations for our product candidates;
- failure or discontinuation of any of our product candidates;
- failure to develop our Therapeutic Vector Evolution platform technology;
- results of preclinical studies, clinical trials or regulatory approvals of product candidates of our competitors, or announcements about new research programs or product candidates of our competitors;
- regulatory or legal developments in the United States and other countries, including sanctions imposed by either the U.S. or foreign governments;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- the commencement of litigation;
- the level of expenses related to any of the research programs or product candidates that we may develop;

- the results of our efforts to develop additional product candidates or products;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders, or other stockholders;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in estimates or recommendations by securities analysts, if any, that cover our stock;
- changes in the structure of healthcare payment systems;
- the impact of political instability, natural disasters, war and/or events of terrorism, such as the war between Ukraine and Russia, and the corresponding tensions created from such conflict between Russia, the United States and countries in Europe as well as other countries such as China, and the ongoing war in the Middle East;
- market conditions in the pharmaceutical and biotechnology sectors;
- general economic, industry, and market conditions; and
- the other factors described in this “Risk Factors” section.

In recent years, the stock market in general, and the market for pharmaceutical and biotechnology companies in particular, has experienced significant price and volume fluctuations that have often been unrelated or disproportionate to changes in the operating performance of the companies whose stock is experiencing those price and volume fluctuations. Further, the stock market in general has been highly volatile due to macroeconomic factors such as higher inflation and increased interest rates and political uncertainty in the United States. Broad market and industry factors may seriously affect the market price of our common stock, regardless of our actual operating performance. Since the completion of our initial public offering in December 2020, the price of our common stock has been volatile, and we expect such volatility to continue. Following periods of such volatility in the market price of a company’s securities, securities class action litigation has often been brought against that company. Because of the potential volatility of our stock price, we may become the target of securities litigation in the future. Securities litigation could result in substantial costs and divert management’s attention and resources from our business.

If securities analysts do not publish research or reports about our business or if they publish negative evaluations of our stock, the price of our stock could decline.

The trading market for our common stock relies in part on the research and reports that industry or financial analysts publish about us or our business. If one or more of these analysts should drop research coverage of us or if one or more of the analysts covering our business downgrade their evaluations of our stock, the price of our stock could decline. If one or more of these analysts cease to cover our stock, we could lose visibility in the market for our stock, which in turn could cause our stock price to decline.

Sales of a substantial number of shares of our common stock in the public market could occur at any time, which could cause the market price of our common stock to decline significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales or the perception in the market that the holders of a large number of shares of our common stock intend to sell shares, could reduce the market price of our common stock.

Further, shares issued upon the exercise of stock options outstanding under our equity incentive plans, or pursuant to future awards granted under those plans, will become available for sale in the public market to the extent permitted by the provisions of applicable vesting schedules and Rule 144 and Rule 701 under the Securities Act.

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

We will seek additional capital through one or a combination of public and private equity offerings, debt financings, strategic partnerships and alliances, licensing arrangements, and the term loans under our Loan Agreement with Hercules. We, and indirectly, our stockholders, will bear the cost of issuing and servicing such securities. Because our decision to issue debt or equity securities in any future offering will depend on market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing or nature of any future offerings. To the extent that we raise additional capital through the sale of equity securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. The incurrence of indebtedness would result in increased fixed payment obligations and could involve restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. Additionally, any future collaborations we enter into with third parties may provide capital in the near term but limit our potential cash flow and revenue in the future. If we raise additional funds through strategic partnerships and alliances and licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies or product candidates, or grant licenses on terms unfavorable to us.

Additionally, as of June 30, 2026, there are Pre-funded Warrants outstanding to purchase 16,935,665 shares of common stock, which are exercisable at a nominal exercise price. If holders of these Pre-funded Warrants exercise these securities, existing shareholders will suffer dilution to their voting power and we may experience dilution in our earnings per share, as well as a negative impact on our share price.

Insiders have substantial influence over us, which could limit your ability to affect the outcome of key transactions, including a change of control.

Our directors, executive officers, holders of more than 5% of our outstanding stock and their respective affiliates beneficially own shares representing approximately 62% of our outstanding common stock as of June 30, 2026. As a result, these stockholders, if they act together, will be able to influence our management and affairs and all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. This concentration of ownership may have the effect of delaying or preventing a change in control of our company and might affect the market price of our common stock.

We incur significant costs as a result of operating as a public company, and our management devotes substantial time to public company compliance initiatives. We may fail to comply with the rules that apply to public companies, including Section 404 of the Sarbanes-Oxley Act of 2002, which could result in sanctions or other penalties that would seriously harm our business.

We incur significant legal, accounting and other expenses as a public company, including costs resulting from public company reporting obligations under the Exchange Act and regulations regarding corporate governance practices. The listing requirements of the Nasdaq Global Select Market and the rules of the SEC require that we satisfy certain corporate governance requirements relating to director independence, filing annual and interim reports, stockholder meetings, approvals and voting, soliciting proxies, conflicts of interest and a code of conduct. Our management and other personnel will need to devote a substantial amount of time to ensure that we comply with all of these requirements. Moreover, the reporting requirements, rules and regulations have and will likely continue to increase our legal and financial compliance costs and will make some activities more time-consuming and costly. Any changes we make to comply with these obligations may not be sufficient to allow us to satisfy our obligations as a public company on a timely basis, or at all. These reporting requirements, rules and regulations, coupled with the increase in potential litigation exposure associated with being a public company, could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors or board committees or to serve as executive officers, or to obtain certain types of insurance, including directors' and officers' insurance, on acceptable terms.

Section 404 of the Sarbanes-Oxley Act of 2002 ("Section 404") requires an annual management assessment of the effectiveness of our internal control over financial reporting. While Section 404 also requires, among other things, that we assess the effectiveness of our internal control structure and procedures for financial reporting on an annual basis, for as long as we are a non-accelerated filer or a smaller reporting company, the registered public accounting firm that issues an audit report on our financial statements will not be required to attest to or report on the effectiveness of our internal control over financial reporting pursuant to Section 404. Our compliance with Section 404 requires that we incur substantial expense and expend significant management efforts.

During the course of our review and testing, we may identify deficiencies and be unable to remediate them before we must provide the required reports. Furthermore, if we have a material weakness in our internal controls over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated. We or our independent registered public accounting firm may not be able to conclude on an ongoing basis that we have effective internal control over financial reporting, which could harm our operating results, cause investors to lose confidence in our reported financial information and cause the trading price of our stock to fall. In addition, as a public company we will be required to file accurate and timely quarterly and annual reports with the SEC under the Exchange Act. In order to report our results of operations and financial statements on an accurate and timely basis, we will depend in part on CROs to provide timely and accurate notice of their costs to us.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws and Delaware law might discourage, delay or prevent a change in control of our company or changes in our management and, therefore, depress the market price of our common stock.

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could depress the market price of our common stock by acting to discourage, delay or prevent a change in control of our company or changes in our management that the stockholders of our Company may deem advantageous. These provisions, among other things:

- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- eliminate cumulative voting in the election of directors;
- authorize our board of directors to issue shares of preferred stock and determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval;
- provide our board of directors with the exclusive right to elect a director to fill a vacancy or newly created directorship;
- provide that our directors may be removed only for cause;
- permit stockholders to only take actions at a duly called annual or special meeting and not by written consent;
- prohibit stockholders from calling a special meeting of stockholders;
- provide for a staggered board, which will result in only a few directors being up for re-election in each calendar year;
- require that stockholders give advance notice to nominate directors or submit proposals for consideration at stockholder meetings;
- authorize our board of directors, by a majority vote, to amend the bylaws;
- require the affirmative vote of at least 66 2/3% or more of the outstanding shares of our common stock to amend many of the provisions described above; and
- limit the liability of, and provide indemnification to, our directors and officers.

In addition, Section 203 of the General Corporation Law of the State of Delaware ("DGCL") prohibits a publicly-held Delaware corporation from engaging in a business combination with an interested stockholder, generally a person which together with its affiliates owns, or within the last three years has owned, 15% of our voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner.

Any provision of our certificate of incorporation, bylaws, or Delaware law that has the effect of delaying or preventing a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our capital stock and could also affect the price that some investors are willing to pay for our common stock.

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law.

In addition, as permitted by Section 145 of the Delaware General Corporation Law, our amended and restated bylaws and our indemnification agreements that we have entered into with our directors and officers provide that:

- We will indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful.
- We may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law.
- We are required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification.
- We will not be obligated pursuant to our amended and restated bylaws to indemnify a person with respect to proceedings initiated by that person against us or our other indemnitees, except with respect to proceedings authorized by our board of directors or brought to enforce a right to indemnification.
- The rights conferred in our amended and restated bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons.
- We may not retroactively amend our amended and restated bylaw provisions to reduce our indemnification obligations to directors, officers, employees and agents.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that the Court of Chancery of the State of Delaware will be the exclusive forum for certain disputes 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 or employees.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, in the event that the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware or other state courts of the State of Delaware) shall, to the fullest extent permitted by law, be the sole and exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a claim of breach of fiduciary duty, any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated bylaws, or any action asserting a claim against us that is governed by the internal affairs doctrine; provided that, the exclusive forum provision will not apply to suits brought to enforce any liability or duty created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction; and provided further that, if and only if the Court of Chancery of the State of Delaware dismisses any such action for lack of subject matter jurisdiction, such action may be brought in another state or federal court sitting in the State of Delaware. Our amended and restated certificate of incorporation and amended and restated bylaws also provide that the federal district courts of the United States of America will be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act, including all causes of action asserted against any defendant to such complaint. Nothing in our amended and restated certificate of incorporation and amended and restated bylaws precludes stockholders that assert claims under the Exchange Act from bringing such claims in state or federal court, subject to applicable law.

This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or any of our directors, officers, other employees or stockholders, which may discourage lawsuits with respect to such claims, although our stockholders will not be deemed to have waived our compliance with federal securities laws and the rules and regulations thereunder. Furthermore, the enforceability of similar choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could find these types of provisions to be inapplicable or unenforceable. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions, and there can be no assurance that such provisions will be enforced by a court in those other jurisdictions. If a court were to find the choice of forum provision that will be contained in our amended and restated certificate of incorporation and amended and restated bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could seriously harm our business. Any person or entity purchasing or otherwise acquiring any interest in our shares of capital stock shall be deemed to have notice of and consented to this exclusive forum provision, but will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder.

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

We do not currently intend to pay any cash dividends on our common stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. In addition, the terms of our Loan Agreement with Hercules may preclude us from paying dividends without the lender's consent or at all. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future. Since we do not intend to pay dividends, your ability to receive a return on your investment will depend on any future appreciation in the market value of our common stock. There is no guarantee that our common stock will appreciate or even maintain the price at which our holders have purchased it.

Unfavorable conditions in the global economy caused by global political unrest or conflicts, including the ongoing conflict between Russia and Ukraine and in the Middle East, may exacerbate certain risks we face.

Political unrest, international conflict, terrorism or war, such as Russia's invasion of Ukraine and the armed conflict in the Middle East, and the global response to these conflicts, including the imposition of sanctions by the United States and other countries, could create or exacerbate risks facing our business. We have evaluated our operations and partner contracts, and we currently do not expect existing conflicts to directly have a significant effect on our financial condition or results of operations. However, if hostilities persist, escalate or expand, risks that we have identified in this Quarterly Report on Form 10-Q may be materially increased. For example, if our supply arrangements or clinical operations are disrupted due to expanded sanctions or involvement of countries where we have operations or relationships, our business could be materially disrupted. Further, the use of cyberattacks could expand as part of the ongoing conflicts, which could adversely affect our ability to maintain or enhance our cyber security measures. These and other risks are described more fully in this "Risk Factors" section.

General Risk Factors

Any legal proceedings or claims against us could be costly and time-consuming to defend and could harm our reputation regardless of the outcome.

We may in the future become subject to legal proceedings and claims that arise in the ordinary course of business, such as disputes or employment claims made by our current or former employees. Any litigation, whether meritorious or not, could harm our reputation, increase our costs and may divert management's attention, time and resources, which may in turn seriously harm our business. Insurance might not cover such claims, might not provide sufficient payments to cover all the costs to resolve one or more such claims, and might not continue to be available on terms acceptable to us. A claim brought against us that is uninsured or underinsured could result in unanticipated costs and could seriously harm our business.

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

We face an inherent risk of product liability as a result of the clinical testing of our product candidates and will face an even greater risk when and if we commercialize any products. For example, we may be sued if our product candidates cause or are perceived to cause injury or are found to be otherwise unsuitable during clinical testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability or a breach of warranties. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to cease commercialization of our product candidates. Even successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased or interrupted demand for our products;
- substantial monetary awards to trial participants or patients;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- injury to our reputation;
- withdrawal of clinical trial participants and inability to continue clinical trials;
- initiation of investigations by regulators;
- costs to defend the related litigation;
- a diversion of management's time and our resources;
- loss of revenue;
- exhaustion of any available insurance and our capital resources;
- the inability to commercialize any product candidate; and
- a decline in our share price.

Our inability to obtain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of products we develop, alone or with collaborators. Our insurance policies may have various exclusions, and we may be subject to a product liability claim for which we have no coverage. We may have to pay any amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient capital to pay such amounts. Even if our agreements with any future corporate collaborators entitle us to indemnification against losses, such indemnification may not be available or adequate should any claim arise.

Our employees, independent contractors, consultants, research or commercial partners or collaborators and vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.

We are exposed to the risk of fraud, misconduct or other illegal activity by our employees, independent contractors, consultants, research or commercial partners or other collaborators, including the foundations we work with, and vendors. Misconduct by these parties could include intentional, reckless and negligent conduct that fails to: comply with the laws of the FDA, EMA and other comparable foreign regulatory authorities; provide true, complete and accurate information to the FDA, EMA and other comparable foreign regulatory authorities; comply with manufacturing standards we have established; comply with healthcare fraud and abuse laws in the United States and similar foreign fraudulent misconduct laws; or report financial information or data accurately or to disclose unauthorized activities to us. If we obtain FDA approval of any of our product candidates and begin commercializing those products in the United States, our potential exposure under such laws will increase significantly, and our costs associated with compliance with such laws are also likely to increase. In particular, research, sales, marketing, education and other business arrangements in the healthcare industry are subject to extensive laws designed to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, educating, marketing and promotion, sales and commission, certain customer incentive programs and other business arrangements generally. Activities subject to these laws also involve the improper use of information obtained in the course of patient recruitment for clinical trials, which could result in regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and third parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws. In addition, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could seriously harm our business, including the imposition of significant fines or other sanctions.

If we or any contract manufacturers and suppliers we engage fail to comply with environmental, health, and safety laws and regulations, we could become subject to fines or penalties or incur costs that could seriously harm our business.

We and any contract manufacturers and suppliers we engage are subject to numerous federal, state and local environmental, health, and safety laws, regulations, and permitting requirements, including those governing laboratory procedures; the generation, handling, use, storage, treatment and disposal of hazardous and regulated materials and wastes; the emission and discharge of hazardous materials into the ground, air and water; and employee health and safety. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. Under certain environmental laws, we could be held responsible for costs relating to any contamination at our current or past facilities and at third-party facilities. We also could incur significant costs associated with civil or criminal fines and penalties.

Compliance with applicable environmental laws and regulations may be expensive, and current or future environmental laws and regulations may impair our research, product development and manufacturing efforts. In addition, we cannot entirely eliminate the risk of accidental injury or contamination from these materials or wastes. Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not carry specific biological or hazardous waste insurance coverage, and our property, casualty, and general liability insurance policies specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination. Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our clinical trials or regulatory approvals could be suspended, which could seriously harm our business.

Our business could be negatively impacted by corporate citizenship and ESG matters and/or our reporting of such matters.

Institutional, individual, and other investors, proxy advisory services, regulatory authorities, consumers and other stakeholders have increasingly focused on environmental, social and governance ("ESG") practices of companies. As we look to respond to evolving standards for identifying, measuring, and reporting ESG metrics, our efforts may result in a significant increase in costs and may nevertheless not meet investor or other stakeholder expectations and evolving standards or regulatory requirements, which may negatively impact our financial results, our reputation, our ability to attract or retain employees, our attractiveness as an investment or business partner, or expose us to government enforcement actions, private litigation, and actions by stockholders or stakeholders.

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

Recent Sales of Unregistered Securities

Not applicable.

Use of Proceeds

Not applicable.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

Insider Trading Arrangements

During the fiscal quarter ended June 30, 2026, none of our directors or officers (as defined in Rule 16a-1(f) under the Securities Exchange Act of 1934, as amended) adopted 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) or any "non-Rule 10b5-1 trading arrangement," as defined in Item 408(a) of Regulation S-K.

Item 6. Exhibits

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Date	Number	
3.1	Amended and Restated Certificate of Incorporation, as currently in effect.	8-K	12/15/20	3.1	
3.2	Amended and Restated Bylaws, as currently in effect.	8-K	10/02/25	3.1	
4.1	Description of Securities of the Registrant.	10-K	3/18/2026	4.1	
4.2	Form of Common Stock Certificate.	S-1/A	12/7/20	4.2	
4.3	Form of Pre-Funded Warrant issued in conjunction with February 2024 Offering.	8-K	2/9/24	4.1	
4.4	Form of Pre-Funded Warrant issued in conjunction with November 2024 Exchange.	10-Q	11/13/24	4.4	
4.5	Form of Pre-Funded Warrant issued in conjunction with December 2024 Exchange.	8-K	12/11/24	4.1	
4.6	Form of Pre-Funded Warrant issued in conjunction with November 2025 Offering.	8-K	11/7/25	4.1	
4.7	Form of Pre-Funded Warrant issued in conjunction with January 2026 Exchange.	8-K	1/26/26	4.1	
10.1†	Loan and Security Agreement, dated June 24, 2026, between the Registrant, the several banks and other financial institutions or entities from time to time party thereto, and Hercules Capital, Inc.				X
31.1	Certification of the Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
31.2	Certification of the Principal Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
32.1*	Certifications of the Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				X
101.INS	Inline XBRL Instance Document.				X
101.SCH	Inline XBRL Taxonomy Extension Schema With Embedded Linkbase Document.				X
104	The cover page from the Company's Quarterly Report on Form 10-Q for the three months ended June 30, 2026 has been formatted in Inline XBRL.				X

† Certain confidential portions (indicated by brackets and asterisks) have been omitted from this exhibit pursuant to Item 601(b)(10) of Regulation S-K because they are both (i) not material and (ii) the type of information that the Company treats as private or confidential.

* The certifications attached as Exhibit 32.1 that accompany this Quarterly Report on Form 10-Q are deemed furnished and not filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of 4D Molecular Therapeutics, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Quarterly Report on Form 10-Q, irrespective of any general incorporation language contained in such filing.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Report to be signed on its behalf by the undersigned thereunto duly authorized.

4D Molecular Therapeutics, Inc.

Date: August 13, 2026

By: /s/ David Kirn

David Kirn, M.D.
President, Chief Executive Officer and Director
Principal Executive Officer

Date: August 13, 2026

By: /s/ Kristian Humer

Kristian Humer
Chief Financial Officer
Principal Financial and Accounting Officer

Exhibit 10.1

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THE EXHIBIT BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE COMPANY TREATS AS PRIVATE OR CONFIDENTIAL.

LOAN AND SECURITY AGREEMENT

THIS LOAN AND SECURITY AGREEMENT is made and dated as of June 24, 2026 and is entered into by and among **4D MOLECULAR THERAPEUTICS, INC.**, a Delaware corporation ("Company"), and each other Person that has delivered a Joinder Agreement pursuant to Section 7.13 from time to time party hereto (together with Company, individually or collectively, as the context may require, "Borrower"), the several banks and other financial institutions or entities from time to time party hereto (each, a "Lender", and collectively "Lenders") and HERCULES CAPITAL, INC., a Maryland corporation, in its capacity as administrative agent and collateral agent for itself and Lenders (in such capacity, including any successors or assigns, "Agent").

RECITALS

A. Borrower has requested Lenders make available to Borrower up to seven (7) tranches of term loans in an aggregate principal amount of up to Two Hundred Million Dollars ($200,000,000) (the "Term Loans"); and

B. Lenders are willing to make the Term Loans on the terms and conditions set forth in this Agreement.

AGREEMENT

NOW, THEREFORE, Borrower, Agent and Lenders agree as follows:

SECTION 1. DEFINITIONS AND RULES OF CONSTRUCTION

1.1 Unless otherwise defined herein, the following capitalized terms shall have the following meanings:

"4D-150" means the Company's gene therapy product candidate known as 4D-150 (including any product containing the same or substantially similar transgene and viral vector construct), in any dosage form, formulation, strength, mode of administration, delivery mechanism, presentation, or package configuration, including any improvement, modification, enhancement, reformulation, next-generation version, or line extension thereof.

"Account Control Agreement(s)" means any agreement entered into by and among Agent, Borrower and a third-party bank or other institution (including a Securities Intermediary) in which Borrower maintains a Deposit Account or an account holding Investment Property and which perfects Agent's first priority security interest in the subject account or accounts.

"ACH Authorization" means the ACH Debit Authorization Agreement in substantially the form of Exhibit H, which account numbers shall be redacted for security purposes if and when filed publicly by Borrower.

"Acquisition" means any transaction or series of related transactions for the purpose of or resulting, directly or indirectly, in (a) the acquisition of all or substantially all of the assets of a Person, or of any business, line of business or division or other unit of operation of a Person, (b) the acquisition of

fifty percent (50%) or more of the Equity Interests of any Person, whether or not involving a merger, consolidation or similar transaction with such other Person, or otherwise causing any Person to become a Subsidiary of Borrower, or (c) the acquisition of, or the right to use, develop or sell, in each case, including through licensing (other than any Permitted Licenses), any product, product line or intellectual property of or from any other Person.

"Advance(s)" means a Term Loan Advance.

"Advance Date" means the funding date of any Advance.

"Advance Request" means a request for an Advance submitted by Borrower to Agent in substantially the form of Exhibit A, which account numbers shall be redacted for security purposes if and when filed publicly by Borrower.

"Affiliate" means any Person (a) that directly or indirectly controls, is controlled by, or is under common control with the Person in question, (b) directly or indirectly owning, controlling or holding with power to vote fifteen percent (15%) or more of the outstanding voting securities of another Person, or (c) fifteen percent (15%) or more of whose outstanding voting securities are directly or indirectly owned, controlled or held by another Person with power to vote such securities. As used in the definition of "Affiliate," the term "control" means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a Person, whether through ownership of voting securities, by contract or otherwise.

"Agreement" means this Loan and Security Agreement, as amended, restated, amended and restated, supplemented or otherwise modified from time to time.

"Anti-Corruption Laws" means all laws, rules, and regulations of any jurisdiction applicable to Borrower or any of its controlled Affiliates from time to time concerning or relating to bribery or corruption, including without limitation the United States Foreign Corrupt Practices Act of 1977, as amended, the UK Bribery Act 2010 and other similar legislation in any other jurisdictions.

"Anti-Terrorism Laws" means any laws, rules, regulations or orders relating to terrorism or money laundering, including without limitation Executive Order No. 13224 (effective September 24, 2001), the USA PATRIOT Act, the laws comprising or implementing the Bank Secrecy Act, and the laws administered by OFAC.

"Bankruptcy Code" means the federal bankruptcy law of the United States as from time to time in effect, currently as Title 11 of the United States Code. Section references to current sections of the Bankruptcy Code shall refer to comparable sections of any revised version thereof if section numbering is changed.

"Biologics License Application" means an application for licensure of a biological product submitted to the FDA under 42 U.S.C. § 262(a) for permission to introduce, or deliver for introduction, a biologic product into interstate commerce.

"Blocked Person" means any Person: (a) listed in the annex to, or is otherwise subject to the provisions of, Executive Order No. 13224, (b) owned or controlled by, or acting for or on behalf of, any Person that is listed in the annex to, or is otherwise subject to the provisions of, Executive Order No. 13224, (c) with which any Lender is prohibited from dealing or otherwise engaging in any transaction by any Anti-Terrorism Law, (d) that commits, threatens or conspires to commit or supports "terrorism" as defined in

Executive Order No. 13224, or (e) that is named a "specially designated national" or "blocked person" on the most current list published by OFAC or other similar list.

"Board Approved Forecast" means the Net Product Revenue projections approved by Company's Board of Directors and delivered after satisfaction of the Approval Milestone in accordance with Section 7.1(i), which projections must be acceptable to Agent in its reasonable discretion.

"Board of Directors" means, with respect to any Person that is a corporation, its board of directors, with respect to any Person that is a limited liability company, its board of managers, board of members or similar governing body, and with respect to any other Person that is another form of a legal entity, such Person's governing body in accordance with its Organizational Documents.

"Borrower Product Activities" means the research, design, development, manufacture, production, use, commercialization, marketing, importing, storage, transport, offer for sale, distribution or sale of the Borrower Products.

"Borrower Products" means all products, software, service offerings, technical data or technology currently being designed, manufactured or sold or that are under clinical investigation or development by Borrower or any of its Subsidiaries or which Borrower or any of its Subsidiaries intends to sell, license, or distribute in the future including any products or service offerings under development, collectively, together with all products, software, service offerings, technical data or technology that have been sold, licensed or distributed by Borrower or any of its Subsidiaries (if any) since its incorporation.

"Borrower's Books" means Borrower's or any of its Subsidiaries' books and records including ledgers, federal, state, local and foreign tax returns, records regarding Borrower's or its Subsidiaries' assets or liabilities, the Collateral, business operations or financial condition, and all computer programs or storage or any equipment containing such information.

"Business Day" means any day other than Saturday, Sunday and any other day on which banking institutions in the State of New York are closed for business.

"Cash" means all cash, cash equivalents and liquid funds, in each case, excluding Digital Assets.

"Change in Control" means (a) at any time, any "person" or "group" (as such terms are used in Sections 13(d) and 14(d) of Securities Exchange Act of 1934, as amended), shall become, or obtain rights (whether by means of warrants, options or otherwise) to become, the "beneficial owner" (as defined in Rules 13(d)-3 and 13(d)-5 under Securities Exchange Act of 1934, as amended), directly or indirectly, of fifty percent (50.0%) or more of the ordinary voting power for the election of directors, partners, managers and members, as applicable, of Company (determined on a fully diluted basis); (b) [reserved]; (c) at any time, Company shall cease to own and control, of record and beneficially, directly or indirectly, one hundred percent (100.0%) of each class of outstanding stock, partnership, membership, or other ownership interest or other equity securities of each Subsidiary of Company free and clear of all Liens (other than Permitted Liens); or (d) any "change of control", "fundamental change" or any comparable term under and as defined in any indenture governing any Permitted Convertible Debt Financing has occurred.

"Charter" means, with respect to any Person, such Person's incorporation, formation or equivalent documents, as in effect from time to time.

"Closing Date" means the date of this Agreement.

"Code" means the U.S. Internal Revenue Code of 1986, as amended.

"Collateral Claim" means any and all present and future "claims" (used in its broadest sense, as contemplated by and defined in Section 101(5) of the Bankruptcy Code, but without regard to whether such claim would be disallowed under the Bankruptcy Code) of a Lender now or hereafter arising or existing under or relating to this Agreement and related Loan Documents, whether joint, several, or joint and several, whether fixed or indeterminate, due or not yet due, contingent or non-contingent, matured or unmatured, liquidated or unliquidated, or disputed or undisputed, whether under a guaranty or a letter of credit, and whether arising under contract, in tort, by law, or otherwise, any interest or fees thereon (including interest or fees that accrue after the filing of a petition by or against Borrower under the Bankruptcy Code, irrespective of whether allowable under the Bankruptcy Code), any costs of Enforcement Actions, including reasonable attorneys' fees and costs, and any prepayment or termination premiums.

"Common Stock" means the Common Stock, $0.0001 par value per share, of Company.

"Company IP" means any and all of the following, as they exist in and throughout the United States of America:

(a) Current Company IP;

(b) improvements, continuations, continuations-in-part, divisions, provisionals or any substitute applications, any Patent issued with respect to any of the Current Company IP, any Patent right claiming the composition of matter of, or the method of making or using, the Borrower Products in the United States of America, any reissue, reexamination, renewal or Patent term extension or adjustment (including any supplementary protection certificate) of any such Patent, and any confirmation Patent or registration Patent or patent of addition based on any such Patent;

(c) trade secrets and trade secret rights, including any rights to unpatented inventions, know-how, show-how, operating manuals, confidential or proprietary information, research in progress, algorithms, data, databases, data collections, designs, processes, procedures, methods, protocols, materials, formulae, drawings, schematics, blueprints, flow charts, models, strategies, prototypes, techniques, and results of experimentation and testing, including samples, in each case as specifically related to the Borrower Product Activities;

(d) any and all IP Ancillary Rights specifically relating to any of the foregoing; and

(e) regulatory filings, submissions and approvals, and all data provided in any of the foregoing, related to the Borrower Product Activities.

"Compliance Certificate" means a certificate in the form attached hereto as Exhibit E.

"Contingent Obligation" means, as applied to any Person, any direct or indirect liability, contingent or otherwise, of that Person with respect to (i) any Indebtedness, lease (excluding operating leases of real property), dividend, letter of credit or other obligation of another Person, including any such obligation directly or indirectly guaranteed, endorsed, co-made or discounted or sold with recourse by that Person, or in respect of which that Person is otherwise directly or indirectly liable; (ii) any obligations with respect to undrawn letters of credit, corporate credit cards or merchant services issued for the account of that Person; and (iii) all obligations arising under any interest rate, currency or commodity swap agreement, interest rate cap agreement, interest rate collar agreement, or other agreement or arrangement designed to protect a Person against fluctuation in interest rates, currency exchange rates or commodity prices;

provided, however, that the term "Contingent Obligation" shall not include endorsements for collection or deposit in the ordinary course of business. The amount of any Contingent Obligation shall be deemed, without duplication of the primary obligation, to be an amount equal to the stated or determined amount of the primary obligation in respect of which such Contingent Obligation is made or, if not stated or determinable, the maximum reasonably anticipated liability in respect thereof as determined by such Person in good faith; provided, however, that such amount shall not in any event exceed the maximum amount of the obligations under the guarantee or other support arrangement. For the avoidance of doubt, no Permitted Bond Hedge Transaction or Permitted Warrant Transaction will be considered a Contingent Obligation of Company.

"Copyright License" means any written agreement granting any right to use any Copyright or Copyright registration, now owned or hereafter acquired by Borrower or in which Borrower now holds or hereafter acquires any interest.

"Copyrights" means all copyrights, whether registered or unregistered, held pursuant to the laws of the United States of America, any State thereof, or of any other country.

"Core Product Assets" means [* * *].

"Current Company IP" means any pending, registered or in-licensed Intellectual Property that, individually or taken together with any other such Intellectual Property, is material to the business of Borrower and its Subsidiaries, taken as a whole, relating to the Borrower Product Activities, and is owned or co-owned by or exclusively licensed to Borrower or any of its Subsidiaries, as set forth on Schedule 5.10(a) or in the most recently delivered Compliance Certificate.

"Default" means any event, circumstance or condition that has occurred or exists, that would, with the passage of time or the requirement that notice be given or both, become an Event of Default.

"Deposit Accounts" means any "deposit accounts", as such term is defined in the UCC, and includes any checking account, savings account, or certificate of deposit.

"Digital Assets" means all cryptocurrencies, virtual currencies, coins, tokens and other digital assets.

"Disqualified Equity Interests" means any Equity Interests that, by their terms (or by the terms of any security or other Equity Interests into which they are convertible or for which they are exchangeable), or upon the happening of any event or condition (a) mature (excluding any maturity as the result of optional redemption by the issuer thereof, so long as financed by a source other than the balance sheet of Borrower or any of its Subsidiaries, which such financing shall mature no earlier than the day after the Term Loan Maturity Date) or are mandatorily redeemable (other than solely for Qualified Equity Interests) pursuant to a sinking fund obligation or otherwise (except as a result of a change of control or asset sale so long as any rights of the holders thereof upon the occurrence of a change of control or asset sale event shall be subject to the prior repayment in full of the Secured Obligations), (b) are redeemable at the option (except as a result of a change of control or asset sale so long as any rights of the holders thereof upon the occurrence of a change of control or asset sale event shall be subject to the prior repayment in full of the Secured Obligations) of the holder thereof (other than solely for Qualified Equity Interests), in whole or in part, (c) provide for scheduled payments of dividends in Cash, or (d) are or become convertible into or exchangeable for Indebtedness or any other Equity Interests that would constitute Disqualified Equity Interests, in each case, prior to the date that is one hundred fifty (150) days after the Term Loan Maturity Date (other than (i) following repayment in full of the Secured Obligations or (ii) upon a "change in control"; *provided* that any payment required pursuant to this clause (ii) is subject to the prior repayment

in full of the Secured Obligations); *provided*, *however*, that if such Equity Interests are issued to any employee or to any plan for the benefit of employees of the Borrower or the Subsidiaries or by any such plan to such employees, such Equity Interests shall not constitute Disqualified Equity Interests solely because they may be required to be repurchased by the Borrower or its Subsidiaries in order to satisfy applicable statutory or regulatory obligations or as a result of such employee's termination, death or disability.

"Division" means, in reference to any Person which is an entity, the division of such Person into two (2) or more separate Persons, with the dividing Person either continuing or terminating its existence as part of such division, including, without limitation, as contemplated under Section 18-217 of the Delaware Limited Liability Company Act for limited liability companies formed under Delaware law, Section 17-220 of the Delaware Revised Uniform Limited Partnership Act for limited partnerships formed under Delaware law, or any analogous action taken pursuant to any other applicable law with respect to any corporation, limited liability company, partnership or other entity.

"Domestic Subsidiary" means any Subsidiary organized under the laws of the United States of America, any State thereof, the District of Columbia, or any other jurisdiction within the United States of America.

"Enforcement Action" means, with respect to any Lender and with respect to any Collateral Claim of such Lender or any item of Collateral in which such Lender has or claims a security interest lien or right of offset, any action, whether judicial or nonjudicial, to repossess, collect, accelerate, offset, recoup, give notification to third parties with respect to, sell, dispose of, foreclose upon, give notice of sale, disposition, or foreclosure with respect to, or obtain equitable or injunctive relief with respect to, such Collateral Claim or Collateral. The filing, or the joining in the filing, by any Lender of an involuntary bankruptcy or Insolvency Proceeding against Borrower also is an Enforcement Action.

"Equity Interests" means, with respect to any Person, the capital stock, partnership or limited liability company interest, or other equity securities or equity ownership interests of such Person; provided that "Equity Interests" shall not include at any time (i) Permitted Convertible Debt until such Permitted Convertible Debt has been converted pursuant to the terms thereof or (ii) any Permitted Bond Hedge Transaction or Permitted Warrant Transaction until any Equity Interests have been issued pursuant to the terms thereof.

"ERISA" means the Employee Retirement Income Security Act of 1974, as amended, and the regulations promulgated thereunder.

"Excluded Accounts" means any of the following Deposit Accounts which are designated as such in writing to Agent as of the Closing Date or, with respect to any Deposit Account opened after the Closing Date, in the next Compliance Certificate delivered after such Deposit Account is opened: (a) Deposit Accounts exclusively used for payroll, payroll taxes, and other employee wage and benefit payments to or for the benefit of Borrower's employees holding an aggregate amount across all such accounts of not more than amounts needed for the then-next two (2) payroll cycles, (b) any Deposit Account which is a zero-balance disbursement account, (c) any Deposit Account which is solely used for disbursements and payments of withheld income taxes, payroll taxes and/or federal, state or local employee taxes, or (d) accounts used exclusively to maintain cash collateral subject to a Permitted Lien, (e) any Deposit Account which is solely used as a trust account, escrow account, or other fiduciary account.

"FDA" means the U.S. Food and Drug Administration or any successor thereto.

"FDA Laws" means all applicable guidelines, policies and requirements of law administered, implemented, enforced or issued by FDA or any comparable governmental authority.

"Foreign Subsidiary" means a Subsidiary other than any Domestic Subsidiary.

"GAAP" means generally accepted accounting principles in the United States of America, as in effect from time to time.

"Governmental Approval" means any consent, authorization, approval, order, license, franchise, permit, certificate, accreditation, registration, filing or notice, of, issued by, from or to, or other act by or in respect of, any Governmental Authority.

"Governmental Authority" means any applicable federal, state, municipal, national or other government, governmental department, commission, board, bureau, court, agency or instrumentality or political subdivision thereof (including the FDA) or any entity or officer exercising executive, legislative, judicial, regulatory or administrative functions of or pertaining to any government or any court, in each case whether associated with a state or locality of the United States, the United States, or a foreign government.

"Guarantor" means any Subsidiary of Borrower that enters into a Guaranty.

"Guaranty" means a guaranty with respect to the Secured Obligations, in form and substance satisfactory to Agent that may be entered into from time to time, as the same may from time to time be amended, restated, modified or otherwise supplemented.

"Indebtedness" means, without duplication, (a) all indebtedness for borrowed money or the deferred purchase price of property or services (excluding trade credit entered into in the ordinary course of business due within ninety (90) days), including reimbursement and other obligations with respect to surety bonds and letters of credit, (b) all obligations evidenced by notes, bonds, debentures or similar instruments, (c) all capital lease obligations, (d) all equity securities of any Person subject to repurchase or redemption other than at the sole option of such Person, (e) "earnouts", purchase price adjustments, profit sharing arrangements, deferred purchase money amounts and similar payment obligations or continuing obligations of any nature arising out of purchase and sale contracts, in each case to the extent treated as liabilities on the balance sheet in accordance with GAAP, (f) obligations arising under bonus, deferred compensation, incentive compensation or similar arrangements (other than those arising in the ordinary course of business), (g) non-contingent obligations to reimburse any bank or Person in respect of amounts paid under a letter of credit, banker's acceptance or similar instrument and (h) all Contingent Obligations. Notwithstanding the foregoing, "Indebtedness" shall not include any obligations arising under or in connection with any Permitted Bond Hedge Transaction or any Permitted Warrant Transaction.

"Insolvency Proceeding" means any proceeding by or against any Person under the United States Bankruptcy Code, or any other bankruptcy, liquidation, moratorium, receivership, or insolvency law (including without limitation such laws of other countries), including assignments for the benefit of creditors, compositions, extensions generally with its creditors, or proceedings seeking reorganization, administration, winding-up, arrangement, receivership or other similar relief proceedings in the applicable jurisdiction from time to time in effect and affecting the rights of creditors generally.

"Intellectual Property" means all of Borrower's Copyrights; Trademarks; Patents; Licenses; trade secrets and inventions; mask works; Borrower's applications therefor and reissues, extensions, or renewals thereof; and Borrower's goodwill associated with any of the foregoing, together

with Borrower's rights to sue for past, present and future infringement of Intellectual Property and the goodwill associated therewith.

"Intellectual Property Security Agreement" means the Intellectual Property Security Agreement dated as of the Closing Date between Loan Parties and Agent, as the same may from time to time be amended, restated, modified or otherwise supplemented.

"Investment" means (a) any beneficial ownership (including stock, partnership interests, limited liability company interests, or other equity securities or ownership interests) of or in any Person, (b) any loan, advance or capital contribution to any Person or (c) any Acquisition.

"IP Ancillary Rights" means, with respect to any Copyright, Trademark, Patent, software, trade secrets or trade secret rights, including any rights to unpatented inventions, know-how, show-how and operating manuals, all income, royalties, proceeds and liabilities at any time due or payable or asserted under or with respect to any of the foregoing or otherwise with respect thereto, including all rights to sue or recover at law or in equity for any past, present or future infringement, misappropriation, dilution, violation or other impairment thereof, and, in each case, all rights to obtain any other intellectual property right ancillary to any Copyright, Trademark, Patent, software, trade secrets or trade secret rights.

"IRS" means the U.S. Internal Revenue Service.

"Joinder Agreements" means for each Subsidiary required to join as a Borrower or as a Guarantor pursuant to Section 7.13, a completed and executed Joinder Agreement in substantially the form attached hereto as Exhibit F.

"License" means any Copyright License, Patent License, Trademark License or other Intellectual Property license of rights or interests.

"Lien" means any mortgage, deed of trust, pledge, hypothecation, assignment for security, security interest, encumbrance, levy, lien or charge of any kind, whether voluntarily incurred or arising by operation of law or otherwise, against any property, any conditional sale or other title retention agreement, and any lease in the nature of a security interest.

"Loan" means the Advances made under this Agreement.

"Loan Documents" means this Agreement, the promissory notes (if any), the ACH Authorization, the Account Control Agreements, any Joinder Agreement, all UCC financing statements, any Guaranty, the Intellectual Property Security Agreement and any other documents executed in connection with the Secured Obligations or the transactions contemplated hereby, as the same may from time to time be amended, modified, supplemented or restated.

"Loan Party" means Borrower or any Guarantor.

"Market Capitalization" means, for any given date of determination, an amount equal to (a) [* * *] of Company's common Equity Interests as reported for each of the [* * *] ([* * *]) [* * *] preceding such date of determination *multiplied by* (b) the total number of issued and outstanding shares of Company's common Equity Interests (including pre-funded warrants) that are issued and outstanding on the date of the determination and listed on the Principal Stock Exchange, subject to appropriate adjustment for any stock dividend, stock split, stock combination, reclassification or other similar transaction during the applicable calculation period.

"Market Disruption Event" means any of the following events: (a) any suspension of, or limitation imposed on, trading by the Principal Stock Exchange in shares of common Equity Interests during any period or periods aggregating one hour or longer and whether by reason of movements in price exceeding limits permitted by the Principal Stock Exchange or otherwise relating to the common Equity Interests; or (b) the failure to open of the exchange or quotation system on which the common Equity Interests are traded or the closure of such exchange or quotation system prior to its respective scheduled closing time for the regular trading session on such day (without regard to after hours or other trading outside the regular trading session hours).

"Material Acquisition" means any Acquisition for which the total acquisition consideration paid or incurred, or to be paid or incurred, with respect thereto, including any earn-outs with respect thereto and the amount of Permitted Indebtedness assumed, is greater than or equal to [* * *] Dollars ($[* * *]).

"Material Adverse Effect" means a material adverse effect upon: (i) the business, operations, properties, assets or financial condition of the Loan Parties and their respective Subsidiaries taken as a whole; or (ii) the ability of Borrower to perform or pay the Secured Obligations in accordance with the terms of the Loan Documents, or the ability of Agent or Lenders to enforce any of its rights or remedies with respect to the Secured Obligations; or (iii) the Collateral or Agent's Liens on the Collateral or the priority of such Liens.

"Material Agreement" means (a) any Material License, and (b) any license, agreement or other contractual arrangement the termination of which before the end of its stated term could reasonably be expected to result in a Material Adverse Effect individually or in the aggregate.

"Material License" means that certain Collaboration and License Agreement, dated as of October 31, 2025, among the Company and Otsuka Pharmaceutical Co. Ltd., as may be amended, restated, supplemented or otherwise modified from time to time in accordance with the terms hereof and thereof.

"Milestone Obligations" means, with respect to any Acquisition, the aggregate milestone payments reasonably expected to be owing by the Borrower and its Subsidiaries (a) after the Term Loan Maturity Date and (b) prior to the Term Loan Maturity Date, only to the extent Borrower reasonably expects based on its good faith projections that Borrower's Qualified Cash shall be no less than [* * *]% of the Secured Obligations (inclusive of any Prepayment Charge and End of Term Charge that would be due and owing if the outstanding Term Loan Advances were prepaid at the time of measurement), immediately before and at all times after incurring the obligation to make such milestone payment.

"Net Product Revenue" means, as of the last date of any period, Borrower's net product revenue (as determined in accordance with GAAP) solely from the sale of 4D-150 (which may include royalty, profit sharing, co-promotion and co-commercialization revenues or sales-based milestone revenue recognized in accordance with GAAP, but which shall not include any upfront or non-sales-based milestone payments under business development or licensing transactions), measured on as of the date of the most recently delivered monthly or quarterly financial statements in accordance with Section 7.1(a) or Section 7.1(b). For the avoidance of doubt, net product revenue shall not include any of the following to the extent not recognizable as revenue in accordance with GAAP: (i) trade, quantity and cash discounts allowed by Borrower, (ii) discounts, refunds, rebates, charge backs, retroactive price adjustment and any other allowances which effectively reduce net selling price, (iii) product returns and allowances, (iv) allowances for shipping or other distribution expenses, (v) set-offs and counterclaims, and (vi) any other similar and customary deductions that are typically deducted from gross revenue and not included in net revenue in accordance with GAAP.

"Non-Core Product Assets" means any products, Intellectual Property and regulatory filings, submissions and approvals, including marketing approvals and pricing and reimbursement approvals, in each case, that do not constitute Core Product Assets, together with all Proceeds of each of the foregoing.

"Non-Disclosure Agreement" means that certain Mutual Confidential Disclosure Agreement dated March 25, 2026 by and between Company and Agent.

"OFAC" means the Office of Foreign Assets Control of the U.S. Department of Treasury.

"OFAC Lists" means, collectively, the Specially Designated Nationals and Blocked Persons List maintained by OFAC pursuant to Executive Order No. 13224, 66 Fed. Reg. 49079 (Sept. 25, 2001) and/or any other list of terrorists or other restricted Persons maintained pursuant to any of the rules and regulations of OFAC or pursuant to any other applicable Executive Orders.

"Organizational Documents" means with respect to any Person, such Person's Charter, and (a) if such Person is a corporation, its bylaws, (b) if such Person is a limited liability company, its limited liability company agreement (or similar agreement), and (c) if such Person is a partnership, its partnership agreement (or similar agreement), each of the foregoing with all current amendments or modifications thereto.

"Patent License" means any written agreement granting any right with respect to any invention on which a Patent is in existence or a Patent application is pending, in which agreement Borrower now holds or hereafter acquires any interest.

"Patents" means all letters patent of, or rights corresponding thereto, in the United States of America or in any other country, all registrations and recordings thereof, and all applications for letters patent of, or rights corresponding thereto, in the United States of America or any other country.

"Perfection Certificate" means a completed certificate entitled "Perfection Certificate and Diligence Request", dated as of the Closing Date, delivered by Company to Agent and Lenders, signed by Company (as amended pursuant to the terms of this Agreement).

"Permitted Acquisitions" means any Acquisition which is conducted in accordance with the following requirements:

(a) such Acquisition is of a business or Person or product engaged in a line of business reasonably related to that of Borrower or its Subsidiaries;

(b) if such Acquisition is structured as a stock acquisition, then the Person so acquired shall either (i) become a wholly-owned Subsidiary of Borrower or of a Subsidiary and Borrower shall comply, or cause such Subsidiary (other than directors' qualifying shares and investments by foreign nationals mandated by applicable Requirements of Law) to comply, with Section 7.13 or (ii) such Person shall be merged with and into a Loan Party (with such Loan Party being the surviving entity);

(c) if such Acquisition is structured as the acquisition or in-licensing of assets, such assets shall be acquired or in-licensed by a Loan Party or a newly-organized wholly-owned Subsidiary (in which event such Subsidiary shall comply with Section 7.13), and shall be free and clear of Liens other than Permitted Liens;

(d) Borrower shall have delivered to Agent (i) with respect to any Material Acquisition, not less than ten (10) nor more than forty five (45) days prior to the date of such Material Acquisition (or such different period as to which Agent may agree in its sole discretion), notice of such Material Acquisition together with pro forma projected financial information, copies of all draft material documents relating to such Material Acquisition, and historical financial statements for such acquired entity, division or line of business (to the extent applicable), in each case in form reasonably satisfactory to Agent and demonstrating compliance as of such date with the covenants set forth in Section 7.21(a) (to the extent applicable) immediately prior to the consummation of such Acquisition and immediately after the consummation of such Acquisition on a pro forma basis as if the Material Acquisition occurred on the first day of the most recent measurement period for which financial statements have been delivered pursuant to Section 7.1(b) and (ii) with respect to any Acquisition that is not a Material Acquisition, no later than ten (10) days after the date of such Acquisition (or such different period as to which Agent may agree in its sole discretion), notice of such Acquisition together with copies of all material documents related to such Acquisition and such other information as Agent may reasonably request;

(e) both immediately before and after such Acquisition no Default or Event of Default shall have occurred and be continuing;

(f) such Acquisition is approved by the board of directors (or equivalent control group) of all parties to the transaction; and

(g) (x) with respect to any Acquisitions located entirely within the United States, the total upfront cash consideration paid or incurred, or to be paid or incurred, by Borrower with respect thereto, including the amount of Permitted Indebtedness assumed or to which such assets, businesses or business or ownership interest or shares, or any Person so acquired, is subject, shall not be greater than (i) [* * *] Dollars ($[* * *]) for any single acquisition or group of related acquisitions or (ii) [* * *] Dollars ($[* * *]) for all such acquisitions during the term of this Agreement and (y) with respect to any Acquisitions located outside of the United States (entirely or in part), the total upfront cash consideration paid or incurred, plus any milestone payments (other than Milestone Obligations) with respect to any such Acquisition to be paid or incurred, by Borrower with respect thereto, including the amount of Permitted Indebtedness assumed or to which such assets, businesses or business or ownership interest or shares, or any Person so acquired, is subject, shall not be greater than (i) [* * *] Dollars ($[* * *]) for any single acquisition or group of related acquisitions or (ii) [* * *] Dollars ($[* * *]) for all such acquisitions during the term of this Agreement.

"Permitted Bond Hedge Transaction" means any call or capped call option (or substantively equivalent derivative transaction) relating to Common Stock (or other securities or property following a merger event or other change of Common Stock) purchased by the Company in connection with the issuance of any Permitted Convertible Debt and settled in Common Stock (or such other securities or property), cash or a combination thereof (such amount of cash determined by reference to the price of Common Stock or such other securities or property), and cash in lieu of fractional shares of Common Stock, provided that the purchase price for any Permitted Bond Hedge Transaction, less the proceeds received by the Company from the sale of any related Permitted Warrant Transaction, does not exceed the net proceeds received by the Borrower from the sale of the Permitted Convertible Debt issued in connection with the Permitted Bond Hedge Transaction.

"Permitted Convertible Debt Financing" means issuance by Company of convertible notes (which may provide for conversions to be settled in Common Stock (or such other securities or property), cash or a combination thereof (such amount of cash determined by reference to the price of Common Stock or such other securities or property) in an aggregate principal amount of not more than the lesser of (x) [* * *] Dollars ($[* * *]) and (y) an amount equal to [* * *] percent ([* * *]%) of

Borrower's Market Capitalization as of the date of pricing of such convertible notes ("Permitted Convertible Debt"); provided that the foregoing limitations in clauses (x) and (y) shall not apply to Permitted Convertible Debt issued to refinance, refund, renew, replace or extend other Permitted Convertible Debt to the extent such issuance does not increase the aggregate principal amount thereof (other than by the amount of any premiums paid and fees and expenses incurred in connection therewith); provided further that such convertible notes shall (a) both immediately prior to and immediately after giving effect (including pro forma effect) thereto, no Default or Event of Default shall exist or result therefrom, (b) have no scheduled amortization or principal payments, mandatory redemptions or other required payments of principal prior to the date that is one hundred eighty (180) days after the Term Loan Maturity Date, other than customary payments upon a "change of control", "fundamental change", "make-whole fundamental change" or any comparable term (it being understood that a holder's option to convert any such Indebtedness shall not be considered a required mandatory redemption or payment of principal), (c) be unsecured or, if secured, secured by Liens subordinated to the Liens securing the Secured Obligations on terms and conditions satisfactory in its reasonable discretion and subject to a subordination agreement in form and substance satisfactory to Agent in its sole discretion, (d) not be guaranteed by any Subsidiary of Company that is not a Borrower or a guarantor of the Secured Obligations, (e) contain usual and customary subordination terms for underwritten offerings of senior convertible notes, as determined by the Company in good faith and (f) shall be Indebtedness of Company and not of any Subsidiary thereof. For the avoidance of doubt, Permitted Convertible Debt Financing shall not constitute Subordinated Indebtedness.

"Permitted Indebtedness" means:

(i) Indebtedness of Borrower in favor of any Lender or Agent arising under this Agreement or any other Loan Document;

(ii) Indebtedness existing on the Closing Date which is disclosed in Schedule 1A and Schedule 5.10(c);

(iii) Indebtedness of up to [* * *] Dollars ($[* * *]) outstanding at any time secured by a Lien described in clause (vii) of the defined term "Permitted Liens," provided such Indebtedness does not exceed the cost of the Equipment, software or other Intellectual Property financed with such Indebtedness, plus the amount of any fees, costs and expenses incurred in connection therewith;

(iv) Indebtedness incurred in the ordinary course of business with corporate credit cards in an aggregate outstanding amount not to exceed [* * *] Dollars ($[* * *]) at any time;

(v) Indebtedness that also constitutes a Permitted Investment;

(vi) Subordinated Indebtedness;

(vii) reimbursement obligations in connection with letters of credit that are at any time outstanding (which may be secured by Cash) and issued on behalf of Borrower or a Subsidiary in an amount not to exceed [* * *] Dollars ($[* * *]);

(viii) Indebtedness to trade creditors incurred in the ordinary course of business;

(ix) intercompany Indebtedness of (A) any Loan Party owing to another Loan Party or (B) any non-Loan Party owing to another non-Loan Party in an aggregate amount with respect to this clause (B) not to exceed [* * *] Dollars ($[* * *]) at any time;

(x) the Permitted Convertible Debt Financing;

(xi) Indebtedness with respect to a Permitted Royalty Transaction;

(xii) Indebtedness incurred as a result of endorsing negotiable instruments in the ordinary course of business;

(xiii) Contingent Obligations with respect to obligation of a Loan Party (provided that the primary obligations are not prohibited under this Agreement);

(xiv) obligations under any agreement to provide cash management services in the ordinary course of business, including treasury, depository, overdraft, debit card, electronic funds transfer and other cash management arrangements;

(xv) Indebtedness incurred in the ordinary course of business, in each case, arising from the honoring by a bank or other financial institutions of a check, draft or similar instrument inadvertently drawn against insufficient funds in the ordinary course of business;

(xvi) Indebtedness incurred to finance insurance premiums in the ordinary course of business;

(xvii) other unsecured Indebtedness in an amount not to exceed [* * *] Dollars ($[* * *]) at any time outstanding; and

(xviii) extensions, refinancings and renewals of any items of Permitted Indebtedness, provided that the principal amount is not increased (except by an amount equal to unpaid accrued interest and premiums or penalties thereon, and fees, costs and expenses in connection with the refinanced debt and fees, commissions, costs and expenses (including upfront fees, original issue discount and initial yield payments) incurred in connection with the incurrence of such refinancing indebtedness) or the terms modified to impose materially more burdensome terms upon Borrower or its Subsidiary, as the case may be, and subject to any limitations on the aggregate amount of such Indebtedness.

"Permitted Investment" means:

(i) Investments existing on the Closing Date which are disclosed in Schedule 1B;

(ii) (a) marketable direct obligations issued or unconditionally guaranteed by the United States of America or any agency or any State thereof maturing within one year from the date of acquisition thereof currently having a rating of at least A-2 or P-2 from either Standard & Poor's Corporation or Moody's Investors Service, (b) commercial paper maturing no more than one year from the date of creation thereof and currently having a rating of at least A-2 or P-2 from either Standard & Poor's Corporation or Moody's Investors Service, (c) certificates of deposit issued by any bank with assets of at least Five Hundred Million Dollars ($500,000,000) maturing no more than one year from the date of investment therein, (d) money market accounts, and (e) Investments pursuant to the investment policy that has been provided to Agent prior to the Closing Date or any investment policy that has been approved by Agent;

(iii) repurchases of stock of Borrower from present or former employees, directors, or consultants of Borrower under the terms of applicable repurchase agreements at the original issuance price of such securities in an aggregate amount not to exceed [* * *] Dollars ($[* * *]) in

any fiscal year, provided that no Event of Default has occurred, is continuing or could result from such repurchases;

(iv) Investments accepted in connection with Permitted Transfers;

(v) Investments (including debt obligations) received in connection with the bankruptcy or reorganization of customers or suppliers and in settlement of delinquent obligations of, and other disputes with, customers or suppliers arising in the ordinary course of Borrower's business;

(vi) Investments consisting of notes receivable of, or prepaid royalties and other credit extensions, to customers and suppliers who are not Affiliates, in the ordinary course of business, provided that this subsection (vi) shall not apply to Investments of any Loan Party in any Subsidiary of a Loan Party;

(vii) Investments consisting of loans not involving the net transfer on a substantially contemporaneous basis of cash proceeds to employees, officers or directors relating to the purchase of capital stock of Company pursuant to employee stock purchase plans or other similar agreements approved by Company's Board of Directors;

(viii) Investments consisting of: travel advances and employee relocation loans in the ordinary course of business in an aggregate amount not to exceed [* * *] Dollars ($[* * *]) from the Closing Date until the time that no Secured Obligations (other than for inchoate indemnification obligations which, by their terms, survive termination of this Agreement) remain outstanding;

(ix) Investments in newly-formed Subsidiaries, provided that each such Subsidiary enters into a Joinder Agreement promptly after its formation and executes such other documents as shall be reasonably requested by Agent;

(x) (a) Investments in another Loan Party and (b) Investments in any Subsidiary that is not a Loan Party in an amount not to exceed [* * *] Dollars ($[* * *]) in the aggregate in any fiscal year;

(xi) joint ventures or strategic alliances in the ordinary course of Borrower's business consisting of the nonexclusive licensing of technology, the development of technology or the providing of technical support, provided that any cash Investments by Borrower do not exceed [* * *] Dollars ($[* * *]) in the aggregate in any fiscal year;

(xii) Investments in connection with, and the performance of obligations under (including, for the avoidance of doubt, the entry into, payment of any premium with respect to and the settlement of), any Permitted Convertible Debt, any Permitted Bond Hedge Transaction or any Permitted Warrant Transaction, in each case in accordance with its terms and as otherwise permitted by this Agreement;

(xiii) Investments consisting of the endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of business;

(xiv) Investments (including debt obligations) received in connection with the bankruptcy or reorganization of customers or suppliers and in settlement of delinquent obligations of, and other disputes with, customers or suppliers arising in the ordinary course of business;

(xv) Investments consisting of Deposit Accounts and Securities Accounts, but only to the extent that Borrower or its Subsidiaries are permitted to maintain such account in accordance with this Agreement;

(xvi) extension of trade credit and accounts receivable in the ordinary course of business;

(xvii) guarantees of any items of Permitted Indebtedness; provided that (x) the foregoing shall not permit Borrower or any Subsidiary to guarantee Indebtedness that it is not otherwise permitted to incur, assume or otherwise be liable for and (y) if any such Indebtedness constitutes Subordinated Indebtedness, such guarantees shall be subordinated on terms at least as favorable to Agent and Lenders;

(xviii) Permitted Acquisitions; provided, that payments in respect of Milestone Obligations in excess of (x) [* * *] Dollars ($[* * *]) for any single acquisition or group of related acquisitions or (y) [* * *] Dollars ($[* * *]) for all such acquisitions during the term of this Agreement shall be permitted solely to the extent that Borrower's Qualified Cash shall (I) be no less than [* * *]% of the aggregate principal amount of the Secured Obligations (inclusive of any Prepayment Charge and End of Term Charge that would be due and owing if the outstanding Term Loan Advances were prepaid at the time of measurement), immediately after making such milestone payment and (II) based on its good faith projections of Borrower, be reasonably expected to be no less than [* * *]% of Secured Obligations (inclusive of any Prepayment Charge and End of Term Charge that would be due and owing if the outstanding Term Loan Advances were prepaid at the time of measurement) at all times after making such payment;

(xix) additional Investments that do not exceed [* * *] Dollars ($[* * *]) in the aggregate.

"Permitted License" means licenses and similar arrangements (a) with respect to in-licensing, (i) non-exclusive licenses, and (ii) of over-the-counter software that is commercially available to the public and (b) out-licenses for the use of Intellectual Property of Borrower or any of its Subsidiaries entered into in the ordinary course of business on an arms' length basis, including in connection with business development transactions, co-development or co-promotion transactions, collaborations, licensing, partnering or similar transactions with third parties and that are entered into with commercially reasonable terms, that could not result in a legal transfer of title of the licensed property that may be exclusive in respects other than territory or may be exclusive as to territory but only as to discrete geographical areas outside of the United States of America.

"Permitted Liens" means:

(i) Liens in favor of Agent or Lenders;

(ii) Liens existing on the Closing Date which are disclosed in Schedule 1C;

(iii) Liens for taxes, fees, assessments or other governmental charges or levies, either not yet due or being contested in good faith by appropriate proceedings diligently conducted; provided, that Borrower maintains adequate reserves therefor on Borrower's Books in accordance with GAAP;

(iv) Liens securing claims or demands of materialmen, artisans, mechanics, carriers, warehousemen, landlords and other like Persons arising in the ordinary course of Borrower's

business and imposed without action of such parties; provided, that the payment thereof is not yet required;

(v) Liens arising from judgments, decrees, orders or attachments in circumstances which do not constitute an Event of Default hereunder;

(vi) the following deposits, to the extent made in the ordinary course of business: deposits under worker's compensation, unemployment insurance, social security and other similar laws, or to secure the performance of bids, tenders or contracts (other than for the repayment of borrowed money) or to secure indemnity, performance or other similar bonds for the performance of bids, tenders or contracts (other than for the repayment of borrowed money) or to secure statutory obligations (other than Liens arising under ERISA or environmental Liens) or surety or appeal bonds, or to secure indemnity, performance or other similar bonds;

(vii) Liens on Equipment or software or other intellectual property constituting purchase money Liens and other Liens in connection with capital leases securing Indebtedness permitted in clause (iii) of "Permitted Indebtedness";

(viii) Liens incurred in connection with Subordinated Indebtedness;

(ix) leasehold interests in leases or subleases and licenses or sublicenses (other than with respect to Intellectual Property) granted in the ordinary course of business and not interfering in any material respect with the business of the licensor;

(x) Liens in favor of customs and revenue authorities arising as a matter of law to secure payment of custom duties that are promptly paid on or before the date they become due;

(xi) Liens on insurance proceeds securing the payment of financed insurance premiums that are promptly paid on or before the date they become due (provided that such Liens extend only to such insurance proceeds and not to any other property or assets);

(xii) statutory and common law rights of set-off and other similar rights as to deposits of cash and securities in favor of banks, other depository institutions and brokerage firms or securities intermediaries to cover fees, similar expenses and charges;

(xiii) easements, servitudes, zoning restrictions, rights-of-way and similar encumbrances on real property imposed by law or arising in the ordinary course of business so long as they do not materially impair the value or marketability of the related property;

(xiv) (a) Liens on Cash securing obligations permitted under clause (vii) of the definition of Permitted Indebtedness and (b) security deposits in connection with real property leases, the combination of (a) and (b) in an aggregate amount not to exceed [* * *] Dollars ($[* * *]) at any time;

(xv) Permitted Licenses;

(xvi) with respect to Permitted Royalty Transactions, (i) Liens on the royalty or revenue interests purchased or financed to a Permitted Royalty Transaction and proceeds thereon (which Liens may be senior in priority to Agent's Lien), (ii) Liens on any other asset of the applicable Loan Party to such Permitted Royalty Transaction relating to the applicable product that is the subject of such Permitted Royalty Transaction; provided that, to the extent such Lien is on

any Core Product Assets, such Lien on any Core Product Assets shall be subordinated to the Liens securing the Secured Obligations pursuant to a subordination or intercreditor agreement on terms and conditions satisfactory to Agent in its sole but reasonable discretion; and (iii) Liens on any Non-Core Product Assets relating to the applicable product that is the subject of such Permitted Royalty Transaction (which liens may be senior in priority to Agent's Lien);

(xvii) additional Liens so long as (A) neither (x) the aggregate outstanding amount of the obligations secured thereby nor (y) the aggregate fair market value (determined as of the date such Lien is incurred) of the assets subject thereto exceed [* * *] Dollars ($[* * *]) at any time outstanding and (B) any such Lien shall be (1) limited to specific asset and not all assets or substantially all assets of Borrower or any Subsidiary and (2) subordinated to the Liens securing the Secured Obligations on terms and conditions satisfactory in its reasonable discretion and subject to a subordination agreement in form and substance satisfactory to Agent in its sole discretion; and

(xviii) Liens incurred in connection with the extension, renewal or refinancing of the Indebtedness secured by Liens of the type described in clauses (i) through (xv) above; provided, that any extension, renewal or replacement Lien shall be limited to the property encumbered by the existing Lien and the principal amount of the Indebtedness being extended, renewed or refinanced (as may have been reduced by any payment thereon) does not increase.

"Permitted Priority Liens" means (a) Liens having priority over Agent's liens as a matter of law and (b) Liens on Non-Core Product Assets.

"Permitted Royalty Transaction" means (a) with respect to Core Product Assets, any royalty or revenue interest financing or similar transaction whereby Borrower receives upfront unrestricted (including, not subject to any redemption, clawback, escrow or similar encumbrance or restriction) net cash proceeds of no less than [* * *] Dollars ($[* * *]) in exchange for rights to receive future payments based on net sales or revenue, as applicable, in an amount not to exceed, in the aggregate for all such Permitted Royalty Transactions with respect to 4D-150, [* * *] percent [* * *] of worldwide net sales of 4D-150, provided that such royalty or revenue interest financing shall be on terms and conditions, and with a purchaser, in each case reasonably acceptable to Agent, (b) with respect to any Non-Core Product Assets, any royalty or revenue interest financing or similar transaction in the ordinary course of business whereby Borrower receives upfront unrestricted (including, not subject to any redemption, clawback, escrow or similar encumbrance or restriction) net cash proceeds in exchange for rights to receive future payments based on net sales or revenue, as applicable provided that such royalty or revenue interest financing shall be on terms and conditions, and with a purchaser, in each case reasonably acceptable to Agent and (c) with respect to any Core Product Assets or Non-Core Product Assets, any Indebtedness with respect thereto does not have a scheduled maturity date earlier than one hundred fifty (150) days after the Term Loan Maturity Date.

"Permitted Transfers" means:

(i) sales of Inventory in the ordinary course of business;

(ii) clause (b) of Permitted Licenses;

(iii) transfers by and among Borrower and any Subsidiary that has executed a Joinder Agreement;

(iv) transfers constituting the making of Permitted Investments, or the granting of Permitted Liens;

(v) (a) dispositions of damaged, worn-out, obsolete or surplus Equipment or other property that is, in the reasonable judgment of Borrower, no longer economically practicable to maintain or useful in the ordinary course of business and (b) dispositions of Inventory for clinical trials in the ordinary course of business;

(vi) any Permitted Royalty Transaction;

(vii) (a) the issuance or sale of any Permitted Convertible Debt by the Company, (b) the sale of any Permitted Warrant Transaction by the Company, (c) the purchase of any Permitted Bond Hedge Transaction by the Company or (d) the performance by the Company of its obligations under any Permitted Convertible Debt, any Permitted Warrant Transaction or any Permitted Bond Hedge Transaction;

(viii) use of Cash in the ordinary course of business not prohibited by the terms of this Agreement;

(ix) sale of Equity Interests of the Borrower not constituting a Change in Control;

(x) Transfers consisting of abandonment, cancellation, non-renewal, discontinuance of use or maintenance of, forfeiture or dedication to the public of any Intellectual Property that is no longer economically practical or commercially desirable to maintain or useful in the conduct of the business of Borrower and with no material value;

(xi) sales, settlement, forgiveness or discounting, in the ordinary course of business, of past due or doubtful accounts, but only in connection with the collection or compromise thereof or in connection with bankruptcy or reorganization of suppliers or customers (and not as part of any bulk sale, factoring or financing of receivables) in an aggregate amount not to exceed Two Hundred Fifty Thousand Dollars ($250,000) for all such sales, settlements, forgiveness or discounts;

(xii) any involuntary loss, damage or destruction of property to the extent the Borrower or a Subsidiary complies with Section 6.1; and

(xiii) other Transfers of assets having a fair market value of not more than [* * *] Dollars ($[* * *]) in the aggregate in any fiscal year.

"Permitted Warrant Transaction" means any call option, warrant or right to purchase (or substantively equivalent derivative transaction) relating to Common Stock (or other securities or property following a merger event, reclassification, replacement or other change of the Common Stock) and/or cash (in an amount determined by reference to the price of such Common Stock) sold by the Company substantially concurrently with any purchase by the Company of a related Permitted Bond Hedge Transaction and settled in Common Stock (or such other securities or property).

"Person" means any individual, sole proprietorship, partnership, joint venture, trust, unincorporated organization, association, corporation, limited liability company, institution, other entity or government.

"Principal Stock Exchange" means the NASDAQ or, if the common Equity Interests are not listed on the NASDAQ, the principal national securities exchange or public quotation system on which the common Equity Interests are then listed for trading or quoted.

"Qualified Cash" means an amount equal to (a) the amount of Borrower's Cash held in accounts subject to an Account Control Agreement in favor of Agent, *minus* (b) the Qualified Cash A/P Amount.

"Qualified Cash A/P Amount" means the amount of Borrower's accounts payable under GAAP not paid after the 90th day following the invoice for such account payable.

"Qualified Equity Interests" means any Equity Interests that are not Disqualified Equity Interests.

"Qualified Equity Issuance Net Proceeds" means the net proceeds in Cash (excluding any share repurchases, or other holdbacks or discounts) received by Company as consideration for any (a) public or private sale or issuance of any Qualified Equity Interests of Company, (b) contribution to the equity capital of Company (other than in exchange for Disqualified Equity Interests) and (c) Permitted Convertible Debt; provided that the amount of Cash received by Company is measured at the time made and without adjustment for subsequent changes in value, payable for the fair market value of sale, issuance or contribution and any other property received in connection with such sale, issuance or contribution, and paid by any Person that is not a Loan Party or an Affiliate thereof.

"Receivables" means (i) all of Borrower's Accounts, Instruments, Documents, Chattel Paper, Supporting Obligations, letters of credit, proceeds of any letter of credit, and Letter of Credit Rights, and (ii) all customer lists, software, and business records related thereto.

"Redemption Conditions" means, with respect to any repurchase in connection with the redemption of Permitted Convertible Debt upon satisfaction of a condition related to the stock price of Common Stock, satisfaction of each of the following events: (a) no Default or Event of Default shall exist or result therefrom, and (b) both immediately before and at all times after such redemption, Borrower's Qualified Cash shall be no less than 125% of Secured Obligations (inclusive of any Prepayment Charge and End of Term Charge that would be due and owing if the outstanding Term Loan Advances were prepaid at the time of measurement).

"Registration" means any registration, authorization, approval, license, permit, clearance, certificate, and exemption issued or allowed by the FDA or state pharmacy licensing authorities (including, without limitation, Biologic License Applications investigational new drug applications, pricing and reimbursement approvals, labelling approvals or their foreign equivalent, and wholesale distributor permits).

"Required Lenders" means at any time, the holders of more than fifty percent (50%) of the sum of the aggregate unpaid principal amount of the Term Loans then outstanding.

"Restricted License" means any material License or other agreement (other than off-the-shelf software that is commercially available to the public) with respect to which Borrower is the licensee (a) that prohibits or otherwise restricts Borrower from granting a security interest in Borrower's interest in such License or agreement or any other property (but only to the extent enforceable under applicable law), or (b) for which a default under or the termination thereof could materially and adversely affect Agent's right to sell any Collateral.

"Sanctioned Country" means, at any time, a country or territory which is the subject or target of any Sanctions.

"Sanctioned Person" means, at any time, (a) any Person listed in any Sanctions-related list of designated Persons maintained by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the U.S. Department of State, or by the United Nations Security Council, the European Union, any EU member state or other relevant sanctions authority, (b) any Person operating, organized or resident in a Sanctioned Country or (c) any Person controlled by any such Person.

"Sanctions" means economic or financial sanctions or trade embargoes imposed, administered or enforced from time to time by (a) the U.S. government, including those administered by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the U.S. Department of State, or (b) the United Nations Security Council, the European Union or His Majesty's Treasury of the United Kingdom or other relevant sanctions authority.

"SBA Funding Date" means each date on which a Lender which is an SBIC funds any portion of the Term Loans.

"Secured Obligations" means Borrower's obligations under this Agreement and any Loan Document, including any obligation to pay any amount now owing or later arising.

"Subordinated Indebtedness" means Indebtedness subordinated to the Secured Obligations in amounts and on terms and conditions satisfactory to Agent in its sole discretion and subject to a subordination agreement in form and substance satisfactory to Agent in its sole discretion.

"Subsidiary" means an entity, whether a corporation, partnership, limited liability company, joint venture or otherwise, in which Borrower owns or controls, either directly or indirectly, fifty percent (50%) or more of the outstanding voting securities, including each entity listed on Schedule 1.

"Taxes" means all present or future taxes, levies, imposts, duties, deductions, withholdings (including backup withholding), assessments, fees or other charges imposed by any Governmental Authority, including any interest, additions to tax or penalties applicable thereto.

"Term Loan" means any Term Loan Advance made under this Agreement.

"Term Loan Advance" means each Tranche 1A Advance, Tranche 1B Advance, Tranche 2A Advance, Tranche 2B Advance, Tranche 3 Advance, Tranche 4 Advance, Tranche 5 Advance and any other funds advanced under Section 2.2(a).

"Trademark License" means any written agreement granting any right to use any Trademark or Trademark registration, now owned or hereafter acquired by Borrower or in which Borrower now holds or hereafter acquires any interest.

"Trademarks" means all trademarks (registered, common law or otherwise) and any applications in connection therewith, including registrations, recordings and applications in the United States Patent and Trademark Office or in any similar office or agency of the United States of America, any State thereof or any other country or any political subdivision thereof.

"Trading Day" means any day on which (a) there is no Market Disruption Event and (b) the Principal Stock Exchange is open for trading; provided that a "Trading Day" only includes those days that have a scheduled closing time of 4:00 p.m. (Eastern time) or the then standard closing time for regular trading on the relevant exchange or trading system.

"Tranche" means the Tranche 1A Advance, Tranche 1B Advance, Tranche 2A Advance, Tranche 2B Advance, the Tranche 3 Advance, Tranche 4 Advance and/or Tranche 5 Advance, as applicable.

"U.S. Person" means any Person that is a "United States person" as defined in Section 7701(a)(30) of the Code.

1.2 "UCC" means the Uniform Commercial Code as the same is, from time to time, in effect in the State of New York; provided, that in the event that, by reason of mandatory provisions of law, any or all of the attachment, perfection or priority of, or remedies with respect to, Agent's Lien on any Collateral is governed by the Uniform Commercial Code as the same is, from time to time, in effect in a jurisdiction other than the State of New York, then the term "UCC" shall mean the Uniform Commercial Code as in effect, from time to time, in such other jurisdiction solely for purposes of the provisions thereof relating to such attachment, perfection, priority or remedies and for purposes of definitions related to such provisions. The following terms are defined in the Sections or subsections referenced opposite such terms:

Defined Term	Section
1940 Act	5.6(b)
Affected Lender	Addendum 4
Agent	Preamble
Amortization Date	Exhibit K
Applicable Minimum Cash Percentage	Exhibit K
Approval Milestone	Exhibit K
Assignee	11.14
Borrower	Preamble
Claims	11.11(a)
Collateral	3.1
Company	Preamble
Confidential Information	11.13
Due Diligence Fee	Exhibit K
End of Term Charge	Exhibit K
End of Term Charge Percentage	Exhibit K
Event of Default	9
Financial Statements	7.1
Indemnified Person	6.3
Initial Facility Charge	Exhibit K
Initial Minimum Cash Test Date	Exhibit K
Initial Performance Covenant Test Date	Exhibit K
Lenders	Preamble
Liabilities	6.3
Maximum Rate	2.3
Maximum Term Loan Amount	Exhibit K
Minimum Advance Amount	Exhibit K
Participant Register	11.8
Payment Date	2.2(e)
Prepayment Charge	Exhibit K

Prime Rate	Exhibit K
Publicity Materials	11.19
Register	11.7
Rights to Payment	3.1
RTI Amount	Exhibit K
SBA	7.16
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SBIC Act	7.16
Subsequent Financing	Exhibit K
Term Commitment	Exhibit K
Term Loan Interest Rate	Exhibit K
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Tranche 1A Commitment	Exhibit K
Tranche 1B Advance	2.2(a)
Tranche 1B Commitment	Exhibit K
Tranche 1B Commitment Period	Exhibit K
Tranche 2A Advance	2.2(a)
Tranche 2A Commitment	Exhibit K
Tranche 2A Commitment Period	Exhibit K
Tranche 2B Advance	2.2(a)
Tranche 2B Commitment	Exhibit K
Tranche 2B Commitment Period	Exhibit K
Tranche 2 Early Draw Milestone	Exhibit K
Tranche 2 Milestone	Exhibit K
Tranche 3 Advance	2.2(a)
Tranche 3 Commitment	Exhibit K
Tranche 3 Commitment Period	Exhibit K
Tranche 3 Milestone	Exhibit K
Tranche 4 Advance	2.2(a)
Tranche 4 Commitment	Exhibit K
Tranche 4 Commitment Period	Exhibit K
Tranche 4 Milestone	Exhibit K
Tranche 5 Advance	2.2(a)
Tranche 5 Commitment	Exhibit K
Tranche 5 Commitment Period	Exhibit K
Tranche Facility Charge	Exhibit K
Transfer	7.8
Updated Schedule 5.10(a)	5.10(a)

1.3 Unless otherwise specified, all references in this Agreement or any Annex or Schedule hereto to a "Section," "subsection," "Exhibit," "Annex," or "Schedule" shall refer to the corresponding

Section, subsection, Exhibit, Annex, or Schedule in or to this Agreement. Unless otherwise specifically provided herein, any accounting term used in this Agreement or the other Loan Documents shall have the meaning customarily given such term in accordance with GAAP as in effect on the date hereof, and all financial computations hereunder shall be computed in accordance with GAAP as in effect on the date hereof, consistently applied. Unless otherwise defined herein or in the other Loan Documents, terms that are used herein or in the other Loan Documents and defined in the UCC shall have the meanings given to them in the UCC. For all purposes under the Loan Documents, in connection with any Division or plan of Division under Delaware law (or any comparable event under a different jurisdiction's laws): (a) if any asset, right, obligation or liability of any Person becomes the asset, right, obligation or liability of a different Person, then it shall be deemed to have been transferred from the original Person to the subsequent Person and (b) if any new Person comes into existence, such new Person shall be deemed to have been organized on the first date of its existence by the holders of its Equity Interests at such time.

1.4 If at any time any change in GAAP would affect the computation of any financial requirement set forth in any Loan Document, and either Borrower or the Required Lenders shall so request, Agent, Lenders and Borrower shall negotiate in good faith to amend such requirement to preserve the original intent thereof in light of such change in GAAP; provided that, until so amended, such requirement shall continue to be computed in accordance with GAAP prior to such change. For the avoidance of doubt, and without limitation of the foregoing, Permitted Convertible Debt shall at all times be valued at the full stated principal amount thereof and shall not include any reduction or appreciation in value of the shares deliverable upon conversion thereof.

1.5 Notwithstanding anything in the definition of GAAP to the contrary, any obligations under a lease (whether existing now or entered into in the future) that is not (or would not be) a capital lease under GAAP as in effect prior to giving effect to FASB Accounting Standards Update No. 2016-02, Leases, shall not be treated as a capital lease solely as a result of the adoption of changes in GAAP.

1.6 Any reference in any Loan Document to a merger, transfer, consolidation, amalgamation, assignment, sale, disposition or transfer, or similar term, shall be deemed to apply to a Division of or by a limited liability company, or an allocation of assets to a series of a limited liability company (or the unwinding of such a Division or allocation), as if it were a merger, transfer, consolidation, amalgamation, consolidation, assignment, sale or transfer, or similar term, as applicable, to, of or with a separate Person. Any Division of a limited liability company shall constitute a separate Person under the Loan Documents (and each Division of any limited liability company that is a Subsidiary, joint venture or any other like term shall also constitute such a Person or entity) on the first date of its existence. In connection with any Division, if any asset, right, obligation or liability of any Person becomes the asset, right, obligation or liability of a different Person, then such asset shall be deemed to have been transferred from the original Person to the subsequent Person.

SECTION 2. THE LOAN

2.1 [Reserved].

2.2 Term Loan Advances.

(a) Advances.

(i) Tranche 1A. Subject to the terms and conditions of this Agreement, on the Closing Date, Lenders shall severally (and not jointly) make, and Borrower agrees to draw, a Term Loan Advance in an aggregate principal amount equal to the Tranche 1A Commitment (such Term Loan Advance, the "Tranche 1A Advance").

(ii) Tranche 1B. Subject to the terms and conditions of this Agreement, at any time during the Tranche 1B Commitment Period, Borrower may request and Lenders shall severally (and not jointly) make one (1) additional Term Loan Advance in an aggregate amount equal to the Tranche 1B Commitment (such Term Loan Advance, the "Tranche 1B Advance").

(iii) Tranche 2A. Subject to the terms and conditions of this Agreement, Borrower may request, and the Lenders shall severally (and not jointly) make, in each case, at any time during the Tranche 2A Commitment Period, one (1) additional Term Loan Advance in a minimum increment of the Minimum Advance Amount in an aggregate principal amount up to the Tranche 2A Commitment (such Term Loan Advances the "Tranche 2A Advance").

(iv) Tranche 2B. Subject to the terms and conditions of this Agreement, Borrower may request, and the Lenders shall severally (and not jointly) make, in each case, at any time during the Tranche 2B Commitment Period, one or more additional Term Loan Advances in minimum increments of the Minimum Advance Amount (or if less, the remaining amount of Term Loan Advances available to be drawn pursuant to this Section 2.2(a)(iv)) in an aggregate principal amount up to the Tranche 2B Commitment (such Term Loan Advances, the "Tranche 2B Advances").

(v) Tranche 3. Subject to the terms and conditions of this Agreement, Borrower may request, and the Lenders shall severally (and not jointly) make, in each case, at any time during the Tranche 3 Commitment Period, one or more additional Term Loan Advances in minimum increments of the Minimum Advance Amount (or if less, the remaining amount of Term Loan Advances available to be drawn pursuant to this Section 2.2(a)(v)) in an aggregate principal amount up to the Tranche 3 Commitment (such Term Loan Advances, the "Tranche 3 Advances").

(vi) Tranche 4. Subject to the terms and conditions of this Agreement, Borrower may request, and the Lenders shall severally (and not jointly) make, in each case, at any time during the Tranche 4 Commitment Period, one or more additional Term Loan Advances in minimum increments of the Minimum Advance Amount (or if less, the remaining amount of Term Loan Advances available to be drawn pursuant to this Section 2.2(a)(vi)) in an aggregate principal amount up to the Tranche 4 Commitment (such Term Loan Advances, the "Tranche 4 Advances").

(vii) Tranche 5. Subject to the terms and conditions of this Agreement, Borrower may request, and the Lenders shall severally (and not jointly) make, in each case, at any time during the Tranche 5 Commitment Period, and conditioned on approval by Lenders' investment committee in its sole and unfettered discretion, one or more additional Term Loan Advances in minimum increments of the Minimum Advance Amount (or if less, the remaining amount of Term Loan Advances available to be drawn pursuant to this Section 2.2(a)(vii)) in an aggregate principal amount up to the Tranche 5 Commitment (such Term Loan Advances, the "Tranche 5 Advances").

(b) Maximum Term Loan Amount. The aggregate outstanding Term Loan Advances shall not exceed the Maximum Term Loan Amount. Each Term Loan Advance of each Lender shall not exceed its respective Term Commitment. After repayment, no Term Loan Advance (or any portion thereof) may be reborrowed.

(c) Advance Request. To obtain a Term Loan Advance, Borrower shall complete, sign and deliver an Advance Request (at least one (1) Business Day before the Closing Date and at least five (5) Business Days before each Advance Date other than the Closing Date) to Agent. Lenders shall fund the Term Loan Advance in the manner requested by the Advance Request provided that each of the conditions precedent set forth in Section 4 and applicable to such Term Loan Advance is satisfied as of the requested Advance Date. The proceeds of any Term Loan Advance shall be deposited into and maintained in an account that is subject to an Account Control Agreement.

(d) Interest. The principal balance shall bear interest thereon from such Advance Date at the Term Loan Interest Rate, based on a year consisting of three hundred sixty (360) days, with interest computed daily based on the actual number of days elapsed. The Term Loan Interest Rate will float and change on the day the Prime Rate changes from time to time.

(e) Payment. Borrower will pay accrued but unpaid interest on each Term Loan Advance on the first Business Day of each month (each such date, a "Payment Date"), beginning the month after the Advance Date. To the extent applicable, Borrower shall repay the aggregate principal balance of the Term Loan Advances that is outstanding on the day immediately preceding the Amortization Date, in equal monthly installments of principal and interest (mortgage style) beginning on the Amortization Date and continuing on the first Business Day of each month thereafter until the Secured Obligations (other than inchoate indemnity obligations which, by their terms, survive termination of this Agreement) are repaid. The entire principal balance of the Term Loan Advances and all accrued but unpaid interest hereunder, shall be due and payable on the Term Loan Maturity Date; provided, that if the Term Loan Maturity Date is not a Business Day, the Term Loan Maturity Date shall be the immediately subsequent Business Day. Borrower shall make all payments under this Agreement without setoff, recoupment or deduction and regardless of any counterclaim or defense. If a payment hereunder becomes due and payable on a day that is not a Business Day, the due date thereof shall be the immediately subsequent Business Day. Agent or Lenders will initiate debit entries to Borrower's account as authorized on the ACH Authorization (i) on each Payment Date of all periodic obligations payable to Lenders under each Term Loan Advance and (ii) out-of-pocket legal fees and costs incurred by Agent or Lenders in connection with Section 11.12; provided that, with respect to clause (i) above, in the event that Lenders or Agent informs Borrower that Lenders will not initiate a debit entry to Borrower's account for a certain amount of the periodic obligations due on a specific Payment Date, Borrower shall pay to Lenders, such amount of periodic obligations in full in immediately available funds on such Payment Date; provided, further, that, with respect to clause (i) above, if Lenders or Agent informs Borrower that Lenders will not initiate a debit entry as described above later than the date that is three (3) Business Days prior to such Payment Date, Borrower shall pay to Lenders such amount of periodic obligations in full in immediately available funds on the date that is three (3) Business Days after the date on which Lenders or Agent notifies Borrower of such; provided, further, that, with respect to clause (ii) above, in the event that Lenders or Agent informs Borrower that Lenders will not initiate a debit entry to Borrower's account for specified out-of-pocket legal fees and costs incurred by Agent or Lenders, Borrower shall pay to Lenders such amount in full in immediately available funds within three (3) Business Days.

2.3 Maximum Interest. Notwithstanding any provision in this Agreement or any other Loan Document to the contrary, it is the parties' intent not to contract for, charge or receive interest at a rate that is greater than the maximum rate permissible by law that a court of competent jurisdiction shall deem applicable hereto (which under the laws of the State of New York shall be deemed to be the laws relating to permissible rates of interest on commercial loans) (the "Maximum Rate"). If a court of competent jurisdiction shall finally determine that Borrower has actually paid

to Lenders an amount of interest in excess of the amount that would have been payable if all of the Secured Obligations had at all times borne interest at the Maximum Rate, then such excess interest actually paid by Borrower shall be applied as follows: first, to the payment of the Secured Obligations consisting of the outstanding principal; second, after all principal is repaid, to the payment of Lenders' accrued interest, reasonable and documented out-of-pocket costs, expenses, professional fees and any other Secured Obligations; and third, after all Secured Obligations are repaid, the excess (if any) shall be refunded to Borrower.

2.4 Default Interest. In the event any payment is not paid on the scheduled payment date, an amount equal to four percent (4%) of such past due amount shall be payable on demand. In addition, upon the occurrence and during the continuation of an Event of Default hereunder, all outstanding Secured Obligations, including principal, interest, compounded interest, and professional fees, shall bear interest at a rate per annum equal to the rate set forth in Section 2.2(d) plus four percent (4%) per annum. In the event any interest is not paid when due hereunder, delinquent interest shall be added to principal and shall bear interest on interest, compounded at the rate set forth in Section 2.2(d) or this Section 2.4, as applicable.

2.5 Prepayment. At its option, Borrower may prepay all or a portion of the outstanding Advances by paying the entire principal balance (or such portion thereof), all accrued and unpaid interest thereon, all unpaid Lender's fees and expenses due hereunder accrued to the date of the repayment (including, without limitation, the portion of the End of Term Charge applicable to the aggregate original principal amount of the Term Loan Advances being prepaid in accordance with Section 2.6(a)), together with a Prepayment Charge with respect to the outstanding principal amount of such Advance amount being so prepaid. Borrower agrees that the Prepayment Charge is a reasonable calculation of Lenders' lost profits in view of the difficulties and impracticality of determining actual damages resulting from an early repayment of the Advances. Borrower shall prepay the outstanding amount of all principal and accrued interest through the prepayment date and the Prepayment Charge upon the occurrence of a Change in Control or any other prepayment hereunder (other than a Change in Control pursuant to clause (a) of the definition thereof) no later than the date that is twenty-four (24) months following the Closing Date. Notwithstanding the foregoing, Agent and Lenders agree to waive the Prepayment Charge if (x) Agent and Lenders (in their sole and absolute discretion) agree in writing to refinance the Advances prior to the Term Loan Maturity Date, (y) such prepayment occurs as a result of a Change in Control pursuant to clause (a) of the definition thereof no later than the date that is twenty-four (24) months following the Closing Date or (z) such prepayment occurs due to the failure of the 4FRONT-1 or 4FRONT-2 clinical trial. Any amounts paid under this Section shall be applied by Agent to the then unpaid amount of any outstanding Secured Obligations (including principal and interest) in such order and priority as Agent may choose in its sole discretion acting reasonably. For the avoidance of doubt, if a payment hereunder becomes due and payable on a day that is not a Business Day, the due date thereof shall be the immediately subsequent Business Day.

2.6 End of Term Charge.

(a) On any date that Borrower partially prepays the outstanding Secured Obligations pursuant to Section 2.5, Borrower shall pay Lenders a charge equal to the product of the End of Term Charge Percentage *multiplied* by the principal amount of such Term Loan Advances being prepaid.

(b) On the earliest to occur of (i) the Term Loan Maturity Date, (ii) the date that Borrower prepays the outstanding Secured Obligations (other than any inchoate indemnity

obligations and any other obligations which, by their terms, are to survive the termination of this Agreement) in full, (iii) the date that the outstanding Secured Obligations become due and payable, or (iv) as required pursuant to Section 2.5, Borrower shall pay Lenders a charge equal to the End of Term Charge.

(c) Notwithstanding the required payment date of such End of Term Charge, the applicable pro rata portion of the End of Term Charge shall be deemed earned by Lenders as of each date that an applicable Term Loan Advance is made. For the avoidance of doubt, if a payment hereunder becomes due and payable on a day that is not a Business Day, the due date thereof shall be the immediately subsequent Business Day.

2.7 Pro Rata Treatment. Each payment (including prepayment) on account of any fee and any reduction of the Term Loan Advances shall be made pro rata according to the Term Commitments of the relevant Lender.

2.8 Taxes; Increased Costs. Borrower, Agent and Lenders each hereby agree to the terms and conditions set forth on Addendum 1 attached hereto.

2.9 Treatment of Prepayment Charge and End of Term Charge. Borrower agrees that any Prepayment Charge and any End of Term Charge payable shall be presumed to be the liquidated damages sustained by each Lender as the result of the early termination, and Borrower agrees that it is reasonable under the circumstances currently existing and existing as of the Closing Date. The Prepayment Charge and the End of Term Charge shall also be payable in the event the Secured Obligations (and/or this Agreement) are satisfied or released by foreclosure (whether by power of judicial proceeding), deed in lieu of foreclosure, or by any other means. Each Loan Party expressly waives (to the fullest extent it may lawfully do so) the provisions of any present or future statute or law that prohibits or may prohibit the collection of the foregoing Prepayment Charge and End of Term Charge in connection with any such acceleration. Borrower agrees (to the fullest extent that each may lawfully do so): (a) each of the Prepayment Charge and the End of Term Charge is reasonable and is the product of an arm's length transaction between sophisticated business people, ably represented by counsel; (b) each of the Prepayment Charge and the End of Term Charge shall be payable notwithstanding the then prevailing market rates at the time payment is made; (c) there has been a course of conduct between Lenders and Borrower giving specific consideration in this transaction for such agreement to pay the Prepayment Charge and the End of Term Charge as a charge (and not interest) in the event of prepayment or acceleration; and (d) Borrower shall be estopped from claiming differently than as agreed to in this Section. Borrower expressly acknowledges that its agreement to pay each of the Prepayment Charge and the End of Term Charge to Lenders as herein described was on the Closing Date and continues to be a material inducement to Lenders to provide the Term Loan Advances.

2.10 Due Diligence Fee. Borrower agrees that the Due Diligence Fee has been paid to Agent and received by Agent prior to the Closing Date, and shall be deemed fully earned on such date regardless of the early termination of this Agreement.

SECTION 3. SECURITY INTEREST

3.1 Grant of Security Interest. As security for the prompt and complete payment when due (whether on the payment dates or otherwise) of all the Secured Obligations, each Borrower grants to Agent a security interest in all of such Borrower's right, title, and interest in, to and under the following property, whether now existing or hereafter acquired (collectively, the "Collateral"): (a) Receivables; (b) Equipment; (c) Fixtures; (d) General Intangibles (including Intellectual

Property); (e) Inventory; (f) Investment Property; (g) Deposit Accounts; (h) Cash; (i) Goods; (j) [reserved]; and (k) all other tangible and intangible personal property of such Borrower whether now or hereafter owned or existing, leased, consigned by or to, or acquired by, Borrower and wherever located, and any of such Borrower's property in the possession or under the control of Agent; and, to the extent not otherwise included, all Proceeds of each of the foregoing and all accessions to, substitutions and replacements for, and rents, profits and products of each of the foregoing.

3.2 Notwithstanding the broad grant of the security interest set forth in Section 3.1, above, the Collateral shall not include (a) any "intent to use" trademarks at all times prior to the first use thereof, whether by the actual use thereof in commerce, the recording of a statement of use with the United States Patent and Trademark Office or otherwise, provided, that upon submission and acceptance by the United States Patent and Trademark Office of an amendment to allege use of an intent-to-use trademark application pursuant to 15 U.S.C. Section 1060(a) (or any successor provision) such intent-to-use application shall constitute Collateral, (b) nonassignable licenses or contracts, which by their terms require the consent of the licensor thereof or another party (but only to the extent such prohibition on transfer is enforceable under applicable law, including, without limitation, Sections 9-406, 9-407 and 9-408 of the UCC), (c) property for which the granting of a security interest therein is contrary to applicable law, provided that upon the cessation of any such restriction or prohibition, such property shall automatically be included in the Collateral, (d) any lease, license or other agreement and any property subject thereto on the Closing Date or on the date of the acquisition of such property (other than any property acquired by a Loan Party subject to any such contract or other agreement to the extent such contract or other agreement was incurred in contemplation of such acquisition) to the extent that a grant of a security interest therein to secure the Secured Obligations would violate or invalidate such lease, license, contract or agreement or create a right of termination in favor of any other party thereto (other than the Borrower, any other Loan Party or any Subsidiary) (but (A) only to the extent such prohibition is enforceable under applicable law and (B) other than to the extent that any such term would be rendered ineffective pursuant to Sections 9-406, 9-408 or 9-409 (or any other Section) of Article 9 of the UCC), and (e) any other assets as may be agreed by the Agent in writing in its sole discretion to be excluded from the Collateral.

SECTION 4. CONDITIONS PRECEDENT TO LOAN

The obligations of Lenders to make the Loan hereunder are subject to the satisfaction by Borrower of the following conditions:

4.1 Initial Advance. On or prior to the Closing Date, Borrower shall have delivered to Agent the following:

(a) duly executed copies of the Loan Documents, and all other documents and instruments reasonably required by Agent to effectuate the transactions contemplated hereby or to create and perfect the Liens of Agent with respect to all Collateral, in all cases in form and substance reasonably acceptable to Agent;

(b) duly executed Account Control Agreement(s) with respect to each Deposit Account and account holding Investment Property (other than an Excluded Account) maintained by Borrower or any Subsidiary;

(c) a legal opinion of Borrower's counsel in form and substance reasonably acceptable to Agent;

(d) copy of resolutions of each Borrower's Board of Directors, certified by an officer of such Borrower, (i) evidencing approval of the Loan and other transactions evidenced by the Loan Documents, (ii) authorizing a specified person or persons to execute the Loan Documents to which it is a party on its behalf, (iii) authorizing a specified person or persons, on its behalf, to sign and/or dispatch all documents and notices (including, if relevant, any Advance Request or other relevant notice) to be signed and/or dispatched by it under or in connection with the Loan Documents to which it is a party, and (iv) acknowledging that the Board of Directors is acting for a proper purpose and that the Loan Documents are in the best interests of that Borrower and for its commercial benefit;

(e) certified copies of the Charter of Borrower, certified by the Secretary of State of the applicable jurisdiction of organization and the other Organizational Documents, as amended through the Closing Date, of Borrower;

(f) a certificate of good standing for Borrower from its jurisdiction of organization and similar certificates from all other jurisdictions in which it does business and where the failure to be qualified could have a Material Adverse Effect;

(g) certified copies, dated as of a recent date, of searches for financing statements filed in the central filing office of Borrower's jurisdiction of incorporation or organization, as applicable, accompanied by written evidence (including any UCC termination statements) that the Liens on any Collateral indicated in any such financing statements either constitute Permitted Liens or have been or, in connection with the initial Term Loan Advance, will be terminated or released;

(h) payment of the Due Diligence Fee, Initial Facility Charge and reimbursement of Agent's and Lenders' current expenses reimbursable pursuant to this Agreement, which amounts may be deducted from the initial Advance;

(i) a duly executed copy of the Perfection Certificate and each exhibit and addendum thereto;

(j) all certificates of insurance and copies of each insurance policy and endorsement required hereunder;

(k) [reserved];

(l) duly executed bailee agreements for any bailee location holding a portion of Borrower's assets or property valued, individually or in the aggregate, in excess of One Hundred Thousand Dollars ($100,000);

(m) all reports, declarations and forms required by the SBA, including but not limited to SBA 652, SBA 1031 and SBA 480; and

(n) such other documents as Agent may reasonably request.

4.2 All Advances. On each Advance Date:

(a) Agent shall have received (i) an Advance Request for the relevant Advance as required by Section 2.2(c), duly executed by Borrower's Chief Executive Officer or Chief Financial Officer, and (ii) any other documents Agent may reasonably request;

(b) The representations and warranties set forth in this Agreement shall be true and correct in all material respects on and as of the applicable Advance Date with the same effect as though made on and as of such date, except to the extent such representations and warranties expressly relate to an earlier date (in which case such representations and warranties shall be true and correct in all material respects as of such earlier date); provided, that any representations and warranties qualified by "materiality", "Material Adverse Effect" or similar language shall be true and correct (after giving effect to any such qualification therein) in all respects;

(c) Borrower shall be in compliance with all the terms and provisions set forth herein and in each other Loan Document on its part to be observed or performed;

(d) With respect to any Advance (other than the Tranche 1A Advance or Tranche 1B Advance) made available on such Advance Date, the Loan Parties shall have paid the Tranche Facility Charge applicable to such Advance;

Each Advance Request shall be deemed to constitute a representation and warranty by Borrower on the relevant Advance Date as to the matters specified in Section 4.2(b), Section 4.2(c) and Section 4.3 and as to the matters set forth in the Advance Request.

4.3 No Default. As of the Closing Date and at the time of and immediately after each Advance Date, (i) no fact or condition exists that could (or could, with the passage of time, the giving of notice, or both) constitute an Event of Default and (ii) no Material Adverse Effect has occurred and is continuing.

SECTION 5. REPRESENTATIONS AND WARRANTIES OF BORROWER

Borrower represents and warrants that:

5.1 Corporate Status; Execution and Delivery; Binding Effect. Each Borrower is a corporation, limited liability company or partnership duly organized, legally existing and in good standing under the laws of its jurisdiction of incorporation or formation, as applicable, and is duly qualified as a foreign corporation, limited liability company or partnership, as the case may be, in all jurisdictions in which the nature of its business or location of its properties require such qualifications and where the failure to be qualified could reasonably be expected to have a Material Adverse Effect. Borrower's present name, former names within the past five (5) years (if any), locations, place of formation, tax identification number, organizational identification number and other information are correctly set forth in Exhibit B, as may be updated by Borrower in a written notice (including any Compliance Certificate) provided to Agent after the Closing Date in accordance with this Agreement. This Agreement has been, and each other Loan Document, when delivered hereunder, will have been, duly executed and delivered by the Borrower. This Agreement constitutes, and each other Loan Document when so delivered will constitute, a legal, valid and binding obligation of the Borrower, enforceable against the Borrower in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, receivership, moratorium or other laws affecting creditors' rights generally and by general principles of equity.

5.2 Collateral. Borrower owns or otherwise has the rights to use the Collateral, free of all Liens, except for Permitted Liens. Borrower has the power and authority to grant to Agent a Lien in the Collateral as security for the Secured Obligations.

5.3 Consents. Borrower's execution, delivery and performance of this Agreement and all other Loan Documents to which it is a party, (i) have been duly authorized by all necessary action of Borrower in accordance with its Organizational Documents and applicable law, (ii) will not result in the creation or imposition of any Lien upon the Collateral, other than Permitted Liens, (iii) do not violate any provisions of Borrower's Organizational Documents or any material law, regulation, order, injunction, judgment, decree or writ to which Borrower is subject and (iv) except as described on Schedule 5.3, do not violate any contract or agreement or require the consent or approval of any other Person or Governmental Authority which has not already been obtained, except for violations, consents or approvals that could not reasonably be expected to have a Material Adverse Effect. The individual or individuals executing the Loan Documents are duly authorized to do so.

5.4 Material Adverse Effect. No Material Adverse Effect has occurred and is continuing. Borrower is not aware of any event or circumstance that is likely to occur that is reasonably expected to result in a Material Adverse Effect.

5.5 Actions Before Governmental Authorities. There are no actions, suits, claims, disputes or proceedings at law or in equity or by or before any Governmental Authority now pending or, to the knowledge of Borrower, threatened in writing against or affecting Borrower or its property, that are reasonably expected to result in a Material Adverse Effect.

5.6 Laws.

(a) Neither Borrower nor any of its Subsidiaries is in violation of any law, rule or regulation, or in default with respect to any judgment, writ, injunction or decree of any Governmental Authority to which Borrower or such Subsidiaries are subject, where such violation or default could reasonably be expected to result in a Material Adverse Effect. Borrower is not in default under (i) any provision of any agreement or instrument evidencing Indebtedness, or (ii) any other agreement to which it is a party or by which it is bound that, in each case of the foregoing clauses (i) or (ii), would reasonably be expected to be materially adverse to the interests of Agent or Lenders.

(b) Neither Borrower nor any of its Subsidiaries is an "investment company," a company that would be an "investment company" except for the exclusion from the definition of "investment company" in Section 3(c) of the Investment Company Act of 1940, as amended (the "1940 Act"), or a company "controlled" by an "investment company" under the 1940 Act. Neither Borrower nor any of its Subsidiaries is engaged as one of its important activities in extending credit for margin stock (under Regulations X, T and U of the Federal Reserve Board of Governors). Borrower and each of its Subsidiaries has complied in all material respects with the Federal Fair Labor Standards Act. Neither Borrower nor any of its Subsidiaries is a "holding company" or an "affiliate" of a "holding company" or a "subsidiary company" of a "holding company" as each term is defined and used in the Public Utility Holding Company Act of 2005. Neither Borrower's nor any of its Subsidiaries' properties or assets have been used by Borrower or such Subsidiary or, to Borrower's knowledge, by previous Persons, in disposing, producing, storing, treating, or transporting any hazardous substance other than in material compliance with applicable laws. Borrower and each of its Subsidiaries has obtained all consents, approvals and authorizations of, made all declarations or filings with, and given all notices to, all Governmental Authorities that are necessary to continue their respective businesses as currently conducted.

(c) None of Borrower, any of its Subsidiaries, or any of Borrower's or its Subsidiaries' controlled Affiliates or any of their respective agents acting or benefiting in any capacity in

connection with the transactions contemplated by this Agreement is (i) in violation of any Anti-Terrorism Law, (ii) engaging in or conspiring to engage in any transaction that evades or avoids, or has the purpose of evading or avoiding or attempts to violate, any of the prohibitions set forth in any Anti-Terrorism Law, or (iii) is a Blocked Person. None of Borrower, any of its Subsidiaries, or (to the knowledge of Borrower) any of their controlled Affiliates or agents acting or benefiting in any capacity in connection with the transactions contemplated by this Agreement, (x) conducts any business or engages in making or receiving any contribution of funds, goods or services to or for the benefit of any Blocked Person, or (y) deals in, or otherwise engages in any transaction relating to, any property or interest in property blocked pursuant to Executive Order No. 13224, any similar executive order or other Anti-Terrorism Law. None of the funds to be provided under this Agreement will be used, directly or, to Borrower's knowledge, indirectly, (a) for any activities in violation of any applicable anti-money laundering, economic sanctions and anti-bribery laws and regulations or (b) for any payment to any governmental official or employee, political party, official of a political party, candidate for political office, or anyone else acting in an official capacity, in order to obtain, retain or direct business or obtain any improper advantage, in violation of the United States Foreign Corrupt Practices Act of 1977, as amended.

5.7 Information Correct and Current. No written information, report, Advance Request, financial statement, exhibit or schedule furnished, by or on behalf of Borrower to Agent in connection with any Loan Document or included therein or delivered pursuant thereto contained, or, when taken as a whole, contains or will contain any material misstatement of fact or, when taken together with all other such written information or documents, omitted, omits or will omit to state any material fact necessary to make the statements therein, in the light of the circumstances under which they were, are or will be made, not materially misleading at the time such statement was made or deemed made. Additionally, any and all financial or business projections provided by Borrower to Agent, whether prior to or after the Closing Date, shall be (i) provided in good faith and based on the most current data and information available to Borrower, and (ii) the most current of such projections provided to Borrower's Board of Directors (it being understood that the projections and forecasts provided by Borrower in good faith and based upon reasonable assumptions are not viewed as facts, that such projections are subject to significant uncertainties and contingencies, many of which are beyond the control of Borrower, that no assurance is given that any particular projections will be realized, and the actual results during the period or periods covered by such projections and forecasts may differ from the projected or forecasted results).

5.8 Tax Matters. Except as set forth on Schedule 5.8, (a) Borrower and its Subsidiaries have filed all federal and state income Tax returns and other material Tax returns that they are required to file, (b) Borrower and its Subsidiaries have duly paid all federal and state income Taxes and other material Taxes or installments thereof that they are required to pay, except Taxes being contested in good faith by appropriate proceedings and for which Borrower and its Subsidiaries maintain adequate reserves in accordance with GAAP, and (c) to the best of Borrower's knowledge, no proposed or pending Tax assessments, deficiencies, audits or other proceedings with respect to Borrower or any Subsidiary have had, or could reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect.

5.9 Intellectual Property Claims. Exhibit C is a true, correct and complete list of each of Borrower's pending or registered Patents, Trademarks, Copyrights, and material agreements under which Borrower licenses Intellectual Property from third parties (other than shrink-wrap software licenses, "off-the-shelf" licenses, or open-source software), together with application or registration numbers, as applicable, owned by Borrower or any Subsidiary. Borrower is not in material breach of, nor has Borrower failed to perform any material obligations under, any of the

foregoing contracts, licenses or agreements and, to Borrower's knowledge, no third party to any such contract, license or agreement is in material breach thereof or has failed to perform any material obligations thereunder. Borrower is the sole owner of and has valid title to, or otherwise has the valid right to use, the Intellectual Property material to Borrower's business as currently conducted and proposed to be conducted by Borrower. Except as described on Schedule 5.9, (i) each of the material Copyrights, Trademarks and Patents is valid and enforceable, (ii) no material part of the Intellectual Property has been judged invalid or unenforceable, in whole or in part, and (iii) no claim has been made to Borrower that the ownership of or use of any material part of the Intellectual Property violates the rights of any third party.

5.10 Intellectual Property.

(a) Schedule 5.10(a), as updated as set forth in the most recent Compliance Certificate delivered in accordance with Section 7.1(d) (provided that any such updates made in such Compliance Certificate shall not apply to a period covered by a prior Compliance Certificate and shall not cure any default arising from any false or misleading misrepresentations and warranties when made or when deemed made) (such updated Schedule 5.10(a), "Updated Schedule 5.10(a)"), sets forth a true, correct and complete list of all Current Company IP (including all Patents, registered Trademarks and registered Copyrights, and all pending applications therefor), together with application or registration numbers, as applicable. Except as set forth on Updated Schedule 5.10(a), (i) each item of Current Company IP is valid, subsisting and (other than with respect to Patent applications) enforceable, and no such item has lapsed, expired, been cancelled, invalidated, abandoned or become unenforceable, and (ii) no written notice has been received challenging the inventorship, ownership, validity or enforceability of any such Current Company IP. There are no Liens on any Company IP other than Permitted Liens. To the knowledge of Borrower, there are no published Patent, Patent applications, articles or prior art references that would reasonably be expected to materially adversely affect the exploitation of the Borrower Products.

(b) Except as set forth on Schedule 5.10(b) or in the most recent Compliance Certificate delivered in accordance with Section 7.1(d) (provided that any such updates made in such Compliance Certificate shall not apply to a period covered by a prior Compliance Certificate and shall not cure any default arising from any false or misleading misrepresentations and warranties when made or when deemed made), each Person who has or has had any rights in or to owned Company IP owned by Borrower or any of its Subsidiaries has executed an agreement assigning his, her or its entire right, title and interest therein to the stated owner thereof, and all such assignments of issued Patents in the United States have been duly recorded with the U.S. Patent and Trademark Office. There are no material maintenance, annuity or renewal fees currently overdue beyond their allotted grace period for any Current Company IP.

(c) Each Material Agreement is in full force and effect and is legal, valid, binding and enforceable in accordance with its respective terms, except as may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws relating to or limiting creditors' rights generally or by equitable principles relating to enforceability. Except as set forth on Schedule 5.10(c), to the knowledge of Borrower, neither Borrower nor any of its Subsidiaries is in breach or default under any Material Agreement in any manner that could reasonably be expected to materially affect the Borrower Products. Except as set forth on Schedule 5.10(c), as updated in accordance with Section 7.19, there are no material unpaid fees or royalties under any Material Agreements that have become due or are expected to become overdue.

(d) Except as described on Schedule 5.10(d) or in the most recent Compliance Certificate delivered in accordance with Section 7.1(d) (provided that any such updates made in such Compliance Certificate shall not apply to a period covered by a prior Compliance Certificate and shall not cure any default arising from any false or misleading misrepresentations and warranties when made or when deemed made), there is no pending or, to the knowledge of Borrower, threatened (in writing) opposition, interference, reissue, reexamination, inter-partes review, post-grant review, cancellation, injunction, litigation, or other proceeding challenging the legality, validity, enforceability or ownership of any Current Company IP (other than in the ordinary course), in each case, that would have a material adverse effect on the Borrower Products. Except as described on Schedule 5.10(d) or in the most recent Compliance Certificate delivered in accordance with Section 7.1(d) (provided that any such updates made in such Compliance Certificate shall not apply to a period covered by a prior Compliance Certificate and shall not cure any default arising from any false or misleading misrepresentations and warranties when made or when deemed made), there are no pending or, to the knowledge of Borrower, threatened (in writing) claims against Borrower or any of its Subsidiaries alleging that any Borrower Product Activities infringes, violates or misappropriates the Intellectual Property of any third party ("Third Party IP"), or that any Current Company IP is invalid or unenforceable. Except as described on Schedule 5.9 or in the most recent Compliance Certificate delivered in accordance with Section 7.1(d) (provided that any such updates made in such Compliance Certificate shall not apply to a period covered by a prior Compliance Certificate and shall not cure any default arising from any false or misleading misrepresentations and warranties when made or when deemed made), no Borrower Product Activities, to the knowledge of Borrower, infringes or violates any issued or registered Third Party IP, in each case, that would reasonably be expected to have a material adverse effect on the Borrower Products.

(e) Except as set forth on Schedule 5.10(e), or in the most recent Compliance Certificate delivered in accordance with Section 7.1(d), there are no settlements, covenants not to sue, consents, judgments, orders or similar obligations which (i) restrict the rights of Borrower or any of its Subsidiaries to use any Intellectual Property relating to Borrower Product Activities (in order to accommodate any Third Party IP or otherwise), or (ii) permit any third parties to use any Company IP. Except as set forth on Schedule 5.10(e), or in the most recent Compliance Certificate delivered in accordance with Section 7.1(d), to the knowledge of Borrower, there is no infringement, violation or misappropriation by any Person of any Company IP.

(f) [Reserved].

(g) Except for restrictions that are unenforceable under Article 9 of the UCC or otherwise permitted under this Agreement with respect to Licenses, Borrower has the right, to the extent required to operate Borrower's business, to freely transfer, license or assign Intellectual Property of Borrower and necessary or material in the operation or conduct of Borrower's business as currently conducted and proposed to be conducted, without condition, restriction or payment of any kind (other than license payments in the ordinary course of business) to any third party, except for customary covenants in inbound license agreements, joint ventures or strategic alliances (to the extent such joint ventures or strategic alliances are Permitted Investments) and equipment leases where Borrower is the licensee or lessee. Borrower owns or has the right to use, pursuant to valid licenses, all software development tools, library functions, compilers and all other third-party software that are material to Borrower's business and Borrower Product Activities. Except as disclosed on Schedule 5.10(g) or in the most recent Compliance Certificate delivered in accordance with Section 7.1(d), Borrower is not a party to, nor is it bound by, any Restricted License.

(h) No material software or other materials used by Borrower or any of its Subsidiaries (or used in any Borrower Products) are subject to an open-source or similar license (including the General Public License, Lesser General Public License, Mozilla Public License, or Affero License) in a manner that would cause such software or other materials to have to be (i) distributed to third parties at no charge or a minimal charge (royalty-free basis), (ii) licensed to third parties to modify, make derivative works based on, decompile, disassemble, or reverse engineer, or (iii) disclosed or distributed in source code form.

5.11 Borrower Products. Except as set forth on Schedule 5.11 (as may be updated in the Compliance Certificate delivered in accordance with Section 7.1(d)) and as provided for in any Registration or application therefor, no Intellectual Property of Borrower or Borrower Product is subject to any actual or, to the knowledge of Borrower, threatened (in writing) litigation, proceeding (including any proceeding in the United States Patent and Trademark Office or any corresponding foreign office or agency) or outstanding decree, order, judgment, settlement agreement or stipulation that restricts in any manner Borrower's use, transfer or licensing thereof or that may affect the use thereof. There is no decree, order, judgment, agreement, stipulation, arbitral award or other provision entered into in connection with any litigation or proceeding that obligates Borrower to grant licenses or ownership interest in any future Intellectual Property related to the operation or conduct of the business of Borrower or Borrower Products. To Borrower's knowledge, neither Borrower's use of its Intellectual Property nor the production and sale of Borrower Products infringes the Intellectual Property or other rights of others.

5.12 Financial Accounts. Exhibit D, as may be updated by Borrower in a written notice provided to Agent after the Closing Date (including in any Compliance Certificate delivered in accordance with Section 7.1(d)), is a true, correct and complete list of (a) all banks and other financial institutions at which Borrower or any Subsidiary maintains Deposit Accounts and (b) all institutions at which Borrower or any Subsidiary maintains an account holding Investment Property, and such exhibit correctly identifies the name, address and telephone number of each bank or other institution, the name in which the account is held, a description of the purpose of the account, and the complete account number therefor. Neither Borrower nor any Subsidiary owns or holds any Digital Assets.

5.13 Employee Loans. Except for loans constituting Permitted Investments or as described on Schedule 5.13, Borrower has no outstanding loans to any employee, officer or director of Borrower nor has Borrower guaranteed the payment of any loan made to an employee, officer or director of Borrower by a third party.

5.14 Capitalization and Subsidiaries. Borrower does not own any stock, partnership interest or other securities of any Person, except for Permitted Investments. Attached as Schedule 5.14, as may be updated by Borrower in a written notice provided after the Closing Date, is a true, correct and complete list of each Subsidiary.

5.15 Solvency. The fair salable value of Borrower's consolidated assets (including goodwill minus disposition costs) exceeds the fair value of Borrower's liabilities; Borrower is not left with unreasonably small capital after the transactions in this Agreement; and Borrower and each of its Subsidiaries are able to pay their debts (including trade debts) as they mature. The amount of any contingent liability at any time shall be computed as the amount that would reasonably be expected to become an actual and matured liability.

SECTION 6. INSURANCE; INDEMNIFICATION

6.1 Coverage. Borrower shall cause to be carried and maintained commercial general liability insurance covering Borrower and its Subsidiaries, on an occurrence form, against risks and in such amounts customarily insured against in Borrower's line of business. Such risks shall include the risks of bodily injury, including death, property damage, personal injury, advertising injury, and contractual liability per the terms of the indemnification agreement found in Section 6.3. Borrower must maintain a minimum of [* * *] Dollars ($[* * *]) of commercial general liability insurance for each occurrence. Borrower maintains and shall continue to maintain a minimum of [* * *] Dollars ($[* * *]) of directors' and officers' insurance for each occurrence and [* * *] Dollars ($[* * *]) in the aggregate. So long as there are any Secured Obligations outstanding (other than inchoate indemnity obligations which, by their terms, survive termination of this Agreement), Borrower shall also cause to be carried and maintained insurance upon the business and assets of Borrower and its Subsidiaries, insuring against all risks of physical loss or damage howsoever caused, in an amount not less than the full replacement cost of the Collateral, provided that such insurance may be subject to standard exceptions and deductibles. If Borrower fails to obtain the insurance called for by this Section 6.1 or fails to pay any premium thereon or fails to pay any other amount which Borrower is obligated to pay under this Agreement or any other Loan Document or which may be required to preserve the Collateral, Agent may obtain such insurance or make such payment, and all amounts so paid by Agent are immediately due and payable, bearing interest at the then highest rate applicable to the Secured Obligations, and secured by the Collateral. Agent will make reasonable efforts to provide Borrower with notice of Agent obtaining such insurance at the time it is obtained or within a reasonable time thereafter. No payments by Agent are deemed an agreement to make similar payments in the future or Agent's waiver of any Event of Default.

6.2 Certificates. Borrower shall deliver to Agent certificates of insurance that evidence Borrower's compliance with its insurance obligations in Section 6.1 and the obligations contained in this Section 6.2. Borrower's insurance certificate shall reflect Agent (shown as "Hercules Capital, Inc., as Agent, and its successors and/or assigns") is an additional insured for commercial general liability, a lender's loss payable for all risk property damage insurance, subject to the insurer's approval, and a lender's loss payable for property insurance, an additional insured for liability insurance for any future insurance that Borrower may acquire from such insurer and any other designations as requested by Agent with respect to any other insurance policies (including cybersecurity policies) of Borrower. Attached to the certificates of insurance will be additional insured endorsements for liability, lender's loss payable endorsements for all risk property damage insurance and any other endorsements as reasonably requested by Agent with respect to any other insurance policies (including cybersecurity policies) of Borrower. All certificates of insurance will provide for a minimum of thirty (30) days advance written notice to Agent of cancellation (other than cancellation for non-payment of premiums, for which ten (10) days' advance written notice shall be sufficient) or any other change adverse to Agent's interests. Any failure of Agent to scrutinize such insurance certificates for compliance is not a waiver of any of Agent's rights, all of which are reserved. Borrower shall provide Agent with copies of each insurance policy, and upon entering into or amending any insurance policy required hereunder. Upon Agent's reasonable request, Borrower shall provide Agent with copies of such policies and shall promptly deliver to Agent updated insurance certificates with respect to such policies.

6.3 Indemnity. Borrower agrees to indemnify and hold Agent, Lenders and each of their respective officers, directors, employees, agents, in-house attorneys, representatives and shareholders (each, an "Indemnified Person") harmless from and against any and all third-party claims, documented out-of-pocket costs, expenses, damages and liabilities (including such claims, costs, expenses, damages and liabilities based on liability in tort, including strict liability in tort), including reasonable and documented out-of-pocket attorneys' fees and disbursements and other

costs of investigation or defense (including those incurred upon any appeal) (collectively, "Liabilities"), that may be instituted or asserted against or incurred by such Indemnified Person as the result of credit having been extended, suspended or terminated under this Agreement and the other Loan Documents or the administration of such credit, or in connection with or arising out of the transactions contemplated hereunder and thereunder, or any actions or failures to act in connection therewith, or arising out of the disposition or utilization of the Collateral, excluding in all cases Liabilities to the extent such Liabilities arise solely out of gross negligence or willful misconduct of any Indemnified Person or changes in income tax rates. This Section 6.3 shall not apply with respect to Taxes other than any Taxes that represent losses, claims, damages, etc. arising from any non-Tax claim. In no event shall any Indemnified Person be liable on any theory of liability for any special, indirect, consequential or punitive damages (including any loss of profits, business or anticipated savings). This Section 6.3 shall survive the repayment of indebtedness under, and otherwise shall survive the expiration or other termination of, this Agreement, in each case, subject to the applicable statute of limitations.

SECTION 7. COVENANTS OF BORROWER

Borrower agrees as follows:

7.1 Financial Reports. Borrower shall furnish to Agent the financial statements and reports listed hereinafter (the "Financial Statements"):

(a) (i) until Borrower has achieved the Approval Milestone, as soon as practicable (and in any event within ten (10) days) after the end of each month, a summary of the account balances of each of Borrower's Deposit Accounts and accounts holding Investment Property as of the last day of the month, delivered by email to [* * *] and [* * *] at [* * *] and [* * *] or to such successor Person(s) as Agent may designate in writing from time to time and (ii) from and after the date Borrower has achieved the Approval Milestone, as soon as practicable (and in any event within thirty (30) days) after the end of each month, unaudited interim and year-to-date financial statements as of the end of such month (prepared on a consolidated and consolidating basis, if applicable), including balance sheet and related statements of income and cash flows accompanied by a report detailing any material contingencies (including the commencement of any material litigation by or against Borrower) or any other occurrence that could reasonably be expected to have a Material Adverse Effect, all certified by a duly authorized officer of Borrower to the effect that they have been prepared in accordance with GAAP, except (i) for the absence of footnotes, (ii) that they are subject to normal year-end adjustments, and (iii) they do not contain certain non-cash items that are customarily included in quarterly and annual financial statements;

(b) as soon as practicable (and in any event within forty-five (45) days) after the end of each of the first three fiscal quarters of each fiscal year, unaudited interim and year-to-date financial statements as of the end of such calendar quarter (prepared on a consolidated and consolidating basis, if applicable), including balance sheet and related statements of income and cash flows accompanied by a report detailing any material contingencies (including the commencement of any material litigation by or against Borrower) or any other occurrence that could reasonably be expected to have a Material Adverse Effect, certified by a duly authorized officer of Borrower to the effect that they have been prepared in accordance with GAAP, except (i) for the absence of footnotes, and (ii) that they are subject to normal year-end adjustments;

(c) as soon as practicable (and in any event within ninety (90) days after the end of each fiscal year, audited financial statements as of the end of such year (prepared on a consolidated

and consolidating basis, if applicable), including balance sheet and related statements of income and cash flows, and setting forth in comparative form the corresponding figures for the preceding fiscal year, certified without qualification [* * *] by a firm of independent certified public accountants selected by Borrower and reasonably acceptable to Agent, accompanied by any management report from such accountants;

(d) as soon as practicable (and in any event within thirty (30) days) after the end of each month, a Compliance Certificate;

(e) as soon as practicable (and in any event within thirty (30) days) after the end of each month, a report showing agings of accounts receivable and accounts payable;

(f) promptly after the sending or filing thereof, as the case may be, copies of any proxy statements, financial statements, information or reports that Company has made available to holders of its common stock or preferred stock and copies of any regular, periodic and special reports or registration statements that Company files with the Securities and Exchange Commission or any Governmental Authority that may be substituted therefor, or any national securities exchange;

(g) copies of any material Governmental Approvals obtained by Borrower or any of its Subsidiaries;

(h) [reserved];

(i) financial and business projections, including the Board Approved Forecast, promptly following their approval by Company's Board of Directors, and in any event, within thirty (30) days prior to the end of Borrower's fiscal year, as well as budgets, operating plans and other financial information reasonably requested by Agent;

(j) [reserved];

(k) insurance renewal statements, annually or otherwise promptly upon renewal of insurance policies required to be maintained in accordance with Section 6.1;

(l) prompt notice of any legal process that is reasonably likely to result in damages, expenses or liabilities in excess of [* * *] Dollars ($[* * *]); and

(m) prompt (but in any event no more than two (2) Business Days') notice if Borrower or any Subsidiary has knowledge that Borrower, or any Subsidiary or controlled Affiliate of Borrower, is listed on the OFAC Lists or (a) is convicted on, (b) pleads *nolo contendere* to, (c) is indicted on, or (d) is arraigned and held over on charges involving money laundering or predicate crimes to money laundering.

Borrower shall not (without the consent of the Agent) make any change in its (a) accounting policies or reporting practices (other than to the extent required or otherwise contemplated by GAAP or other applicable regulatory requirements), or (b) fiscal years or fiscal quarters. The fiscal year of Borrower shall end on December 31.

The executed Compliance Certificate and all Financial Statements required to be delivered hereunder shall be sent per instructions (i) specified on Addendum 2 or (ii) otherwise provided by Agent to Borrower via a written notice from time to time.

7.2 Management Rights. Borrower shall permit any representative that Agent or Lenders authorizes, including its attorneys and accountants, to inspect the Collateral and examine and make copies and abstracts of the books of account and records of Borrower at reasonable times and upon reasonable notice during normal business hours; provided, however, that so long as no Event of Default has occurred and is continuing, such examinations shall be limited to no more often than twice per fiscal year. In addition, in connection with such inspections, any such representative shall have the right to meet with management and officers of Borrower to discuss such books of account and records at reasonable times and upon reasonable notice. In addition, Agent or Lenders shall be entitled at reasonable times and intervals to consult with and advise the management and officers of Borrower concerning significant business issues affecting Borrower. Such consultations shall not unreasonably interfere with Borrower's business operations. The parties intend that the rights granted to Agent and Lenders shall constitute "management rights" within the meaning of 29 C.F.R. Section 2510.3-101(d)(3)(ii), but that any advice, recommendations or participation by Agent or Lenders with respect to any business issues shall not be deemed to give Agent or Lenders, nor be deemed an exercise by Agent or Lenders of, control over Borrower's management or policies.

7.3 Further Assurances. Borrower shall, and shall cause each other Loan Party to, from time to time execute, deliver and file, alone or with Agent, any financing statements, security agreements, collateral assignments, notices, control agreements, promissory notes or other documents to perfect, give the highest priority to Agent's Lien on the Collateral, subject to Permitted Priority Liens, or otherwise evidence Agent's rights herein, in each case as reasonably requested by Agent. Borrower shall from time to time procure any instruments or documents as may be reasonably requested by Agent, and take all further action that may be necessary, or that Agent may reasonably request, to perfect and protect the Liens granted hereby or pursuant to applicable Loan Documents. In addition, and for such purposes only, Borrower hereby authorizes Agent to execute and deliver on behalf of Borrower and to file such financing statements (including an indication that the financing statement covers "all assets or all personal property" of Borrower in accordance with Section 9-504 of the UCC), collateral assignments, notices, control agreements, security agreements and other documents without the signature of Borrower either in Agent's name or in the name of Agent as agent and attorney-in-fact for Borrower, in each case, solely to the extent actually related to the Collateral and otherwise in accordance with the applicable provisions of this Agreement or the other Loan Documents. Borrower shall protect and defend Borrower's title to the Collateral and Agent's Lien thereon against all Persons claiming any interest adverse to Borrower or Agent other than Permitted Liens.

7.4 Indebtedness. Borrower shall not create, incur, assume, guarantee or be or remain liable with respect to any Indebtedness, or permit any Subsidiary to do so, other than Permitted Indebtedness, or prepay any Indebtedness for borrowed money or take any actions which impose on Borrower an obligation to prepay any Indebtedness for borrowed money, except for (a) the conversion of Indebtedness into equity securities and the payment of cash in lieu of fractional shares in connection with such conversion, (b) purchase money Indebtedness pursuant to its then applicable payment schedule, (c) prepayment by any Subsidiary of (i) inter-company Indebtedness owed by such Subsidiary to any Borrower, or (ii) if such Subsidiary is not a Borrower, intercompany Indebtedness owed by such Subsidiary to another Subsidiary that is not a Borrower, (d) payments made on Subordinated Indebtedness to the extent permitted under the relevant subordination agreement, (e) Indebtedness permitted by clauses (i), (ii), (iii), (iv), (vii), (viii), (xii), (xiv), (xvi), (xvii) and, to the extent related to any of the foregoing and not in excess of the related primary obligation, (xiii) of the defined term "Permitted Indebtedness", or (f) as otherwise permitted hereunder or approved in writing by Agent.

Notwithstanding anything to the contrary in the foregoing, the issuance of, performance of obligations under (including any payments of interest), and conversion, exercise, repurchase, redemption (including, for the avoidance of doubt, a required repurchase in connection with the redemption of Permitted Convertible Debt upon satisfaction of a condition related to the stock price of Common Stock), settlement or early termination or cancellation of (whether in whole or in part and including by netting or set-off) (in each case, whether in cash, Common Stock or, following a merger event or other change of the Common Stock, other securities or property), or the satisfaction of any condition that would permit or require any of the foregoing, any Permitted Convertible Debt shall not constitute a prepayment of Indebtedness by the Company for the purposes of this Section 7.4 provided that principal payments in cash (other than cash in lieu of fractional shares) shall be allowed with respect to any repurchase in connection with the redemption of Permitted Convertible Debt upon satisfaction of a condition related to the stock price of Common Stock only if the Redemption Conditions are satisfied in respect of such redemption and at all times after such redemption.

Notwithstanding the foregoing, the Company may repurchase, exchange or induce the conversion of Permitted Convertible Debt by delivery of shares of Common Stock and/or a different series of Permitted Convertible Debt and/or by payment of cash (in an amount that does not exceed the proceeds received by the Company from the substantially concurrent issuance of shares of Common Stock and/or such different series of Permitted Convertible Debt minus the net cost of any Permitted Bond Hedge Transaction and related Permitted Warrant Transaction entered into in connection therewith plus the net cash proceeds, if any, received by the Company pursuant to the related exercise or early unwind or termination of the related Permitted Bond Hedge Transactions and Permitted Warrant Transactions, if any, pursuant to the immediately following proviso); provided that, for the avoidance of doubt, substantially concurrently with, or a commercially reasonable period of time before or after, the related settlement date for the Permitted Convertible Debt that are so repurchased, exchanged or converted, the Company may exercise or unwind or terminate early (whether in cash, shares or any combination thereof) the portion of the Permitted Bond Hedge Transactions and Permitted Warrant Transactions, if any, corresponding to such Permitted Convertible Debt that are so repurchased, exchanged or converted.

7.5 Collateral. Borrower shall at all times (a) keep the Collateral and all other property and assets used in Borrower's business or in which Borrower now or hereafter holds any interest free and clear from any Liens whatsoever (except for Permitted Liens), and (b) shall give Agent prompt written notice of any legal process that is reasonably likely to result in damages, expenses or liabilities in excess of [* * *] Dollars ($[* * *]) affecting the Collateral, such other property and assets, or any Liens thereon, provided however, that the Collateral and such other property or assets may be subject to Permitted Liens. Borrower shall not agree with any Person other than Agent or Lenders not to encumber its property other than in connection with Permitted Liens. Borrower shall not enter into or suffer to exist or become effective any agreement that prohibits or limits the ability of any Borrower to create, incur, assume or suffer to exist any Lien upon any of its property (including Intellectual Property), whether now owned or hereafter acquired, to secure its obligations under the Loan Documents to which it is a party other than (i) this Agreement and the other Loan Documents, (ii) any agreements governing any purchase money Liens or capital lease obligations otherwise permitted hereby (in which case, any prohibition or limitation shall only be effective against the assets financed thereby), (iii) customary restrictions on the assignment of leases, licenses and other agreements, and (iv) customary anti-assignment provisions in contracts permitted under this Agreement and entered into in the ordinary course of business. Borrower shall cause its Subsidiaries to protect and defend such Subsidiary's title to its assets from and against all Persons claiming any interest adverse to such Subsidiary, and Borrower shall cause its Subsidiaries at all

times to keep such Subsidiary's property and assets free and clear from any Liens whatsoever (except for Permitted Liens), and shall give Agent prompt written notice of any legal process that is reasonably likely to result in damages, expenses or liabilities in excess of [* * *] Dollars ($[* * *]) affecting such Subsidiary's assets.

7.6 Investments. Borrower shall not directly or indirectly acquire or own, or make any Investment in or to any Person, or permit any of its Subsidiaries to do so, other than Permitted Investments. Neither Borrower nor any Subsidiary shall directly or indirectly acquire or own, nor make any Investment in Digital Assets, nor permit any Subsidiary so to do.

Notwithstanding the foregoing, and for the avoidance of doubt, this Section 7.6 shall not prohibit (i) the conversion or exchange by holders of (including any cash payment upon conversion or exchange), or required payment of any principal or premium on (including, for the avoidance of doubt, in respect of a required repurchase in connection with the redemption of Permitted Convertible Debt upon satisfaction of a condition related to the stock price of Common Stock) or required payment of any interest with respect to, any Permitted Convertible Debt in each case, in accordance with the terms of the indenture governing such Permitted Convertible Debt provided that principal payments in cash (other than cash in lieu of fractional shares) shall be allowed with respect to any repurchase in connection with the redemption of Permitted Convertible Debt upon satisfaction of a condition related to the stock price of Common Stock only if the Redemption Conditions are satisfied in respect of such redemption and at all times after such redemption, (ii) the entry into (including the payment of premiums in connection therewith) or any required payment with respect to, or required early unwind or settlement of (including by netting or set-off), any Permitted Bond Hedge Transaction or Permitted Warrant Transaction, in each case, in accordance with the terms of the agreement governing such Permitted Bond Hedge Transaction or Permitted Warrant Transaction, or (iii) the withholding of shares of Common Stock upon the vesting of performance stock units and restricted stock units issued to the Borrower's employees under the Borrower's equity incentive plan upon vesting of such stock units.

Notwithstanding the foregoing, the Company may repurchase, exchange or induce the conversion of Permitted Convertible Debt by delivery of shares of Common Stock and/or a different series of Permitted Convertible Debt and/or by payment of cash (in an amount that does not exceed the proceeds received by the Company from the substantially concurrent issuance of shares of Common Stock and/or such different series of Permitted Convertible Debt, minus the net cost of any Permitted Bond Hedge Transaction and related Permitted Warrant Transaction entered into in connection therewith, plus the net cash proceeds, if any, received by the Company pursuant to the related exercise or early unwind or termination of the related Permitted Bond Hedge Transactions and Permitted Warrant Transactions, if any, pursuant to the immediately following proviso); provided that, for the avoidance of doubt, substantially concurrently with, or a commercially reasonable period of time before or after, the related settlement date for the Permitted Convertible Debt that are so repurchased, exchanged or converted, the Company may exercise or unwind or terminate early (whether in cash, shares or any combination thereof) the portion of the Permitted Bond Hedge Transactions and Permitted Warrant Transactions, if any, corresponding to such Permitted Convertible Debt that are so repurchased, exchanged or converted.

7.7 Distributions. Borrower shall not, and shall not allow any Subsidiary to, (a) repurchase or redeem any class of stock or other Equity Interest other than pursuant to employee, director or consultant repurchase plans or other similar agreements, provided, however, in each case the repurchase or redemption price does not exceed the original consideration paid for such stock or Equity Interest, or (b) declare or pay any cash dividend or make any other cash distribution on any

class of stock or other Equity Interest, except that (i) a Subsidiary may pay dividends or make other distributions to Borrower or any Subsidiary of Borrower, (ii) Borrower or any Subsidiary may pay non-Cash dividends or make other non-Cash distributions on, or may repurchase or redeem stock or Equity Interests, in each case for Qualified Equity Interests of such Person or any parent entity, (iii) Borrower may make payments in cash for fractional shares/unit upon conversion or in connection with the exercise or conversion of warrants or other securities in an amount not to exceed [* * *] Dollars ($[* * *]) in the aggregate, (iv) to the extent constituting a distribution, Borrower may make any Permitted Investment, or (v) pursuant to employee director or consultant repurchases plans, Organizational Document, equity incentive plans, rights of first refusal and co-sale agreements, acquisition stock agreement, restricted stock agreements, or other similar agreements in an amount not to exceed [* * *] Dollars ($[* * *]) in the aggregate, or (c) except for Permitted Investments, lend money to any employees, officers or directors or guarantee the payment of any such loans granted by a third party in excess of [* * *] Dollars ($[* * *]) in the aggregate, or (d) convert any of its convertible securities other than pursuant to the terms of such convertible securities, provided that such conversion does not result in a Change in Control, or (e) waive, release or forgive any Indebtedness owed by any employees, officers or directors in excess of [* * *] Dollars ($[* * *]) in the aggregate.

Notwithstanding the foregoing, the Company may repurchase, exchange or induce the conversion of Permitted Convertible Debt by delivery of shares of Common Stock and/or a different series of Permitted Convertible Debt and/or by payment of cash (in an amount that does not exceed the proceeds received by the Company from the substantially concurrent issuance of shares of Common Stock and/or such different series of Permitted Convertible Debt minus the net cost of any Permitted Bond Hedge Transaction and related Permitted Warrant Transaction entered into in connection therewith plus the net cash proceeds, if any, received by the Company pursuant to the related exercise or early unwind or termination of the related Permitted Bond Hedge Transactions and Permitted Warrant Transactions, if any, pursuant to the immediately following proviso); provided that, for the avoidance of doubt, substantially concurrently with, or a commercially reasonable period of time before or after, the related settlement date for the Permitted Convertible Debt that are so repurchased, exchanged or converted, the Company may exercise or unwind or terminate early (whether in cash, shares or any combination thereof) the portion of the Permitted Bond Hedge Transactions and Permitted Warrant Transactions, if any, corresponding to such Permitted Convertible Debt that are so repurchased, exchanged or converted.

For the avoidance of doubt, this Section 7.7(a) shall not prohibit any payments or delivery obligations in respect of any Permitted Convertible Debt, Permitted Bond Hedge Transaction or Permitted Warrant Transaction.

7.8 Transfers. Except for Permitted Transfers, Borrower shall not, and shall not permit any Subsidiary to, voluntarily or involuntarily transfer, sell, lease, license, lend or in any other manner convey ("Transfer") any equitable, beneficial or legal interest in any material portion of its assets (including, without limitation, pursuant to a Division).

7.9 Mergers and Consolidations. Borrower shall not, nor will it permit any Subsidiary to, merge, dissolve, liquidate, consolidate with or into another Person, or dispose of (whether in one transaction or in a series of transactions) all or substantially all of its assets (whether now owned or hereafter acquired) to or in favor of any Person (other than the following: (a) mergers or consolidations of (i) a Subsidiary which is not a Borrower into another Subsidiary or into Borrower, or (ii) a Borrower into another Borrower, (b) Permitted Investments and Permitted Transfers, in each case, subject to compliance with Section 7.13, or (c) the dissolution, liquidation or disposition of (i)

any Borrower provided that all of its assets and business are transferred to another Borrower (ii) any Guarantor provided that all of its assets and business are transferred to another Loan Party).

7.10 Taxes. Borrower shall, and shall cause each of its Subsidiaries to, pay when due all material Taxes of any nature whatsoever now or hereafter imposed or assessed against Borrower or such Subsidiary or the Collateral or upon Borrower's (or such Subsidiary's) ownership, possession, use, operation or disposition thereof or upon Borrower's (or such Subsidiary's) rents, receipts or earnings arising therefrom. Borrower shall, and shall cause each of its Subsidiaries to, accurately file on or before the due date therefor (taking into account proper extensions) all federal and state income Tax returns and other material Tax returns required to be filed. Notwithstanding the foregoing, Borrower and its Subsidiaries may contest, in good faith and by appropriate proceedings diligently conducted, Taxes for which Borrower and its Subsidiaries maintain adequate reserves in accordance with GAAP.

7.11 Corporate Changes.

(a) Neither Borrower nor any Subsidiary shall change its corporate name, legal form or jurisdiction of formation without twenty (20) days' prior written notice to Agent (or such shorter period as agreed by Agent in its sole discretion).

(b) Neither Borrower nor any Subsidiary shall suffer a Change in Control.

(c) Neither Borrower nor any Subsidiary shall relocate its chief executive office or its principal place of business unless: (i) it has provided prior written notice to Agent; and (ii) such relocation shall be within the continental United States of America.

(d) If Borrower intends to add any new offices or business locations, including warehouses, containing any portion of Borrower's assets or property (other than in-transit inventory and mobile equipment) valued, individually or in the aggregate, in excess of [* * *] Dollars ($[* * *]), then Borrower will use commercially reasonable efforts to cause the landlord of any such new offices or business locations, including warehouses, to execute and deliver a landlord consent in form and substance reasonably satisfactory to Agent.

(e) If Borrower intends to deliver any portion of Borrower's assets or property (other than in-transit inventory and mobile equipment) valued, individually or in the aggregate, in excess of [* * *] Dollars ($[* * *]) to a bailee, and Agent and such bailee are not already parties to a bailee agreement governing both the Collateral and the location to which Borrower intends to deliver the Collateral, then Borrower will use commercially reasonable efforts to cause such bailee to execute and deliver a bailee agreement in form and substance reasonably satisfactory to Agent.

(f) The Borrower will not, and will not permit any Subsidiary to, engage to any material extent in any business other than those businesses conducted by the Borrower and its Subsidiaries on the date hereof or any business reasonably related or incidental thereto or representing a reasonable expansion thereof.

(g) Without the prior written consent of Agent, the Borrower will not make, or agree to make, any modification, amendment or waiver of any of the terms or provisions of Borrower's Organizational Documents that is materially adverse to Agent or any of the Lenders.

7.12 Deposit Accounts. No Loan Party shall maintain any Deposit Accounts, any accounts or sub-accounts in connection with an insured cash sweep program, or accounts holding

Investment Property, except with respect to which Agent has an Account Control Agreement on terms and conditions satisfactory to Agent in its reasonable discretion, provided that no Account Control Agreement shall be required for any Excluded Account. No Loan Party shall own or hold any Digital Assets.

7.13 Joinder of Subsidiaries. Borrower shall notify Agent of each Subsidiary formed or acquired subsequent to the Closing Date (including any new Subsidiary formed by Division) and, within thirty (30) days of such formation or acquisition (or such longer period of time as agreed to by Agent in writing (which may be by email) in its sole discretion), shall cause any such Subsidiary to execute and deliver to Agent a Joinder Agreement and such other documents and instruments as shall be requested by Agent to effectuate the transactions contemplated by such Joinder Agreement (in each case in form and substance acceptable to Agent), or, if requested by Agent, a Guaranty and appropriate collateral security documents to secure the obligations pursuant to such Guaranty (in each case in form and substance acceptable to Agent); it being agreed that if such new Subsidiary is formed by a Division, the foregoing requirements shall be satisfied substantially concurrently with the formation of such Subsidiary.

7.14 Regulatory and Product Notices. Borrower shall promptly (but in any event within [* * *]) after the receipt or occurrence thereof notify Agent of the following (provided, that it shall be deemed notice to Agent if the Company has made a filing with the SEC disclosing such events):

(a) any written notice that the FDA (or international equivalent) is limiting, suspending or revoking any material Registration (including, but not limited to, by the issuance of a clinical hold);

(b) any written notice that Borrower or its Subsidiaries has become subject to any material regulatory enforcement action,

(c) the exclusion or debarment from any governmental healthcare program or debarment or disqualification by FDA (or international equivalent) of Borrower or its Subsidiaries or its or their authorized officers;

(d) any written notice that a Borrower or any Subsidiary, or any of their licensees or sublicensees (including licensees or sublicensees under any Material Agreement), is being investigated or is the subject of any allegation of potential or actual violations of any FDA Laws; or

(e) any written notice that any material quantity of any product of Borrower or its Subsidiaries has been seized, withdrawn, recalled, detained, or subject to a suspension of manufacturing, or the commencement of any proceedings in the United States or any other jurisdiction seeking the withdrawal, recall, suspension, import detention, or seizure of any material quantity of any Borrower Product are pending or threatened in writing against Borrower or its Subsidiaries.

7.15 Notification of Event of Default. Borrower shall notify Agent immediately of the occurrence of any Event of Default.

7.16 SBA. One or more affiliates of Agent have received a license from the U.S. Small Business Administration ("SBA") to extend loans as a small business investment company ("SBIC") pursuant to the Small Business Investment Act of 1958, as amended, and the associated regulations,

as amended (collectively, the "SBIC Act"). Portions of the Loan to Borrower may be made by a Lender that is a SBIC. Addendum 3 to this Agreement outlines various responsibilities of Agent, each Lender and Borrower associated with a loan made by a SBIC, and such Addendum 3 is hereby incorporated in this Agreement. Borrower shall immediately notify Agent of any failure to comply with its obligations under Addendum 3 upon acquiring knowledge thereof.

7.17 Use of Proceeds. Borrower agrees that the proceeds of the Loans shall be used solely to pay related fees and expenses in connection with this Agreement and for working capital and general corporate purposes. The proceeds of the Loans will not be used in violation of Anti-Corruption Laws or applicable Sanctions.

7.18 [Reserved.]

7.19 Material Agreements. Borrower shall (a) not, without the consent of Agent (not to be unreasonably withheld, conditioned or delayed), amend the Material License in a manner that, taken as a whole, is reasonably likely to have a materially adverse impact on Agent or Lenders, and (b) give prompt written notice to Agent of entering into a Material Agreement or materially amending or taking actions resulting in the termination of a Material Agreement, including delivery of an updated Schedule 5.10(c), if applicable.

7.20 Compliance with Laws.

(a) Borrower (i) shall maintain, and shall cause its Subsidiaries to maintain, compliance in all material respects with all applicable laws, rules or regulations (including any law, rule or regulation with respect to the making or brokering of loans or financial accommodations), and (ii) shall, or cause its Subsidiaries to, obtain and maintain all required governmental authorizations, approvals, licenses, franchises, permits or registrations reasonably necessary in connection with the conduct of Borrower's business. Borrower shall not become an "investment company," a company that would be an "investment company" except for the exclusion from the definition of "investment company" in Section 3(c) of the 1940 Act, or a company controlled by an "investment company" under the 1940 Act, or undertake as one of its important activities extending credit to purchase or carry margin stock (as defined in Regulation X, T and U of the Federal Reserve Board of Governors).

(b) Neither Borrower nor any of its Subsidiaries shall, nor shall Borrower or any of its Subsidiaries permit any controlled Affiliate to, directly or indirectly, knowingly enter into any documents, instruments, agreements or contracts with any Person listed on the OFAC Lists. Neither Borrower nor any of its Subsidiaries shall, nor shall Borrower or any of its Subsidiaries, permit any controlled Affiliate to, directly or indirectly, (i) conduct any business or engage in any transaction or dealing with any Blocked Person, including, without limitation, the making or receiving of any contribution of funds, goods or services to or for the benefit of any Blocked Person, (ii) deal in, or otherwise engage in any transaction relating to, any property or interests in property blocked pursuant to Executive Order No. 13224 or any similar executive order or other Anti-Terrorism Law, or (iii) engage in or conspire to engage in any transaction that evades or avoids, or has the purpose of evading or avoiding, or attempts to violate, any of the prohibitions set forth in Executive Order No. 13224 or other Anti-Terrorism Law.

(c) Borrower has implemented and shall maintain in effect policies and procedures designed to ensure compliance by Borrower, its Subsidiaries and their respective directors, officers, employees and agents with Anti-Corruption Laws and applicable Sanctions, and Borrower, its Subsidiaries and their respective officers and employees and to the knowledge of Borrower its

directors and agents, are in compliance with Anti-Corruption Laws and applicable Sanctions in all material respects.

(d) None of Borrower, any of its Subsidiaries or any of their respective directors, officers or employees, or to the knowledge of Borrower, any agent for Borrower or its Subsidiaries that will act in any capacity in connection with or benefit from the credit facility established hereby, is a Sanctioned Person. No Loan, use of proceeds or other transaction contemplated by this Agreement will violate Anti-Corruption Laws or applicable Sanctions.

7.21 Financial Covenants.

(a) Minimum Cash.

(i) If the Initial Minimum Cash Test Date has occurred, Borrower shall thereafter at all times maintain Qualified Cash in an amount greater than or equal to (x) the aggregate outstanding Secured Obligations, multiplied by (y) the Applicable Minimum Cash Percentage. Notwithstanding the foregoing, this Section 7.21(a) shall not be required to be complied with on any day on which Company's Market Capitalization for such day is greater than or equal to (x) the aggregate outstanding Secured Obligations, multiplied by (y) seven (7).

(ii) If Borrower makes a redemption other than non-cash redemption or any other cash payment in respect of Permitted Convertible Debt (except for the payment of cash in lieu of fractional shares and/or for accrued and unpaid interest), subject to satisfaction of the Redemption Conditions, Borrower shall, at all times thereafter, maintain Qualified Cash in the amount required by the defined term "Redemption Conditions."

(b) Performance Covenant. If the Initial Performance Covenant Test Date has occurred, Borrower shall thereafter satisfy at least one of (i) Performance Covenant A or Performance Covenant B, tested at all times, or (ii) Performance Covenant C, tested as of the last date of the most recent calendar month for which financial statements and a Compliance Certificate have been (or were required to be) delivered under Section 7.1(a) and Section 7.1(d), respectively. Notwithstanding the foregoing, if the financial statements required by Section 7.1(a) and the related Compliance Certificate required by Section 7.1(d) are not delivered by the applicable due dates for any month, Borrower shall be deemed not to have satisfied Performance Covenant A or Performance Covenant B for such period.

7.22 Intellectual Property. Each Borrower shall (i) protect, defend and maintain the validity and enforceability of its Current Company IP; (ii) promptly advise Agent in writing of (A) material infringements of its Intellectual Property, and (B) any material claim (in writing) against Borrower or any of its Subsidiaries alleging that Borrower Product Activities infringes, violates or misappropriates the Intellectual Property of any third party; (iii) not allow any Current Company IP to be abandoned, forfeited or dedicated to the public without Agent's written consent; and (iv) at all times conduct its business without infringement or claim of infringement of any Intellectual Property rights of others that could reasonably be expected to have a Material Adverse Effect. If a Borrower (a) obtains any Patent, registered Trademark, registered Copyright, registered mask work, or any pending application for any of the foregoing, whether as owner, licensee or otherwise, or (b) applies for any Patent or the registration of any Trademark, then such Borrower shall provide written notice thereof to Agent with the delivery of the then-next Compliance Certificate delivered pursuant to Section 7.1(d) and shall execute such intellectual property security agreements and other documents and take such other actions as Agent may request in its good faith business judgment to perfect and

maintain a first priority (subject to Permitted Priority Liens) perfected security interest in favor of Agent in such property. If a Borrower decides to register any Copyrights or mask works in the United States Copyright Office, such Borrower shall: (x) provide Agent with at least fifteen (15) days prior written notice of such Borrower's intent to register such Copyrights or mask works together with a copy of the application it intends to file with the United States Copyright Office (excluding exhibits thereto); (y) execute an intellectual property security agreement and such other documents and take such other actions as Agent may request in its good faith business judgment to perfect and maintain a first priority (subject to Permitted Priority Liens) perfected security interest in favor of Agent in the Copyrights or mask works intended to be registered with the United States Copyright Office; and (z) record such intellectual property security agreement with the United States Copyright Office contemporaneously with filing the Copyright or mask work application(s) with the United States Copyright Office. Borrower shall provide written notice to Agent of entering or becoming bound by any Restricted License (other than off-the-shelf software that is commercially available to the public) in the then-next Compliance Certificate delivered in accordance with Section 7.1(d).

7.23 Transactions with Affiliates. Except as otherwise described on Schedule 7.23, Borrower shall not, and shall not permit any Subsidiary to, directly or indirectly, enter into or permit to exist any transaction of any kind with any Affiliate of Borrower or such Subsidiary except: (a) transactions on terms that are no less favorable to Borrower or such Subsidiary, as the case may be, than those that might be obtained in an arm's length transaction from a Person who is not an Affiliate of Borrower or such Subsidiary, (b) the incurrence of Subordinated Indebtedness and the issuance of Equity Interests of the Borrower to its existing investors that does not result in Change in Control, (c) any compensation, director indemnification or similar arrangements in the ordinary course of business of Borrower and as approved by Borrower's Board of Directors, or (d) any intercompany arrangements entered into in the ordinary course of business and not prohibited hereunder.

7.24 Post-Closing Obligations. Borrower shall take each of the actions described on Schedule 7.24, in each case, in the manner and by the dates set forth thereon.

SECTION 8. RIGHT TO INVEST

8.1 Lenders or their assignee or nominee shall, for so long as such applicable Lender shall constitute a "Lender" under this Agreement, have the right, in its discretion, to participate in any Subsequent Financing in an aggregate amount of up to the RTI Amount among all Lenders on the same terms, conditions and pricing afforded to others participating in any such Subsequent Financing. This Section 8.1, and all rights and obligations provided for hereunder, shall terminate upon the earliest to occur of (a) termination of this Agreement and (b) such time that the Lenders or their permitted assignees or nominees, have purchased Borrower's Equity Interests in an aggregate amount of at least the RTI Amount in Subsequent Financings.

SECTION 9. EVENTS OF DEFAULT

The occurrence of any one or more of the following events shall be an "Event of Default":

9.1 Payments. A Loan Party fails to (a) pay principal or interest on any Loan on its due date or (b) make any other payment when due on account of any other Secured Obligation within [* * *] after the applicable due date; provided, however, that in each case an Event of Default shall not occur on account of a failure to pay due solely to an administrative or operational error of Agent or Lenders or Borrower's bank if Borrower had the funds to make the payment when due and makes the payment within [* * *] following Borrower's knowledge of such failure to pay; or

9.2 Covenants. A Loan Party breaches or defaults in the performance of any covenant or Secured Obligation under this Agreement, or any of the other Loan Documents, and (a) with respect to a Default under any covenant under this Agreement (other than under Sections 6, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.15, 7.16, 7.17, 7.19, 7.21, 7.22 and 7.24), any other Loan Document, such default continues for more than [* * *] after the earlier of the date on which (i) Agent or Lenders has given notice of such default to Borrower and (ii) Borrower has actual knowledge of such default or (b) with respect to a Default under any of Sections 6, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.15, 7.16, 7.17, 7.19, 7.21, 7.22 and 7.24, the occurrence of such Default; or

9.3 Material Adverse Effect. A circumstance has occurred that could reasonably be expected to have a Material Adverse Effect; provided that, solely for purposes of this Section 9.3, the failure to achieve the Approval Milestone shall not in and of itself constitute a Material Adverse Effect under this Section 9.3; or

9.4 Representations. Any representation or warranty made by any Loan Party in any Loan Document shall have been false or misleading in any material respect when made or when deemed made; or

9.5 Insolvency. (a) A Loan Party or any of its Subsidiaries fails to be solvent as described under Section 5.15 hereof; (b) a Loan Party or any of its Subsidiaries begins an Insolvency Proceeding; or (c) an Insolvency Proceeding is begun against a Loan Party or any of its Subsidiaries and is not dismissed or stayed within thirty (30) days (but no Advances shall be made while any of the conditions described in clause (a) exist or until any Insolvency Proceeding is dismissed); or

9.6 Judgments; Penalties. One or more fines, penalties or final judgments, orders or decrees for the payment of money in an amount, individually or in the aggregate, of at least [* * *] Dollars ($[* * *]) (not covered by independent third-party insurance as to which liability has been accepted by such insurance carrier) shall be rendered against any Loan Party or any of its Subsidiaries by any Governmental Authority, and the same are not, within thirty (30) days after the entry, assessment or issuance thereof, discharged, or after execution thereof, or stayed pending appeal, or such judgments are not discharged prior to the expiration of any such stay (provided that no Advances shall be made prior to the discharge, or stay of such fine, penalty, judgment, order or decree); or

9.7 Attachment; Levy; Restraint on Business.

(a) (i) The service of process seeking to attach, by trustee or similar process, any funds of any Loan Party or any of its Subsidiaries in excess of [* * *] Dollars ($[* * *]), or (ii) a notice of lien or levy is filed against any of any Loan Party's or any of its Subsidiaries' assets by any Governmental Authority, and the same under subclauses (i) and (ii) hereof are not, within thirty (30) days after the occurrence thereof, discharged or stayed (whether through the posting of a bond or otherwise); provided, however, no Advances shall be made during any thirty (30) day cure period; or

(b) (i) any material portion of any Loan Party's or any of its Subsidiaries' assets is attached, seized, levied on, or comes into possession of a trustee or receiver, or (ii) any court order enjoins, restrains, or prevents any Loan Party from conducting all or any material part of its business; or

9.8 Other Obligations.

(a) The occurrence of any default under (i) any agreement or obligation of a Loan Party involving any Indebtedness in excess of [* * *] Dollars ($[* * *]) or (ii) any Material Agreement (other than the Material License);

(b) Any early payment by the Company is required or unwinding or early termination occurs with respect to any Permitted Bond Hedge Transaction and Permitted Warrant Transaction, or any condition giving rise to the foregoing is met, in each case, with respect to which the Company or any of its Subsidiary has a net cash payment obligation owing to the counterparty thereunder (after giving effect to any netting, set-off or payment received by the Company from such counterparty under the Permitted Bond Hedge Transaction or Permitted Warrant Transaction, as applicable); or

9.9 Governmental Approvals; FDA Action. (a) Any Governmental Approval shall have been revoked, rescinded, suspended, modified in an adverse manner, or not renewed in the ordinary course for a full term and such revocation, rescission, suspension, modification or non-renewal has resulted in or could reasonably be expected to result in a Material Adverse Effect; or (b) (i) the FDA, DOJ or other Governmental Authority initiates a regulatory action or any other enforcement action against Borrower or any of its Subsidiaries or any supplier of Borrower or any of its Subsidiaries that causes Borrower or any of its Subsidiaries to recall, withdraw, remove or discontinue manufacturing, distributing, and/or marketing any of its products, even if such action is based on previously disclosed conduct, and such action could reasonably be expected to result in a Material Adverse Effect; (ii) the FDA or any other comparable Governmental Authority issues a warning letter to Borrower or any of its Subsidiaries with respect to any of its activities or products which could reasonably be expected to result in a Material Adverse Effect; (iii) Borrower or any of its Subsidiaries conducts a mandatory or voluntary recall which could reasonably be expected to result in a Material Adverse Effect; (iv) Borrower or any of its Subsidiaries enters into a settlement agreement with the FDA, DOJ or other Governmental Authority that results in aggregate liability as to any single or related series of transactions, incidents or conditions, of [* * *] Dollars ($[* * *]) or more, or that could reasonably be expected to result in a Material Adverse Effect, even if such settlement agreement is based on previously disclosed conduct; (v) the FDA or any other comparable Governmental Authority revokes any authorization or permission granted under any Registration, or Borrower or any of its Subsidiaries withdraws any Registration, that could reasonably be expected to result in a Material Adverse Effect; (vi) there occurs any adverse event or adverse drug reaction in connection with any Borrower Product which could reasonably be expected to result in a Material Adverse Effect; or (vii) any Borrower Product is determined by the FDA or any other Governmental Authority to be adulterated or misbranded within the meaning of the Federal Food, Drug and Cosmetic Act in any material respect, or any Borrower Product becomes an article prohibited from introduction into interstate commerce under Section 505 of the Federal Food, Drug and Cosmetic Act, in either case where such determination or event could reasonably be expected to have a Material Adverse Effect; or

9.10 Stop Trade. At any time, an SEC stop trade order or NASDAQ market trading suspension of the Common Stock shall be in effect for five (5) consecutive days or five (5) days during a period of ten (10) consecutive days, excluding in all cases a suspension of all trading on a public market, provided that Borrower shall not have been able to cure such trading suspension within thirty (30) days of the notice thereof or list the Common Stock on another public market within sixty (60) days of such notice.

SECTION 10. REMEDIES

10.1 General. Upon the occurrence and during the continuation of any one or more Events of Default, Agent may, and at the direction of the Required Lenders shall, accelerate and demand payment of all or any part of the outstanding Secured Obligations together with a Prepayment Charge and declare them to be immediately due and payable (provided, that upon the occurrence of an Event of Default of the type described in Section 9.5, all of the Secured Obligations (including, without limitation, the Prepayment Charge and the End of Term Charge) shall automatically be accelerated and made due and payable, in each case without any further notice or act). Borrower hereby irrevocably appoints Agent as its lawful attorney-in-fact to: (a) exercisable following the occurrence and during continuation of an Event of Default, (i) sign Borrower's name on any invoice or bill of lading for any account or drafts against account debtors; (ii) demand, collect, sue, and give releases to any account debtor for monies due, settle and adjust disputes and claims about the accounts directly with account debtors, and compromise, prosecute, or defend any action, claim, case, or proceeding about any Collateral (including filing a claim or voting a claim in any bankruptcy case in Agent's or Borrower's name, as Agent may elect); (iii) make, settle, and adjust all claims under Borrower's insurance policies; (iv) pay, contest or settle any Lien, charge, encumbrance, security interest, or other claim in or to the Collateral, or any judgment based thereon, or otherwise take any action to terminate or discharge the same; (v) transfer the Collateral into the name of Agent or a third party as the UCC permits; and (vi) receive, open and dispose of mail addressed to Borrower; and (b) regardless of whether an Event of Default has occurred, (i) endorse Borrower's name on any checks, payment instruments, or other forms of payment or security; and (ii) notify all account debtors to pay Agent directly. Borrower hereby appoints Agent as its lawful attorney-in-fact to sign Borrower's name on any documents necessary to perfect or continue the perfection of Agent's security interest in the Collateral regardless of whether an Event of Default has occurred until all Secured Obligations (other than inchoate indemnity obligations which, by their terms survive termination of this Agreement) have been satisfied in full and the Loan Documents have been terminated. Agent's foregoing appointment as Borrower's attorney in fact, and all of Agent's rights and powers, coupled with an interest, are irrevocable until all Secured Obligations (other than inchoate indemnity obligations which, by their terms, survive termination of this Agreement) have been fully repaid and performed and the Loan Documents have been terminated. Agent may, and at the direction of the Required Lenders shall, exercise all rights and remedies with respect to the Collateral under the Loan Documents or otherwise available to it under the UCC and other applicable law, including the right to release, hold, sell, lease, liquidate, collect, realize upon, or otherwise dispose of all or any part of the Collateral and the right to occupy, utilize, process and commingle the Collateral. All Agent's rights and remedies shall be cumulative and not exclusive.

10.2 Collection; Foreclosure. Upon the occurrence and during the continuance of any Event of Default, Agent may, and at the direction of the Required Lenders shall, at any time or from time to time, apply, collect, liquidate, sell in one or more sales, lease or otherwise dispose of, any or all of the Collateral, in its then condition or following any commercially reasonable preparation or processing, in such order as Agent may elect. Any such sale may be made either at public or private sale at its place of business or elsewhere. Borrower agrees that any such public or private sale may occur upon ten (10) calendar days' prior written notice to Borrower. Agent may require Borrower to assemble the Collateral and make it available to Agent at a place designated by Agent that is reasonably convenient to Agent and Borrower. The proceeds of any sale, disposition or other realization upon all or any part of the Collateral shall be applied by Agent in the following order of priorities:

First, to Agent, in an amount equal to the sum of all fees owing to Agent hereunder and under any other Loan Document;

Second, to Agent and Lenders in an amount sufficient to pay in full Agent's and Lenders' reasonable and documented costs and professionals' and advisors' fees and expenses as described in Section 11.12;

Third, to Lenders, ratably, in an amount equal to the sum of all accrued interest owing to Lenders on the Term Loan Advances hereunder;

Fourth, to Lenders, ratably, in an amount equal to the sum of the outstanding principal and premium, if any owing to Lenders from Borrower on the Term Loan Advances hereunder;

Fifth, to Lenders and Agent, ratably (in proportion to all remaining Secured Obligations owing to each), in an amount equal to the sum of all other outstanding and unpaid Secured Obligations (including principal, interest, and the default rate interest set forth in Section 2.4, if required under this Agreement), in such order and priority as Agent may choose in its sole discretion; and

Finally, after the full and final payment in Cash of all of the Secured Obligations (other than inchoate obligations which, by their terms, survive termination of this Agreement), to any creditor holding a junior Lien on the Collateral, or to Borrower or its representatives or as a court of competent jurisdiction may direct.

Agent shall be deemed to have acted reasonably in the custody, preservation and disposition of any of the Collateral if it complies with the obligations of a secured party under the UCC.

10.3 No Waiver. Agent shall be under no obligation to marshal any of the Collateral for the benefit of Borrower or any other Person, and Borrower expressly waives all rights, if any, to require Agent to marshal any Collateral.

10.4 Waivers. Borrower waives demand, notice of default or dishonor, notice of payment and nonpayment, notice of any default, nonpayment at maturity, release, compromise, settlement, extension, or renewal of accounts, documents, instruments, chattel paper, and guarantees held by Agent on which Borrower is liable.

10.5 Cumulative Remedies. The rights, powers and remedies of Agent hereunder shall be in addition to all rights, powers and remedies given by statute or rule of law and are cumulative. The exercise of any one or more of the rights, powers and remedies provided herein shall not be construed as a waiver of or election of remedies with respect to any other rights, powers and remedies of Agent.

SECTION 11. MISCELLANEOUS

11.1 Severability. Whenever possible, each provision of this Agreement shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement shall be prohibited by or invalid under such law, such provision shall be ineffective only to the extent and duration of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Agreement.

11.2 Notice. Except as otherwise provided herein, any notice, demand, request, consent, approval, declaration, service of process or other communication (including the delivery of financial statements) that is required, contemplated, or permitted under the Loan Documents or with respect to the subject matter hereof shall be in writing, and shall be deemed to have been validly served, given, delivered, and received upon the earlier of: (i) the day of transmission by electronic mail or hand delivery or delivery by an overnight express service or overnight mail delivery service;

or (ii) the third calendar day after deposit in the United States of America mails, with proper first class postage prepaid, in each case addressed to the party to be notified as follows:

(a) If to Agent:

HERCULES CAPITAL, INC.
Legal Department
Attention: Chief Legal Officer; Lake McGuire; Cristy Barnes; Briana Gironda; and Zach Norris
1 North B Street, Suite 2000
San Mateo, CA 94401
email: [* * *]
Telephone: [* * *]

(b) If to Lenders:

HERCULES CAPITAL, INC.
Legal Department
Attention: Chief Legal Officer; Lake McGuire; Cristy Barnes; Briana Gironda; and Zach Norris
1 North B Street, Suite 2000
San Mateo, CA 94401
email: [* * *]
Telephone: [* * *]

(c) If to Borrower:

4D MOLECULAR THERAPEUTICS, INC.
Attention: Kristian Humer, Chief Financial Officer
5858 Horton St. Suite 455
Emeryville, CA 94608
email: [* * *]

or to such other address as each party may designate for itself by like notice.

11.3 Entire Agreement; Amendments.

(a) This Agreement and the other Loan Documents constitute the entire agreement and understanding of the parties hereto in respect of the subject matter hereof and thereof, and supersede and replace in their entirety any prior proposals, term sheets, non-disclosure or confidentiality agreements, letters, negotiations or other documents or agreements, whether written or oral, with respect to the subject matter hereof or thereof (including Agent's revised proposal letter dated May 1, 2026 and the Non-Disclosure Agreement).

(b) Neither this Agreement, any other Loan Document, nor any terms hereof or thereof may be amended, supplemented or modified except in accordance with the provisions of this Section 11.3(b). The Required Lenders and Loan Parties party to the relevant Loan Document may, or, with the written consent of the Required Lenders, Agent and Loan Parties party to the relevant Loan Document may, from time to time, (i) enter into written amendments, supplements or modifications hereto and to the other Loan Documents for the purpose of adding any provisions to

this Agreement or the other Loan Documents or changing in any manner the rights of Lenders or of Loan Parties hereunder or thereunder or (ii) waive, on such terms and conditions as the Required Lenders or Agent, as the case may be, may specify in such instrument, any of the requirements of this Agreement or the other Loan Documents or any Default or Event of Default and its consequences; provided, however, that no such waiver and no such amendment, supplement or modification shall (A) forgive the principal amount or extend the final scheduled date of maturity of any Loan, extend the scheduled date of any amortization payment in respect of any Term Loan Advance, reduce the stated rate of any interest (or fee payable hereunder) or extend the scheduled date of any payment thereof, in each case without the written consent of each Lender directly affected thereby; (B) eliminate or reduce the voting rights of any Lender under this Section 11.3(b) without the written consent of such Lender; (C) reduce any percentage specified in the definition of Required Lenders, consent to the assignment or transfer by Loan Parties of any of its rights and obligations under this Agreement and the other Loan Documents, release all or substantially all of the Collateral or release a Loan Party from its obligations under the Loan Documents, in each case without the written consent of all Lenders; or (D) amend, modify or waive any provision of Section 11.18 or Addendum 4 without the written consent of Agent. Any such waiver and any such amendment, supplement or modification shall apply equally to each Lender and shall be binding upon the applicable Loan Parties, Lenders, Agent and all future holders of the Loans.

11.4 No Strict Construction. The parties hereto have participated jointly in the negotiation and drafting of this Agreement. In the event an ambiguity or question of intent or interpretation arises, this Agreement shall be construed as if drafted jointly by the parties hereto and no presumption or burden of proof shall arise favoring or disfavoring any party by virtue of the authorship of any provisions of this Agreement.

11.5 No Waiver. The powers conferred upon Agent and Lenders by this Agreement are solely to protect their rights hereunder and under the other Loan Documents and their interest in the Collateral and shall not impose any duty upon Agent or Lenders to exercise any such powers. No omission or delay by Agent or Lenders at any time to enforce any right or remedy reserved to them, or to require performance of any of the terms, covenants or provisions hereof by Borrower at any time designated, shall be a waiver of any such right or remedy to which Agent or Lenders are entitled, nor shall it in any way affect the right of Agent or Lenders to enforce such provisions thereafter.

11.6 Survival. All agreements, representations and warranties contained in this Agreement and the other Loan Documents or in any document delivered pursuant hereto or thereto shall be for the benefit of Agent and Lenders and shall survive the execution and delivery of this Agreement. Sections 6.3, 11.9, 11.11, 11.14, 11.15, 11.17 and 11.18 shall survive the termination of this Agreement.

11.7 Successors and Assigns. The provisions of this Agreement and the other Loan Documents shall inure to the benefit of and be binding on Borrower and its permitted assigns (if any). No Loan Party shall assign its obligations under this Agreement or any of the other Loan Documents without Agent's express prior written consent, and any such attempted assignment shall be void and of no effect. Agent and Lenders may assign, transfer, or endorse its rights hereunder and under the other Loan Documents without prior notice to Borrower, and all of such rights shall inure to the benefit of Agent's and Lenders' successors and assigns; provided that as long as no Event of Default has occurred and is continuing, neither Agent nor any Lender may assign, transfer or endorse its rights hereunder or under the Loan Documents to any party that is a direct competitor of Borrower (as reasonably determined by Agent), it being acknowledged that in all cases, any

transfer to an Affiliate of any Lender or Agent shall be allowed. Notwithstanding the foregoing, (x) in connection with any assignment by a Lender as a result of a forced divestiture at the request of any regulatory agency, the restrictions set forth herein shall not apply and Agent and Lenders may assign, transfer or endorse its rights hereunder and under the other Loan Documents to any Person or party and (y) in connection with a Lender's own financing or securitization transactions, the restrictions set forth herein shall not apply and Agent and Lenders may assign, transfer or endorse its rights hereunder and under the other Loan Documents to any Person or party providing such financing or formed to undertake such securitization transaction and any transferee of such Person or party upon the occurrence of a default, event of default or similar occurrence with respect to such financing or securitization transaction; provided that no such sale, transfer, pledge or assignment under this clause (y) shall release such Lender from any of its obligations hereunder or substitute any such Person or party for such Lender as a party hereto until Agent shall have received and accepted an effective assignment agreement from such Person or party in form satisfactory to Agent executed, delivered and fully completed by the applicable parties thereto, and shall have received such other information regarding such assignee as Agent reasonably shall require. Agent, acting solely for this purpose as a non-fiduciary agent of Borrower, shall maintain at one of its offices in the United States a register for the recordation of the names and addresses of Lender(s), and the Term Commitments of, and principal amounts (and stated interest) of the Loans owing to, each Lender pursuant to the terms hereof from time to time (the "Register"). The entries in the Register shall be conclusive absent manifest error, and Borrower, Agent and Lender(s) shall treat each Person whose name is recorded in the Register pursuant to the terms hereof as a Lender hereunder for all purposes of this Agreement. The Register shall be available for inspection by Borrower and any Lender, at any reasonable time and from time to time upon reasonable prior notice.

11.8 Participations. Each Lender that sells a participation shall, acting solely for this purpose as a non-fiduciary agent of Borrower, maintain a register on which it enters the name and address of each participant and the principal amounts (and stated interest) of each participant's interest in the Loans or other obligations under the Loan Documents (the "Participant Register"); provided that no Lender shall have any obligation to disclose all or any portion of the Participant Register (including the identity of any participant or any information relating to a participant's interest in any commitments, loans, its other obligations under any Loan Document) to any Person except to the extent that such disclosure is necessary to establish that such commitment, loan, letter of credit or other obligation is in registered form under Section 5f.103-1(c) of the United States Treasury Regulations. The entries in the Participant Register shall be conclusive absent manifest error, and such Lender shall treat each Person whose name is recorded in the Participant Register as the owner of such participation for all purposes of this Agreement notwithstanding any notice to the contrary. For the avoidance of doubt, Agent (in its capacity as Agent) shall have no responsibility for maintaining a Participant Register. Borrower agrees that each participant shall be entitled to the benefits of the provisions in Addendum 1 attached hereto (subject to the requirements and limitations therein, including the requirements under Section 7 of Addendum 1 attached hereto (it being understood that the documentation required under Section 7 of Addendum 1 attached hereto shall be delivered to the participating Lender)) to the same extent as if it were a Lender and had acquired its interest by assignment pursuant to Section 11.7; provided that such participant shall not be entitled to receive any greater payment under Addendum 1 attached hereto, with respect to any participation, than its participating Lender would have been entitled to receive, except to the extent such entitlement to receive a greater payment results from a change in law that occurs after the participant acquired the applicable participation.

11.9 Governing Law. Except as otherwise provided in any of the Loan Documents, this Agreement and the other Loan Documents, and all disputes, claims or defenses (whether sounding

in contract, tort, law, equity or otherwise) based on, arising out of, or related to this Agreement, the other Loan Documents, the relationship of the parties created or the transactions contemplated hereby and thereby, shall be governed by, and construed and enforced in accordance with, the internal laws of the State of New York without regard to principles of conflicts of law or any other principle calling for the application of the law, or statutes of limitation of any other jurisdiction.

11.10 Consent to Jurisdiction and Venue. Each party hereto irrevocably and unconditionally agrees that it will not commence any action or proceeding of any kind, whether in law or equity, and whether sounding in contract, tort or otherwise, against Agent, any Lender or any Related Person related to this Agreement, the other Loan Documents or the relationship of the parties hereto or thereto, or the transactions contemplated hereby or thereby, in any forum other than the courts of the State of New York sitting in New York County, and of the United States District Court for the Southern District of New York sitting in New York County, and any appellate court from any of the foregoing. By execution and delivery of this Agreement, each party hereto irrevocably and unconditionally: (a) submits to the jurisdiction of such courts and agrees that all claims in respect of any such action or proceeding may be heard and determined in such New York State court or, to the fullest extent permitted by applicable law, in such federal court; (b) waives, to the fullest extent permitted by applicable law, any objection it may now or hereafter have to the laying of venue of any action, litigation or proceeding described above in the courts specified in this Section 11.10; (c) waives, to the fullest extent permitted by applicable law, and agrees not to assert, any defense of an inconvenient forum, or any defense based on a lack of jurisdiction, to the maintenance of such action or proceeding in any such court; and (d) agrees to be bound by any judgment rendered thereby related to this Agreement, the other Loan Documents or the relationship of the parties hereto or thereto, or the transactions contemplated hereby or thereby. Nothing in this Agreement or in any other Loan Document shall affect any right that the Agent or any Lender may otherwise have to bring any action, litigation or proceeding related to this Agreement or any other Loan Document against any Loan Party or its properties in the courts of any jurisdiction. Service of process on any party hereto in any action arising out of or relating to this Agreement and the other Loan Documents, and all disputes, claims or defenses (whether sounding in contract, tort, law, equity or otherwise) based on, arising out of, or related to this Agreement, the other Loan Documents, the relationship of the parties created or the transactions contemplated hereby and thereby, shall be effective if given in accordance with the requirements for notice set forth in Section 11.2, and shall be deemed effective and received as set forth in Section 11.2. Nothing herein shall affect the right to serve process in any other manner permitted by law or shall limit the right of either party to bring proceedings in the courts of any other jurisdiction.

11.11 **JURY TRIAL WAIVER**. **TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, EACH PARTY HERETO WAIVES ITS RIGHT TO A JURY TRIAL IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS AGREEMENT OR ANY OTHER LOAN DOCUMENT, THE RELATIONSHIP OF THE PARTIES HERETO OR THERETO, OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY) (COLLECTIVELY, "CLAIMS"). EACH PARTY HERETO ACKNOWLEDGES THAT IT AND THE OTHER PARTIES HERETO HAVE BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE OTHER LOAN DOCUMENTS BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND ACKNOWLEDGEMENTS IN THIS SECTION**.

11.12 Professional Fees. Borrower promises to pay Agent's and Lenders' fees and expenses necessary to finalize the Loan Documents, including but not limited to reasonable

attorneys' fees, UCC searches, filing costs, and other miscellaneous expenses. In addition, Borrower promises to pay any and all reasonable attorneys' and other professionals' fees (including allocated costs of in-house counsel) and expenses incurred by Agent and Lenders after the Closing Date in connection with or related to: (a) the Loan; (b) the administration, collection, or enforcement of the Loan; (c) the amendment or modification of the Loan Documents; (d) any waiver, consent, release, or termination under the Loan Documents; (e) the protection, preservation, audit, field exam, sale, lease, liquidation, or disposition of Collateral or the exercise of remedies with respect to the Collateral; (f) any legal, litigation, administrative, arbitration, or out of court proceeding in connection with or related to Borrower or the Collateral, and any appeal or review thereof; and (g) any bankruptcy, restructuring, reorganization, assignment for the benefit of creditors, workout, foreclosure, or other action related to Borrower, the Collateral, the Loan Documents, including representing Agent or Lenders in any adversary proceeding or contested matter commenced or continued by or on behalf of Borrower's estate, and any appeal or review thereof.

11.13 Confidentiality. Agent and Lenders acknowledge that certain items of Collateral and information provided to Agent and Lenders by Borrower are confidential and proprietary information of Borrower, if and to the extent such information either (x) is marked as confidential by Borrower at the time of disclosure, or (y) should reasonably be understood to be confidential (the "Confidential Information"). Accordingly, Agent and Lenders agree that any Confidential Information it may obtain in the course of acquiring, administering, or perfecting Agent's security interest in the Collateral shall not be disclosed to any other Person or entity in any manner whatsoever, in whole or in part, without the prior written consent of Borrower, except that Agent and Lenders may disclose any such information: (a) to its Affiliates and its partners, investors, lenders, directors, officers, employees, agents, advisors, counsel, accountants, representatives and other professional advisors if Agent or Lenders in their reasonable discretion determine that any such party should have access to such information in connection with such party's responsibilities in connection with the Loan or this Agreement and, provided that such recipient of such Confidential Information either (i) agrees to be bound by the confidentiality provisions of this Section or (ii) is otherwise subject to confidentiality restrictions that reasonably protect against the disclosure of Confidential Information; (b) if such information is generally available to the public or to the extent such information becomes publicly available other than as a result of a breach of this Section or becomes available to Agent or any Lender, or any of their respective Affiliates on a non-confidential basis from a source other than Borrower and not in violation of any confidentiality obligations known to Agent or such Lender; (c) if required or appropriate in any report, statement or testimony submitted to any Governmental Authority having or claiming to have jurisdiction over Agent or Lenders and any rating agency; (d) if required or appropriate in response to any summons or subpoena or in connection with any litigation, to the extent permitted or deemed advisable by Agent's or Lenders' counsel; (e) to comply with any legal requirement or law applicable to Agent or Lenders or demanded by any Governmental Authority; (f) to the extent reasonably necessary in connection with the exercise of, or preparing to exercise, or the enforcement of, or preparing to enforce, any right or remedy under any Loan Document (including Agent's sale, lease, or other disposition of Collateral after the occurrence and during the continuance of an Event of Default), or any action or proceeding relating to any Loan Document; (g) to any participant or assignee of Agent or Lenders or any prospective participant or assignee, provided, that such participant or assignee or prospective participant or assignee is subject to confidentiality restrictions that reasonably protect against the disclosure of Confidential Information; (h) to any investor or potential investor (and each of their respective Affiliates or clients) in Agent or Lenders (or each of their respective Affiliates); provided that such investor, potential investor, Affiliate or client is subject to confidentiality obligations with respect to the Confidential Information similar to the provisions of this Section 11.13; (i) otherwise to the extent consisting of general portfolio information that does not identify

Borrower; or (j) otherwise with the prior written consent of Borrower; provided, that any disclosure made in violation of this Agreement shall not affect the obligations of Borrower or any of its Affiliates or any guarantor under this Agreement or the other Loan Documents. Agent's and Lenders' obligations under this Section 11.13 shall supersede all of their respective obligations under the Non-Disclosure Agreement.

11.14 Assignment of Rights. Borrower acknowledges and understands that Agent or Lenders may, subject to Section 11.7, sell and assign all or part of its interest hereunder and under the Loan Documents to any Person or entity (an "Assignee"). After such assignment the term "Agent" or "Lender" as used in the Loan Documents shall mean and include such Assignee, and such Assignee shall be vested with all rights, powers and remedies of Agent and Lenders hereunder with respect to the interest so assigned; but with respect to any such interest not so transferred, Agent and Lenders shall retain all rights, powers and remedies hereby given. No such assignment by Agent or Lenders shall relieve Borrower of any of its obligations hereunder. Lenders agree that in the event of any transfer by it of the promissory note(s) (if any), it will endorse thereon a notation as to the portion of the principal of the promissory note(s), which shall have been paid at the time of such transfer and as to the date to which interest shall have been last paid thereon.

11.15 Revival of Secured Obligations. This Agreement and the Loan Documents shall remain in full force and effect and continue to be effective if any petition is filed by or against Borrower for liquidation or reorganization, if Borrower becomes insolvent or makes an assignment for the benefit of creditors, if a receiver or trustee is appointed for all or any significant part of Borrower's assets, or if any payment or transfer of Collateral is recovered from Agent or Lenders. The Loan Documents and the Secured Obligations and Collateral security shall continue to be effective, or shall be revived or reinstated, as the case may be, if at any time payment and performance of the Secured Obligations or any transfer of Collateral to Agent, or any part thereof is rescinded, avoided or avoidable, reduced in amount, or must otherwise be restored or returned by, or is recovered from, Agent, Lenders or by any obligee of the Secured Obligations, whether as a "voidable preference," "fraudulent conveyance," or otherwise, all as though such payment, performance, or transfer of Collateral had not been made. In the event that any payment, or any part thereof, is rescinded, reduced, avoided, avoidable, restored, returned, or recovered, the Loan Documents and the Secured Obligations shall be deemed, without any further action or documentation, to have been revived and reinstated except to the extent of the full and final payment to Agent or Lenders in Cash.

11.16 Counterparts. This Agreement and any amendments, waivers, consents or supplements hereto may be executed in any number of counterparts, and by different parties hereto in separate counterparts, each of which when so delivered shall be deemed an original, but all of which counterparts shall constitute but one and the same instrument.

11.17 No Third-Party Beneficiaries. No provisions of the Loan Documents are intended, nor will be interpreted, to provide or create any third-party beneficiary rights or any other rights of any kind in any Person other than Agent, Lenders and Borrower unless specifically provided otherwise herein, and, except as otherwise so provided, all provisions of the Loan Documents will be personal and solely among Agent, Lenders and the Loan Parties party thereto.

11.18 Agency. Agent and each Lender hereby agree to the terms and conditions set forth on Addendum 4 attached hereto. Borrower acknowledges and agrees to the terms and conditions set forth on Addendum 4 attached hereto.

11.19 Publicity. Notwithstanding anything else herein to the contrary, Borrower hereby agrees that the Agent and Lender may, at Agent's or such Lender's sole expense, and without any prior approval by or compensation to the Borrower, make a public announcement of the transactions contemplated by this Agreement, and may publicize or use (a) the other party's name (including a brief description of the relationship among the parties hereto), logo or hyperlink to such other parties' web site, separately or together, in written and oral presentations, advertising, promotional and marketing materials, client lists, public relations materials or on its web site (together, the "Publicity Materials"); (b) the names of officers of such other parties in the Publicity Materials; and (c) such other parties' name, trademarks, servicemarks in any news or press release concerning such party, in each case to the extent such information is not deemed confidential in accordance with Section 11.13.

11.20 Multiple Borrowers. Each Borrower hereby agrees to the terms and conditions set forth on Addendum 5 attached hereto.

11.21 Managerial Assistance. Borrower acknowledges that Hercules Capital, Inc. has elected to be regulated as business development company under the 1940 Act, and as such is required to make available significant managerial assistance to its portfolio companies. Significant managerial assistance may include, but is not limited to, guidance and counsel concerning the portfolio company's management, operations, business objectives and policies, arrangement of financing, management of relationships with financing sources, recruitment of management personnel and evaluation of acquisition and divestiture opportunities. Borrower hereby acknowledges and agrees that it may request such assistance at any time from Hercules Capital, Inc. by contacting [* * *].

11.22 Electronic Execution of Certain Other Documents. The words "execution," "execute", "signed," "signature," and words of like import in or related to any document to be signed in connection with this Agreement and the transactions contemplated hereby (including without limitation assignments, assumptions, amendments, waivers and consents) shall be deemed to include electronic signatures, the electronic matching of assignment terms and contract formations on electronic platforms approved by Agent, or the keeping of records in electronic form, each of which shall be of the same legal effect, validity or enforceability as a manually executed signature or the use of a paper-based recordkeeping system, as the case may be, to the extent and as provided for in any applicable law, including the Federal Electronic Signatures in Global and National Commerce Act, the New York Electronic Signatures and Records Act, or any state laws based on the Uniform Electronic Transactions Act.

(SIGNATURES TO FOLLOW)

IN WITNESS WHEREOF, Borrower, Agent and Lenders have duly executed and delivered this Loan and Security Agreement as of the day and year first above written.

BORROWER:

4D MOLECULAR THERAPEUTICS, INC.

Signature: _/s/ Kristian Humer_____
Print Name: Kristian Humer
Title: Chief Financial Officer

AGENT:

HERCULES CAPITAL, INC.

Signature: _/s/Seth Meyer_____
Print Name: Seth Meyer
Title: President

LENDERS:

HERCULES CAPITAL, INC.

Signature: _/s/Seth Meyer_____
Print Name: Seth Meyer
Title: President

HERCULES PRIVATE CREDIT FUND 1 L.P.

By: Hercules Adviser LLC, its Investment Adviser

Signature: _/s/Seth Meyer_____
Print Name: Seth Meyer
Title: Authorized Signatory

HERCULES VENTURE GROWTH CREDIT OPPORTUNITIES FUND I L.P.

By: Hercules Adviser LLC, its Investment Adviser

Signature: _/s/Seth Meyer_____
Print Name: Seth Meyer
Title: Authorized Signatory

HERCULES GROWTH LENDING FUND IV LP

By: Hercules Growth Lending Fund IV GP LLC,
its General Partner

Signature: _/s/Seth Meyer_____
Print Name: Seth Meyer
Title: Authorized Signatory

HERCULES EVERGREEN FUND LP

By: Hercules Evergreen Fund GP LLC,
its General Partner

Signature: _/s/Seth Meyer_____
Print Name:
Title: Authorized Signatory

HERCULES SBIC V, L.P.

By: Hercules Technology SBIC Management, LLC,
its General Partner

By: Hercules Capital, Inc., its Manager

Signature: _/s/Seth Meyer_____
Print Name: Seth Meyer
Title: President

Table of Addenda, Exhibits and Schedules

Addendum 1: Taxes; Increased Costs

Addendum 2: Delivery Instructions

Addendum 3: SBA Provisions

Addendum 4: Agent and Lender Terms

Addendum 5: Multiple Borrower Terms

Exhibit A: Advance Request
Attachment to Advance Request

Exhibit B: Name, Locations, and Other Information for Borrower

Exhibit C: Borrower's Patents, Trademarks, Copyrights and Licenses

Exhibit D: Borrower's Deposit Accounts and Investment Accounts

Exhibit E: Compliance Certificate

Exhibit F: Joinder Agreement

Exhibit G: [Reserved.]

Exhibit H: ACH Debit Authorization Agreement

Exhibit I: [Reserved.]

Exhibit J-1: Form of U.S. Tax Compliance Certificate (For Foreign Lenders That Are Not Partnerships For U.S. Federal Income Tax Purposes)

Exhibit J-2: Form of U.S. Tax Compliance Certificate (For Foreign Participants That Are Not Partnerships For U.S. Federal Income Tax Purposes)

Exhibit J-3: Form of U.S. Tax Compliance Certificate (For Foreign Participants That Are Partnerships For U.S. Federal Income Tax Purposes)

Exhibit J-4: Form of U.S. Tax Compliance Certificate (For Foreign Lenders That Are Partnerships For U.S. Federal Income Tax Purposes)

Exhibit K: Certain Economic Terms

Schedule 1.1 Commitments
Schedule 1 Subsidiaries
Schedule 1A Existing Permitted Indebtedness

Schedule 1B Existing Permitted Investments
Schedule 1C Existing Permitted Liens
Schedule 5.3 Consents, Etc.
Schedule 5.8 Tax Matters
Schedule 5.9 Intellectual Property Claims
Schedule 5.10 Intellectual Property
Schedule 5.11 Borrower Products
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Schedule 7.23 Affiliate Transactions
Schedule 7.24 Post-Closing Obligations

ADDENDUM 1 to LOAN AND SECURITY AGREEMENT

TAXES; INCREASED COSTS

1. **Defined Terms**. For purposes of this Addendum 1:

   a. "**Connection Income Taxes**" means Other Connection Taxes that are imposed on or measured by net income (however denominated) or that are franchise Taxes or branch profits Taxes.

   b. "**Excluded Taxes**" means any of the following Taxes imposed on or with respect to a Recipient or required to be withheld or deducted from a payment to a Recipient, (i) Taxes imposed on or measured by net income (however denominated), franchise Taxes, and branch profits Taxes, in each case, (A) imposed as a result of such Recipient being organized under the laws of, or having its principal office or, in the case of any Lender, its applicable lending office located in, the jurisdiction imposing such Tax (or any political subdivision thereof) or (B) that are Other Connection Taxes, (ii) in the case of a Lender, U.S. federal withholding Taxes imposed on amounts payable to or for the account of such Lender with respect to an applicable interest in a Loan or Term Commitment pursuant to a law in effect on the date on which (A) such Lender acquires such interest in the Loan or Term Commitment or (B) such Lender changes its lending office, except in each case to the extent that, pursuant to Section 2 or Section 4 of this Addendum 1, amounts with respect to such Taxes were payable either to such Lender's assignor immediately before such Lender became a party hereto or to such Lender immediately before it changed its lending office, (iii) Taxes attributable to such Recipient's failure to comply with Section 7 of this Addendum 1 and (iv) any withholding Taxes imposed under FATCA.

   c. "**FATCA**" means Sections 1471 through 1474 of the Code, as of the date of this Agreement (or any amended or successor version that is substantively comparable and not materially more onerous to comply with), any current or future regulations or official interpretations thereof, any agreements entered into pursuant to Section 1471(b)(1) of the Code, and any fiscal or regulatory legislation, rules or practices adopted pursuant to any intergovernmental agreement, treaty or convention among Governmental Authorities and implementing such Sections of the Code.

   d. "**Foreign Lender**" means a Lender that is not a U.S. Person.

   e. "**Indemnified Taxes**" means (i) Taxes, other than Excluded Taxes, imposed on or with respect to any payment made by or on account of any obligation of Borrower under any Loan Document and (ii) to the extent not otherwise described in clause (i), Other Taxes.

   f. "**Other Connection Taxes**" means, with respect to any Recipient, Taxes imposed as a result of a present or former connection between such Recipient and the jurisdiction imposing such Tax (other than connections arising from such Recipient having executed, delivered, become a party to, performed its obligations under, received payments under, received or perfected a security interest under, engaged in any other transaction pursuant to or enforced any Loan Document, or sold or assigned an interest in any Loan or Loan Document).

   g. "**Other Taxes**" means all present or future stamp, court or documentary, intangible, recording, filing or similar Taxes that arise from any payment made under, from the execution, delivery, performance, enforcement or registration of, from the receipt or perfection of a security

interest under, or otherwise with respect to, any Loan Document, except any such Taxes that are Other Connection Taxes imposed with respect to an assignment.

h. "**Recipient**" means Agent or any Lender, as applicable.

i. "**Withholding Agent**" means Borrower and Agent.

2. **Payments Free of Taxes**. Any and all payments by or on account of any obligation of Borrower under any Loan Document shall be made without deduction or withholding for any Taxes, except as required by applicable law. If any applicable law (as determined in the good faith discretion of an applicable Withholding Agent) requires the deduction or withholding of any Tax from any such payment by a Withholding Agent, then the applicable Withholding Agent shall be entitled to make such deduction or withholding and shall timely pay the full amount deducted or withheld to the relevant Governmental Authority in accordance with applicable law and, if such Tax is an Indemnified Tax, then the sum payable by Borrower shall be increased as necessary so that after such deduction or withholding has been made (including such deductions and withholdings applicable to additional sums payable under this Section 2 or Section 4 of this Addendum 1) the applicable Recipient receives an amount equal to the sum it would have received had no such deduction or withholding been made.

3. **Payment of Other Taxes by Borrower**. Borrower shall timely pay to the relevant Governmental Authority in accordance with applicable law, or at the option of Agent timely reimburse it for the payment of, any Other Taxes.

4. **Indemnification by Borrower**. Borrower shall indemnify each Recipient, within ten (10) days after demand therefor, for the full amount of any Indemnified Taxes (including Indemnified Taxes imposed or asserted on or attributable to amounts payable under Section 2 of this Addendum 1 or this Section 4) payable or paid by such Recipient or required to be withheld or deducted from a payment to such Recipient and any reasonable expenses arising therefrom or with respect thereto, whether or not such Indemnified Taxes were correctly or legally imposed or asserted by the relevant Governmental Authority. A certificate describing the amount of such payment or liability delivered to Borrower by a Lender (with a copy to Agent), or by Agent on its own behalf or on behalf of a Lender, shall be conclusive absent manifest error. In addition, Borrower agrees to pay, and to hold Agent and any Lender harmless from, any and all liabilities with respect to, or resulting from any delay in paying, any and all excise, sales or other similar Taxes (excluding Taxes imposed on or measured by the net income of Agent or such Lender) that may be payable or determined to be payable with respect to any of the Collateral or this Agreement.

5. **Indemnification by Lenders**. Each Lender shall severally indemnify Agent, within ten (10) days after demand therefor, for (a) any Indemnified Taxes attributable to such Lender (but only to the extent that Borrower has not already indemnified Agent for such Indemnified Taxes and without limiting the obligation of Borrower to do so), (b) any Taxes attributable to such Lender's failure to comply with the provisions of Section 11.8 of the Agreement relating to the maintenance of a Participant Register and (c) any Excluded Taxes attributable to such Lender, in each case, that are payable or paid by Agent in connection with any Loan Document, and any reasonable expenses arising therefrom or with respect thereto, whether or not such Taxes were correctly or legally imposed or asserted by the relevant Governmental Authority. A certificate as to the amount of such payment or liability delivered to any Lender by Agent shall be conclusive absent manifest error. Each Lender hereby authorizes Agent to set off and apply any and all amounts at any time owing to such Lender under any Loan Document or otherwise payable by Agent to Lenders from any other source against any amount due to Agent under this Section 5.

6. **Evidence of Payments**. As soon as practicable after any payment of Taxes by Borrower to a Governmental Authority pursuant to the provisions of this Addendum 1, Borrower shall deliver to Agent the original or a certified copy of a receipt issued by such Governmental Authority evidencing such payment, a copy of the return reporting such payment or other evidence of such payment reasonably satisfactory to Agent.

7. **Status of Lenders**.

a. Any Lender that is entitled to an exemption from or reduction of withholding Tax with respect to payments made under any Loan Document shall deliver to Borrower and Agent, at the time or times reasonably requested by Borrower or Agent, such properly completed and executed documentation reasonably requested by Borrower or Agent as will permit such payments to be made without withholding or at a reduced rate of withholding. In addition, any Lender, if reasonably requested by Borrower or Agent, shall deliver such other documentation prescribed by applicable law or reasonably requested by Borrower or Agent as will enable Borrower or Agent to determine whether or not such Lender is subject to backup withholding or information reporting requirements. Notwithstanding anything to the contrary in the preceding two sentences, the completion, execution and submission of such documentation (other than such documentation set forth in Sections 7(b)(i), 7(b)(ii) and 7(b)(iv) of this Addendum 1) shall not be required if in such Lender's reasonable judgment such completion, execution or submission would subject such Lender to any material unreimbursed cost or expense or would materially prejudice the legal or commercial position of such Lender.

b. Without limiting the generality of the foregoing, in the event that Borrower is a U.S. Person,

i. any Lender that is a U.S. Person shall deliver to Borrower and Agent on or prior to the date on which such Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of Borrower or Agent), executed copies of IRS Form W-9 certifying that such Lender is exempt from U.S. federal backup withholding tax;

ii. any Foreign Lender shall, to the extent it is legally entitled to do so, deliver to Borrower and Agent (in such number of copies as shall be requested by the recipient) on or prior to the date on which such Foreign Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of Borrower or Agent), whichever of the following is applicable:

A. in the case of a Foreign Lender claiming the benefits of an income tax treaty to which the United States is a party (x) with respect to payments of interest under any Loan Document, executed copies of IRS Form W-8BEN or IRS Form W-8BEN-E establishing an exemption from, or reduction of, U.S. federal withholding Tax pursuant to the "interest" article of such tax treaty and (y) with respect to any other applicable payments under any Loan Document, IRS Form W-8BEN or IRS Form W-8BEN-E establishing an exemption from, or reduction of, U.S. federal withholding Tax pursuant to the "business profits" or "other income" article of such tax treaty;

B. executed copies of IRS Form W-8ECI;

C. in the case of a Foreign Lender claiming the benefits of the exemption for portfolio interest under Section 881(c) of the Code, (x) a certificate

substantially in the form of Exhibit J-1 to the effect that such Foreign Lender is not a "bank" within the meaning of Section 881(c)(3)(A) of the Code, a "10 percent shareholder" of Borrower within the meaning of Section 871(h)(3)(B) of the Code, or a "controlled foreign corporation" related to Borrower as described in Section 881(c)(3)(C) of the Code (a "U.S. Tax Compliance Certificate") and (y) executed copies of IRS Form W-8BEN or IRS Form W-8BEN-E; or

D. to the extent a Foreign Lender is not the beneficial owner, executed copies of IRS Form W-8IMY, accompanied by IRS Form W-8ECI, IRS Form W-8BEN, IRS Form W-8BEN-E, a U.S. Tax Compliance Certificate substantially in the form of Exhibit J-2 or Exhibit J-3, IRS Form W-9, and/or other certification documents from each beneficial owner, as applicable; provided that if the Foreign Lender is a partnership and one or more direct or indirect partners of such Foreign Lender are claiming the portfolio interest exemption, such Foreign Lender may provide a U.S. Tax Compliance Certificate substantially in the form of Exhibit J-4 on behalf of each such direct and indirect partner;

iii. any Foreign Lender shall, to the extent it is legally entitled to do so, deliver to Borrower and Agent (in such number of copies as shall be requested by the recipient) on or prior to the date on which such Foreign Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of Borrower or Agent), executed copies of any other form prescribed by applicable law as a basis for claiming exemption from or a reduction in U.S. federal withholding Tax, duly completed, together with such supplementary documentation as may be prescribed by applicable law to permit Borrower or Agent to determine the withholding or deduction required to be made; and

iv. if a payment made to a Lender under any Loan Document would be subject to U.S. federal withholding Tax imposed by FATCA if such Lender were to fail to comply with the applicable reporting requirements of FATCA (including those contained in Section 1471(b) or 1472(b) of the Code, as applicable), such Lender shall deliver to Borrower and Agent at the time or times prescribed by law and at such time or times reasonably requested by Borrower or Agent such documentation prescribed by applicable law (including as prescribed by Section 1471(b)(3)(C)(i) of the Code) and such additional documentation reasonably requested by Borrower or Agent as may be necessary for Borrower and Agent to comply with their obligations under FATCA and to determine that such Lender has complied with such Lender's obligations under FATCA or to determine the amount, if any, to deduct and withhold from such payment. Solely for purposes of this clause (iv), "FATCA" shall include any amendments made to FATCA after the date of this Agreement.

c. Each Lender agrees that if any form or certification it previously delivered expires or becomes obsolete or inaccurate in any respect, it shall update such form or certification or promptly notify Borrower and Agent in writing of its legal inability to do so.

8. **Treatment of Certain Refunds**. If any party determines, in its sole discretion exercised in good faith, that it has received a refund of any Taxes as to which it has been indemnified pursuant to the provisions of this Addendum 1 (including by the payment of additional amounts pursuant to the provisions of this Addendum 1), it shall pay to the indemnifying party an amount equal to such refund (but only to

the extent of indemnity payments made under the provisions of this Addendum 1 with respect to the Taxes giving rise to such refund), net of all out-of-pocket expenses (including Taxes) of such indemnified party and without interest (other than any interest paid by the relevant Governmental Authority with respect to such refund). Such indemnifying party, upon the request of such indemnified party, shall repay to such indemnified party the amount paid over pursuant to this Section 8 (plus any penalties, interest or other charges imposed by the relevant Governmental Authority) in the event that such indemnified party is required to repay such refund to such Governmental Authority. Notwithstanding anything to the contrary in this Section 8, in no event will the indemnified party be required to pay any amount to an indemnifying party pursuant to this Section 8 the payment of which would place the indemnified party in a less favorable net after-Tax position than the indemnified party would have been in if the Tax subject to indemnification and giving rise to such refund had not been deducted, withheld or otherwise imposed and the indemnification payments or additional amounts with respect to such Tax had never been paid. This Section 8 shall not be construed to require any indemnified party to make available its Tax returns (or any other information relating to its Taxes that it deems confidential) to the indemnifying party or any other Person.

9. **Increased Costs**. If any change in applicable law shall subject any Recipient to any Taxes (other than (A) Indemnified Taxes, (B) Taxes described in clauses (ii) through (iv) of the definition of Excluded Taxes and (C) Connection Income Taxes) on its loans, loan principal, commitments, or other obligations, or its deposits, reserves, other liabilities or capital attributable thereto, and the result shall be to increase the cost to such Recipient of making, converting to, continuing or maintaining any Term Loan Advance or of maintaining its obligation to make any such Loan, or to reduce the amount of any sum received or receivable by such Recipient (whether of principal, interest or any other amount), then, upon the request of such Recipient, Borrower will pay to such Recipient such additional amount or amounts as will compensate such Recipient for such additional costs incurred or reduction suffered.

10. **Survival**. Each party's obligations under the provisions of this Addendum 1 shall survive the resignation or replacement of Agent or any assignment of rights by, or the replacement of, a Lender, the termination of the Term Commitments and the repayment, satisfaction or discharge of all obligations under any Loan Document.

ADDENDUM 2 to LOAN AND SECURITY AGREEMENT

Delivery Instructions

The Compliance Certificate shall be uploaded and executed via [* * *][1]. All other financial reports required to be furnished to Agent pursuant to Section 7.1 shall be submitted via [* * *].

The Compliance Certificate and other financial reports required to be furnished to Agent pursuant to Section 7.1 may be sent to [* * *] with a copy to [* * *], should access to [* * *] be temporarily unavailable.

[1] All references to [* * *] shall be interpreted as the Portfolio Management Software currently in use by Agent. [* * *] can be reached at the following URL: [* * *]

ADDENDUM 3 to LOAN AND SECURITY AGREEMENT

SBA Provisions

(a) *Borrower's Business*. For purposes of this Addendum 3, Borrower shall be deemed to include its "affiliates" as defined in Title 13 Code of Federal Regulations Section 121.103. Borrower (i) represents and warrants to Agent and Lenders, with respect to subsection 1 below, as of the initial SBA Funding Date, and (ii) represents and warrants to Agent and Lenders, as of each SBA Funding Date and covenants to Agent and Lenders for a period of one year after each SBA Funding Date or for such longer period as set forth below with respect to subsections 2, 3, 4, 5, 6 and 7 below, as follows:

1. Size Status. Borrower's primary NAICS code is 541714 and has less than 1,000 employees in the aggregate (as determined in accordance with Title 13 Code of Federal Regulations Section 121.106);

2. No Relender. Borrower's primary business activity does not involve, directly or indirectly, providing funds to others, purchasing debt obligations, factoring, or long-term leasing of equipment with no provision for maintenance or repair;

3. No Passive Business. Borrower is engaged in a regular and continuous business operation (excluding the mere receipt of payments such as dividends, rents, lease payments, or royalties). Borrower's employees are carrying on the majority of day to day operations. Borrower will not pass through substantially all of the proceeds of the Loan to another entity;

4. No Real Estate Business. Borrower is not classified under North American Industry Classification System (NAICS) codes 531110 (lessors of residential buildings and dwellings), 531120 (lessors of nonresidential buildings except miniwarehouses), 531190 (lessors of other real estate property), 237210 (land subdivision), or 236117 (new housing for-sale builders). Borrower is not classified under NAICS codes 236118 (residential remodelers), 236210 (industrial building construction), or 236220 (commercial and institutional building construction), if Borrower is primarily engaged in construction or renovation of properties on its own account rather than as a hired contractor. Borrower is not classified under NAICS codes 531210 (offices of real estate agents and brokers), 531311 (residential property managers), 531312 (nonresidential property managers), 531320 (offices of real estate appraisers), or 531390 (other activities related to real estate), unless it derives at least 80 percent of its revenue from non-Affiliate sources. The proceeds of the Loan will not be used to acquire or refinance real property unless Borrower (x) is acquiring an existing property and will use at least 51 percent of the usable square footage for its business purposes; (y) is building or renovating a building and will use at least 67 percent of the usable square footage for its business purposes; or (z) occupies the subject property and uses at least 67 percent of the usable square footage for its business purposes.

5. No Project Finance. Borrower's assets are not intended to be reduced or consumed, generally without replacement, as the life of its business progresses, and the nature of Borrower's business does not require that a stream of cash payments be made to the business's financing sources, on a basis associated with the continuing sale of assets (e.g., real estate development projects and oil and gas wells). The primary purpose of the Loan is not to fund production of a single item or defined limited number of items, generally over a defined production period, where such production will constitute the majority of the activities of Borrower (e.g., motion pictures and electric generating plants).

6. No Farm Land Purchases. Borrower will not use the proceeds of the Loan to acquire farm land which is or is intended to be used for agricultural or forestry purposes, such as the production of food, fiber, or wood, or is so taxed or zoned.

7. No Foreign Investment. The proceeds of the Loan will not be used substantially for a foreign operation, passed through to a foreign business or used to acquire a foreign business. Borrower will not have, on or within one year after each SBA Funding Date and each other Loan provided by a Lender that is an SBIC more than 49 percent of its employees or tangible assets located outside the United States of America.

(b) *Small Business Administration Documentation*. Agent and Lenders acknowledge that Borrower completed, executed and delivered to Agent prior to each SBA Funding Date SBA Forms 480, 652 and 1031 (Parts A and B) together with a business plan showing Borrower's financial projections (including balance sheets and income and cash flows statements) for the period described therein and a written statement (whether included in the purchase agreement or pursuant to a separate statement) from Agent regarding its intended use of proceeds from the sale of securities to Lenders (the "Use of Proceeds Statement"). Borrower represents and warrants to Agent and Lenders that the information regarding Borrower and its affiliates set forth in the SBA Form 480, Form 652 and Form 1031 and the Use of Proceeds Statement delivered as of each SBA Funding Date is accurate and complete.

(c) *Inspection*. The following covenants contained in this Section (c) are intended to supplement and not to restrict the related provisions of the Loan Documents. Subject to the preceding sentence, Borrower will permit, for so long as Lenders hold any debt or equity securities of Borrower, Agent, Lenders or their representative, at Agent's or Lenders' expense, and examiners of the SBA to visit and inspect the properties and assets of Borrower, to examine its books of account and records, and to discuss Borrower's affairs, finances and accounts with Borrower's officers, senior management and accountants, all at such reasonable times as may be requested by Agent or Lenders or the SBA.

(d) *Annual Assessment*. Upon request of Agent or Lender, promptly after the end of each calendar year (but in any event prior to February 28 of each year) and at such other times as may be reasonably requested by Agent or Lenders, Borrower will deliver to Agent a written assessment of the economic impact of Lenders' investment in Borrower, specifying the full-time equivalent net jobs created and total jobs created or retained in connection with the investment, the impact of the investment on the revenues and profits of Borrower's business and on taxes paid by Borrower and its employees, and such other information as may be required regarding Borrower in connection with the filing of Lenders' SBA Form 468. Lenders will assist Borrower with preparing

such assessment. In addition to any other rights granted hereunder, Borrower will grant Agent and Lenders and the SBA access to Borrower's books and records for the purpose of verifying the use of such proceeds. Borrower also will furnish or cause to be furnished to Agent and Lenders such other information regarding the business, affairs and condition of Borrower as Agent or Lenders may from time to time reasonably request, and such information shall be certified by the President, Chief Executive Officer or Chief Financial Officer of Borrower to the extent requested by Agent or Lender for compliance with the SBIC Act.

(e) *Use of Proceeds.* Borrower will use the proceeds from the Loan only for purposes set forth in Section 7.17. Borrower will deliver to Agent from time to time promptly following Agent's request, a written report, certified as correct by Borrower's Chief Financial Officer, verifying the purposes and amounts for which proceeds from the Loan have been disbursed. Borrower will supply to Agent such additional information and documents as Agent reasonably requests with respect to its use of proceeds and will permit Agent and Lenders and the SBA to have access to any and all Borrower records and information and personnel as Agent deems necessary to verify how such proceeds have been or are being used, and to assure that the proceeds have been used for the purposes specified in Section 7.17.

(f) *Activities and Proceeds*. Neither Borrower nor any of its affiliates (if any) will engage in any activities or use directly or indirectly the proceeds from the Loan for any purpose for which a small business investment company is prohibited from providing funds by the SBIC Act, including 13 C.F.R. §107.720. Borrower shall not, nor shall it cause or permit any of its subsidiaries to, without obtaining the prior written approval of Agent, change Borrower's or any such subsidiary's business activities from that conducted on the date hereof to a business activity from which a licensee under the SBIC Act is prohibited from providing funds by the SBIC Act. Borrower agrees that any such change in its or any such subsidiary's business activities without such prior written consent of Agent shall constitute a material breach of the obligations of Borrower under this Addendum 3.

(g) *Compliance and Resolution.* Borrower agrees that a failure to comply with Borrower's obligations under this Addendum, or any other set of facts or circumstances where it has been asserted by any governmental regulatory agency (or Agent or Lenders believes that there is a substantial risk of such assertion) that Agent, Lenders and their affiliates are not entitled to hold, or exercise any significant right with respect to, any securities issued to Lenders by Borrower, will constitute a breach of the obligations of Borrower under the financing agreements among Borrower, Agent and Lenders. In the event of (i) a failure to comply with Borrower's obligations under this Addendum; or (ii) an assertion by any governmental regulatory agency (or Agent or Lenders believe that there is a substantial risk of such assertion) of a failure to comply with Borrower's obligations under this Addendum, then (i) Agent, Lenders and Borrower will meet and resolve any such issue in good faith to the satisfaction of Borrower, Agent, Lenders, and any governmental regulatory agency, and (ii) upon request of Lenders or Agent, Borrower will cooperate and assist with any assignment of the financing agreements among Hercules SBIC V, L.P. and Hercules Capital, Inc.

ADDENDUM 4 to LOAN AND SECURITY AGREEMENT

Agent and Lender Terms

(a) Each Lender hereby irrevocably appoints Hercules Capital, Inc. to act on its behalf as Agent hereunder and under the other Loan Documents and irrevocably authorizes Agent to take such actions on its behalf and to exercise such powers as are delegated to Agent by the terms hereof or thereof, together with such actions and powers as are reasonably incidental thereto. Agent shall have only those duties which are specified in this Agreement and it may perform such duties by or through its agents, representatives or employees. In performing its duties on behalf of Lenders, Agent shall exercise the same care which it would exercise in dealing with loans made for its own account, but it shall not be responsible to any Lender for the execution, effectiveness, genuineness, validity, enforceability, collectability or sufficiency of all or any of the Loan Documents, or for any representations, warranties, recitals or statements made therein or made in any written or oral statement or in any financial or other statements, instruments, reports, certificates or any other documents furnished or delivered in connection herewith or therewith by Agent to any Lender or by or on behalf of Borrower to Agent or any Lender, or be required to ascertain or inquire as to the performance or observance of any of the terms, conditions, provisions, covenants or agreements contained herein or therein, as to the use of the proceeds of the Term Loan Advances, the contents of any certificate, report or other document delivered hereunder or thereunder or in connection herewith or therewith, the validity, enforceability, effectiveness or genuineness of this Agreement, any other Loan Document or any other agreement, instrument or document or the satisfaction of any condition set forth in Section 4 or elsewhere herein, other than to confirm receipt of items expressly required to be delivered to Agent. Agent shall not be responsible for insuring the Collateral or for the payment of any Taxes, assessments, charges or any other charges or liens of any nature whatsoever upon the Collateral or otherwise for the maintenance of the Collateral, except in the event Agent enters into possession of a part or all of the Collateral, in which event Agent shall preserve the part in its possession. Unless the officers of Agent acting in their capacity as officer of Agent on Borrower's account have actual knowledge thereof or have been notified in writing thereof by Lenders, Agent shall not be required to ascertain or inquire as to the existence or possible existence of any Event of Default.

(b) Neither Agent nor any of its officers, directors, employees, attorneys, representatives or agents shall be liable to Lenders for any action taken or omitted hereunder or under any of the other Loan Documents or in connection herewith or therewith unless caused by its or their gross negligence or willful misconduct. No provision of this Agreement or of any other Loan Document shall be deemed to impose any duty or obligation on Agent to perform any act or to exercise any power in any jurisdiction in which it shall be illegal, or shall be deemed to impose any duty or obligation on Agent to perform any act or exercise any right or power if such performance or exercise (a) would subject Agent to a Tax in a jurisdiction where it is not then subject to a Tax or (b) would require Agent to qualify to do business in any jurisdiction where it is not so qualified. Without prejudice to the generality of the foregoing, no Lender shall have any right of action whatsoever against Agent as a result of Agent acting or (where so instructed) refraining from acting under this Agreement or under any of the other Loan Documents in accordance with the instructions of Lenders. Agent shall be entitled to refrain from exercising any power, discretion or authority vested in it under this Agreement unless and until it has obtained the written instructions of Lenders. The agency hereby created shall in no way impair or affect any of the rights and powers of, or impose any duties or obligations upon Agent in its individual capacity. With respect to its participation in the Loan Agreement hereunder, Agent shall have the same rights

and powers hereunder as any other Lender and may exercise the same rights and powers as though it were not performing the duties and functions delegated to it hereunder and the term "Lender" or "Lenders" or any similar term shall unless the context clearly indicates otherwise include Agent in its individual capacity.

(c) Agent may rely, and shall be fully protected in acting, or refraining to act, upon, any resolution, statement, certificate, instrument, opinion, report, notice, request, consent, order, bond or other paper or document that it has no reason to believe to be other than genuine and to have been signed or presented by the proper party or parties or, in the case of cables, telecopies and telexes, to have been sent by the proper party or parties. In the absence of its gross negligence or willful misconduct, Agent may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon any certificates or opinions furnished to Agent and conforming to the requirements of this Agreement or any of the other Loan Documents. Agent may consult with counsel, and any opinion or legal advice of such counsel shall be full and complete authorization and protection in respect of any action taken, not taken or suffered by Agent hereunder or under any Loan Documents in accordance therewith. Agent shall have the right at any time to seek instructions concerning the administration of the Collateral from any court of competent jurisdiction. Agent shall not be under any obligation to exercise any of the rights or powers granted to Agent by this Agreement and the other Loan Documents at the request or direction of Lenders unless Agent shall have been provided by Lenders with adequate security and indemnity against the costs, expenses and liabilities that may be incurred by it in compliance with such request or direction.

(d) Each Lender agrees to indemnify Agent in its capacity as such (to the extent not reimbursed by Borrower and without limiting the obligation of Borrower to do so), according to its respective Term Commitment percentages (based upon the total outstanding Term Commitments) in effect on the date on which indemnification is sought under this Addendum 4, from and against any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements of any kind whatsoever that may at any time be imposed on, incurred by or asserted against Agent in any way relating to or arising out of, this Agreement, any of the other Loan Documents or any documents contemplated by or referred to herein or therein or the transactions contemplated hereby or thereby or any action taken or omitted by Agent under or in connection with any of the foregoing; The agreements in this Section shall survive the payment of the Loans and all other amounts payable hereunder.

(e) To the extent not reimbursed either by Borrower or from the application of Collateral proceeds pursuant to Section 10.2, a Lender (the "Indemnified Lender") shall be indemnified by the other Lenders (an "Indemnifying Lender"), on a several basis in proportion to each Lender's pro rata portion of the Term Commitment, and each Indemnifying Lender agrees to reimburse the Indemnified Lender for the Indemnifying Lender's pro rata share of the following items (an "Indemnified Payment"):

(i) all reasonable out-of-pocket costs and expenses of the Indemnified Lender incurred by the Indemnified Lender in connection with the discharge of its activities under this Agreement or the Loan Agreement, including reasonable legal expenses and attorneys' fees; provided, that the Indemnified Lender shall consult with the other Lender regarding the incurrence of such costs and expenses at reasonable intervals (but not more often than monthly) and any such reasonable costs and expenses shall be "Claims" hereunder notwithstanding any disagreement by the other Lender as to their incurrence; and

(ii) from and against any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements of any kind or nature whatsoever, which may be imposed on, incurred by or asserted against the Indemnified Lender in any way relating to or arising out of this Agreement, or any action taken or omitted by the Indemnified Lender hereunder;

provided, however, that the Indemnified Lender shall not be reimbursed or indemnified for an Indemnified Payment, except to the extent that the Indemnified Lender paid more than its ratable share of such payment. All Indemnified Payments as set forth in this clause (e) to an Indemnified Lender are intended to be paid ratably by the other Lender.

(f) Agent in Its Individual Capacity. The Person serving as Agent hereunder shall have the same rights and powers in its capacity as a Lender as any other Lender and may exercise the same as though it were not Agent and the term "Lender" shall, unless otherwise expressly indicated or unless the context otherwise requires, include each such Person serving as Agent hereunder in its individual capacity.

(g) Exculpatory Provisions. Agent shall have no duties or obligations except those expressly set forth herein and in the other Loan Documents. Without limiting the generality of the foregoing, Agent shall not:

(i) be subject to any fiduciary, advisory or other implied duties, regardless of whether any Default or any Event of Default has occurred and is continuing;

(ii) have any duty to take any discretionary action or exercise any discretionary powers, except discretionary rights and powers expressly contemplated hereby or by the other Loan Documents that Agent is required to exercise as directed in writing by Lenders, provided that Agent shall not be required to take any action that, in its opinion or the opinion of its counsel, may expose Agent to liability or that is contrary to any Loan Document or applicable law; and

(iii) except as expressly set forth herein and in the other Loan Documents, have any duty to disclose, and Agent shall not be liable for the failure to disclose, any information relating to Borrower or any of its Affiliates that is communicated to or obtained by any Person serving as Agent or any of its Affiliates in any capacity.

(h) In connection with any exercise of Enforcement Actions hereunder, neither any Agent nor any Lender or any of its partners, or any of their respective directors, officers, employees, attorneys, accountants, or agents shall be liable as such for any action taken or omitted by it or them, except for its or their own gross negligence or willful misconduct with respect to its duties under this Agreement.

(i) Each Lender and Agent may execute any of its powers and perform any duties hereunder either directly or by or through agents or attorneys-in-fact. Each Lender and Agent shall be entitled to advice of counsel concerning all matters pertaining to such powers and duties. No Lender or Agent shall be responsible for the negligence or misconduct of any agents or attorneys-in-fact selected by it, if the selection of such agents or attorneys-in-fact was done without gross negligence or willful misconduct.

(j) Each Lender agrees that it will make its own independent investigation of the financial condition and affairs of Borrower in connection with the making of Term Loan Advances pursuant to the Loan Agreement and has made and shall continue to make its own appraisal of the creditworthiness of Borrower. Neither Agent nor any Lender shall have any duty or responsibility either initially or on a continuing basis to make any such investigation or any such appraisal on behalf of all Lenders or to provide the other Lenders with any credit or other information with respect thereto whether coming into its possession before the date hereof or any time or times thereafter and shall further have no responsibility with respect to the accuracy of or the completeness of the information provided to Lenders by Borrower.

ADDENDUM 5 to LOAN AND SECURITY AGREEMENT

Multiple Borrower Terms

(a) Borrower's Agent. Each Borrower hereby irrevocably appoints Company as its agent, attorney-in-fact and legal representative for all purposes, including requesting disbursement of the Term Loan and receiving account statements and other notices and communications to Borrowers (or any of them) from Agent or any Lender. Agent may rely, and shall be fully protected in relying, on any request for the Term Loan Advances, disbursement instruction, report, information or any other notice or communication made or given by Company, whether in its own name or on behalf of one or more of the other Borrowers, and Agent shall not have any obligation to make any inquiry or request any confirmation from or on behalf of any other Borrower as to the binding effect on it of any such request, instruction, report, information, other notice or communication, nor shall the joint and several character of Borrowers' obligations hereunder be affected thereby.

(b) Waivers. Each Borrower hereby waives: (i) any right to require Agent to institute suit against, or to exhaust its rights and remedies against, any other Borrower or any other person, or to proceed against any property of any kind which secures all or any part of the Secured Obligations, or to exercise any right of offset or other right with respect to any reserves, credits or deposit accounts held by or maintained with Agent or any Indebtedness of Agent or any Lender to any other Borrower, or to exercise any other right or power, or pursue any other remedy Agent or any Lender may have; (ii) any defense arising by reason of any disability or other defense of any other Borrower or any guarantor or any endorser, co-maker or other person, or by reason of the cessation from any cause whatsoever of any liability of any other Borrower or any guarantor or any endorser, co-maker or other person, with respect to all or any part of the Secured Obligations, or by reason of any act or omission of Agent or others which directly or indirectly results in the discharge or release of any other Borrower or any guarantor or any other person or any Secured Obligations or any security therefor, whether by operation of law or otherwise; (iii) any defense arising by reason of any failure of Agent to obtain, perfect, maintain or keep in force any Lien on, any property of any Borrower or any other person; (iv) any defense based upon or arising out of any bankruptcy, insolvency, reorganization, arrangement, readjustment of debt, liquidation or dissolution proceeding commenced by or against any other Borrower or any guarantor or any endorser, co-maker or other person, including without limitation any discharge of, or bar against collecting, any of the Secured Obligations (including without limitation any interest thereon), in or as a result of any such proceeding. Until all of the Secured Obligations have been paid, performed, and discharged in full, nothing shall discharge or satisfy the liability of any Borrower hereunder except the full performance and payment of all of the Secured Obligations. If any claim is ever made upon Agent for repayment or recovery of any amount or amounts received by Agent in payment of or on account of any of the Secured Obligations, because of any claim that any such payment constituted a preferential transfer or fraudulent conveyance, or for any other reason whatsoever, and Agent repays all or part of said amount by reason of any judgment, decree or order of any court or administrative body having jurisdiction over Agent or any of its property, or by reason of any settlement or compromise of any such claim effected by Agent with any such claimant (including without limitation the any other Borrower), then and in any such event, each Borrower agrees that any such judgment, decree, order, settlement and compromise shall be binding upon such Borrower, notwithstanding any revocation or release of this Agreement or the cancellation of any note or other instrument evidencing any of the Secured Obligations, or any release of any of the Secured Obligations, and each Borrower shall be and remain liable to Agent and Lenders under

this Agreement for the amount so repaid or recovered, to the same extent as if such amount had never originally been received by Agent or any Lender, and the provisions of this sentence shall survive, and continue in effect, notwithstanding any revocation or release of this Agreement. Each Borrower hereby expressly and unconditionally waives all rights of subrogation, reimbursement and indemnity of every kind against any other Borrower, and all rights of recourse to any assets or property of any other Borrower, and all rights to any collateral or security held for the payment and performance of any Secured Obligations, including (but not limited to) any of the foregoing rights which Borrower may have under any present or future document or agreement with any other Borrower or other person, and including (but not limited to) any of the foregoing rights which any Borrower may have under any equitable doctrine of subrogation, implied contract, or unjust enrichment, or any other equitable or legal doctrine.

(c) Consents. Each Borrower hereby consents and agrees that, without notice to or by Borrower and without affecting or impairing in any way the obligations or liability of Borrower hereunder, Agent may, from time to time before or after revocation of this Agreement, do any one or more of the following in its sole and absolute discretion: (i) accept partial payments of, compromise or settle, renew, extend the time for the payment, discharge, or performance of, refuse to enforce, and release all or any parties to, any or all of the Secured Obligations; (ii) grant any other indulgence to any Borrower or any other Person in respect of any or all of the Secured Obligations or any other matter; (iii) accept, release, waive, surrender, enforce, exchange, modify, impair, or extend the time for the performance, discharge, or payment of, any and all property of any kind securing any or all of the Secured Obligations or any guaranty of any or all of the Secured Obligations, or on which Agent at any time may have a Lien, or refuse to enforce its rights or make any compromise or settlement or agreement therefor in respect of any or all of such property; (iv) substitute or add, or take any action or omit to take any action which results in the release of, any one or more other Borrowers or any endorsers or guarantors of all or any part of the Secured Obligations, including, without limitation one or more parties to this Agreement, regardless of any destruction or impairment of any right of contribution or other right of Borrower; (v) apply any sums received from any other Borrower, any guarantor, endorser, or co-signer, or from the disposition of any Collateral or security, to any Indebtedness whatsoever owing from such person or secured by such Collateral or security, in such manner and order as Agent determines in its sole discretion, and regardless of whether such Indebtedness is part of the Secured Obligations, is secured, or is due and payable. Each Borrower consents and agrees that Agent shall be under no obligation to marshal any assets in favor of Borrower, or against or in payment of any or all of the Secured Obligations. Each Borrower further consents and agrees that Agent shall have no duties or responsibilities whatsoever with respect to any property securing any or all of the Secured Obligations. Without limiting the generality of the foregoing, Agent shall have no obligation to monitor, verify, audit, examine, or obtain or maintain any insurance with respect to, any property securing any or all of the Secured Obligations.

(d) Independent Liability. Each Borrower hereby agrees that one or more successive or concurrent actions may be brought hereon against such Borrower, in the same action in which any other Borrower may be sued or in separate actions, as often as deemed advisable by Agent. Each Borrower is fully aware of the financial condition of each other Borrower and is executing and delivering this Agreement based solely upon its own independent investigation of all matters pertinent hereto, and such Borrower is not relying in any manner upon any representation or statement of Agent or any Lender with respect thereto. Each Borrower represents and warrants that it is in a position to obtain, and each Borrower hereby assumes full responsibility for obtaining, any additional information concerning any other Borrower's financial condition and any other matter pertinent hereto as such Borrower may desire, and such Borrower is not relying upon or expecting

Agent to furnish to it any information now or hereafter in Agent's possession concerning the same or any other matter.

(e) Subordination. All Indebtedness of a Borrower now or hereafter arising held by another Borrower is subordinated to the Secured Obligations and Borrower holding the Indebtedness shall take all actions reasonably requested by Agent to effect, to enforce and to give notice of such subordination.

EXHIBIT A

[* * *]

EXHIBIT B

[* * *]

EXHIBIT C

[* * *]

EXHIBIT D

[* * *]

EXHIBIT E

[* * *]

EXHIBIT F

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EXHIBIT G

[* * *]

EXHIBIT H

[* * *]

EXHIBIT I

[* * *]

EXHIBIT J-1

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EXHIBIT J-2

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EXHIBIT J-3

[* * *]

EXHIBIT J-4

[* * *]

EXHIBIT K

CERTAIN ECONOMIC TERMS

"**4FRONT-1**" means Borrower's phase 3 clinical trial evaluating 4D-150 in patients with macular neovascularization secondary to age-related macular degeneration, clinicaltrials.gov identifier #NCT06864988.

"**4FRONT-2**" means Borrower's phase 3 clinical trial evaluating 4D-150 in patients with macular neovascularization secondary to age-related macular degeneration, clinicaltrials.gov identifier #NCT07064759.

"**Amortization Date**" means (a) if the Tranche 2 Milestone is satisfied, June 1, 2029, (b) if the Tranche 3 Milestone is satisfied, June 1, 2030, (c) if the Tranche 4 Milestone is satisfied, June 1, 2031, and (d) if none of the Tranche 2 Milestone, Tranche 3 Milestone or Tranche 4 Milestone is satisfied, December 1, 2028.

"**Applicable Minimum Cash Percentage**" means, as of any date of determination, the lowest applicable (i.e., if multiple Applicable Conditions apply, the Applicable Minimum Cash Percentage shall be the lowest of the applicable Levels) percentage set forth in the column titled "Applicable Minimum Cash Percentage" below corresponding to the row with the applicable conditions set forth in the column titled Applicable Conditions that have been satisfied as of such date of determination:

Level	Applicable Conditions	Applicable Minimum Cash Percentage
I	The aggregate original principal amount of the Term Loan Advances is greater than $25,000,000	50%
II	Borrower has achieved the Tranche 2 Milestone	40%
III	Borrower has achieved the Tranche 3 Milestone	35%

"**Approval Milestone**" means the satisfaction of each of the following events: (a) no Default or Event of Default shall have occurred and be continuing; and (b) Borrower shall have delivered evidence reasonably satisfactory to Agent (including supporting documents, as reasonably requested by Agent) that the FDA has approved the Biologics License Application for 4D-150 for the treatment of certain patients with wet age-related macular degeneration ("wet AMD") with a label claim generally consistent [* * *].

"**Due Diligence Fee**" means [* * *] Dollars ($[* * *]).

"**End of Term Charge**" means (x) the End of Term Charge Percentage *multiplied* by the aggregate original principal amount of such Term Loan Advances made hereunder, *minus* (y) the aggregate amount of payments made pursuant to Section 2.6(a).

"**End of Term Charge Percentage**" means, with respect to any End of Term Charge due and payable on any date, (a) if due and payable on or prior to June 1, 2028, three and seven-tenths percent (3.70%); (b) if due and payable after June 1, 2028 but on or prior to June 1, 2029, four and seven-tenths percent (4.70%); (c) if due and payable after June 1, 2029 but on or prior to June 1, 2030, five and seven-tenths percent (5.70%); and (d) if due and payable thereafter, six and one-half percent (6.50%).

"**Indications and Usage**" means the section of the FDA-approved labelling for a drug or biological product that states such drug or biological product is indicated for the treatment, prevention, mitigation, cure, or diagnosis of a recognized disease or condition, or of a manifestation of a recognized disease or

condition, or for the relief of symptoms associated with a recognized disease or condition, as set forth in [* * *].

"**Initial Facility Charge**" means Five Hundred Thousand Dollars ($500,000).

"**Initial Minimum Cash Test Date"** means (a) January 1, 2028, if at any time on or prior to such date the aggregate original principal amount of the Term Loan Advances is greater than Twenty-Five Million Dollars ($25,000,000) or (b) otherwise, the first date on which the aggregate original principal amount of the Term Loan Advances is greater than Twenty-Five Million Dollars ($25,000,000); provided, that if Borrower shall have achieved the Tranche 2 Milestone, the "Initial Minimum Cash Test Date" means the later to occur of (x) July 1, 2028, if at any time on or prior to such date the aggregate original principal amount of the Term Loan Advances is or was greater than Fifty Million Dollars ($50,000,000) or (y) otherwise, the first date on which the aggregate original principal amount of the Term Loan Advances is greater than Fifty Million Dollars ($50,000,000).

"Initial Performance Covenant Test Date" means the last calendar day of the month that is nine (9) months following the first date on which (a) Borrower shall have achieved the Approval Milestone and (b) the aggregate original principal amount of the Term Loan Advances is greater than or equal to Seventy-Five Million Dollars ($75,000,000).

"**Maximum Term Loan Amount**" means Two Hundred Million Dollars ($200,000,000).

"**Minimum Advance Amount**" means Five Million Dollars ($5,000,000).

"**Performance Covenant A**" means, as of any date of determination, (a) Company's Market Capitalization as of such date of determination exceeds Seven Hundred Fifty Million Dollars ($750,000,000) and (b) Borrower maintains Qualified Cash in an amount greater than or equal to the aggregate outstanding Secured Obligations, multiplied by fifty percent (50%).

"**Performance Covenant B**" means, as of any date of determination, Borrower maintains Qualified Cash in an amount greater than or equal to the aggregate outstanding Secured Obligations, multiplied by one hundred twenty-five percent (125%).

"**Performance Covenant C**" means, as of the last date of the most recent calendar month for which financial statements and a Compliance Certificate have been (or were required to be) delivered under Section 7.1(a) and Section 7.1(d), respectively, Borrower's Net Product Revenue, measured on a trailing six (6) month basis, is at least seventy percent (70%) of the Net Product Revenue included in the Board Approved Forecast for the trailing six (6) month period ending on the last day of such calendar month.

"**Prepayment Charge**" means (a) the outstanding principal amount of each Advance amount being prepaid, *multiplied by* (b) (i) three percent (3.00%), if the principal amount of such Advance amounts are prepaid on or prior to the date which is twelve (12) months following the Closing Date; (ii) two percent (2.00%), if the principal amount of such Advance amounts are prepaid after the date which is twelve (12) months following the Closing Date but on or prior to the date which is twenty-four (24) months following the Closing Date; and (iii) one percent (1.00%), if after the date which is twenty-four (24) months following the Closing Date through the day before the Term Loan Maturity Date.

"Prime Rate" means the "prime rate" as reported in *The Wall Street Journal* or any successor publication thereto.

"RTI Amount" means [* * *] Dollars ($[* * *]).

"Subsequent Financing" means the closing of any Borrower financing which becomes effective after the Closing Date that is broadly marketed to multiple investors, which shall not include any Permitted Convertible Debt Financing, Permitted Bond Hedge Transaction or Permitted Warrant Transaction.

"Term Commitment" means the obligation, if any, of any Lender to make a Term Loan Advance to Borrower in a principal amount not to exceed the amount set forth under the heading "Tranche 1A Commitment", "Tranche 1B Commitment", "Tranche 2A Commitment", "Tranche 2B Commitment", "Tranche 3 Commitment", "Tranche 4 Commitment" or "Tranche 5 Commitment", as the case may be, opposite such Lender's name on Schedule 1.1.

"Term Loan Interest Rate" means a per annum rate of interest equal to (a) in the case of the Tranche 1A Advance, the greater of either (i) the Prime Rate *plus* two percent (2.00%) and (ii) eight and three-quarter percent (8.75%) and (b) in the case of any Term Loan Advance (other than the Tranche 1A Advance), the greater of either (i) the Prime Rate *plus* two and one-half percent (2.50%), and (ii) nine and one-quarter percent (9.25%); provided, that in no event shall the Term Loan Interest Rate with respect to any Term Loan Advance exceed the per annum rate of interest that is three-quarters of one percent (0.75%) higher than the Term Loan Interest Rate with respect to such Term Loan Advance on the Advance Date of such Term Loan Advance.

"Term Loan Maturity Date" means June 1, 2031.

"Tranche 1A Commitment" means the obligation, if any, of any Lender to make a Term Loan Advance to Borrower in a principal amount not to exceed the amount set forth under the heading Tranche 1A Commitment opposite such Lender's name on Schedule 1.1.

"Tranche 1B Commitment" means the obligation, if any, of any Lender to make a Term Loan Advance to Borrower in a principal amount not to exceed the amount set forth under the heading Tranche 1B Commitment opposite such Lender's name on Schedule 1.1.

"Tranche 1B Commitment Period" means the period beginning on the Closing Date and continuing through June 15, 2027.

"Tranche 2A Commitment" means the obligation, if any, of any Lender to make a Term Loan Advance to Borrower in a principal amount not to exceed the amount set forth under the heading Tranche 2A Commitment opposite such Lender's name on Schedule 1.1.

"Tranche 2A Commitment Period" means the period beginning on the first date on which (x) Borrower shall have achieved the Tranche 2 Early Draw Milestone and (y) Borrower shall have drawn the entire amount of the Tranche 1A Commitment and the Tranche 1B Commitment and continuing through the date that is five (5) Business Days after the date on which Borrower shall have achieved the Tranche 2 Early Draw Milestone.

"Tranche 2B Commitment" means the obligation, if any, of any Lender to make a Term Loan Advance to Borrower in a principal amount not to exceed the sum of (a) the amount set forth under the heading Tranche 2B Commitment opposite such Lender's name on Schedule 1.1 and (b) the aggregate amount of the unfunded Tranche 2A Commitment as of any date of determination.

"Tranche 2B Commitment Period" means the period beginning on the first date on which Borrower shall have achieved the Tranche 2 Milestone and continuing through December 15, 2027.

"Tranche 2 Early Draw Milestone" means the satisfaction of the following events: (a) no Default or Event of Default shall have occurred; (b) Borrower shall have achieved and reported the [* * *] with respect to 4FRONT-1, which together support the Borrower's target product profile for 4D-150 and the

submission of a Biologics License Application to the FDA as the next immediate step in development, as determined by Borrower, subject to reasonable verification by Agent in its reasonable discretion (including supporting documentation reasonably requested by Agent); and (c) either (i) Company shall have delivered to Agent evidence in form and substance reasonably acceptable to Agent that, after Closing Date and prior to initial Advance Date with respect to a Tranche 2A Advance, Company has received greater than or equal to [* * *] Dollars ($[* * *]) in unrestricted (including, not subject to any redemption, clawback, escrow or similar encumbrance or restriction) Qualified Equity Issuance Net Proceeds, subject to verification by Agent in its reasonable discretion (including supporting documentation reasonably requested by Agent); provided, that in no event shall any Qualified Equity Issuance Net Proceeds attributable to Permitted Convertible Debt be included for purposes of this clause (c)(i); or (ii) Company's Market Capitalization shall be greater than or equal to [* * *] Dollars ($[* * *]) for [* * *] consecutive Trading Days following Borrower's announcement of 4FRONT-1 topline data.

"Tranche 2 Milestone" means the satisfaction of the following events: (a) no Default or Event of Default shall have occurred; (b) Borrower shall have achieved and reported the [* * *] with respect to 4FRONT-1 and 4FRONT-2, which together support the Borrower's target product profile for 4D-150 and the submission of a Biologics License Application to the FDA as the next immediate step in development of 4D-150, as determined by Borrower subject to reasonable verification by Agent in its reasonable discretion (including supporting documentation reasonably requested by Agent); and (c) either (i) Company shall have delivered to Agent evidence in form and substance reasonably acceptable to Agent that, after Closing Date and prior to December 15, 2027, Company has received greater than or equal to $[* * *] in unrestricted (including, not subject to any redemption, clawback, escrow or similar encumbrance or restriction) Qualified Equity Issuance Net Proceeds, subject to verification by Agent in its reasonable discretion (including supporting documentation reasonably requested by Agent); provided that no more than [* * *] Dollars ($[* * *]) of Qualified Equity Issuance Net Proceeds attributable to Permitted Convertible Debt shall be included for purposes of this clause (c)(i); or (ii) Company's Market Capitalization shall be greater than or equal to [* * *] Dollars ($[* * *]) for [* * *] consecutive Trading Days following Borrower's announcement of 4FRONT-2 topline data.

"Tranche 3 Commitment" means the obligation, if any, of any Lender, if any, to make a Term Loan Advance to Borrower in a principal amount not to exceed the amount set forth under the heading Tranche 3 Commitment opposite such Lender's name on Schedule 1.1.

"Tranche 3 Commitment Period" means the period beginning on the first date on which (i) Borrower shall have achieved the Tranche 3 Milestone and (ii) Borrower shall have drawn the entire amount of the Tranche 2A Commitment and the Tranche 2B Commitment or the Tranche 2A Commitment and the Tranche 2B Commitment shall have expired, and continuing through March 15, 2029.

"Tranche 3 Milestone" means the satisfaction of the following events: (a) no Default or Event of Default shall have occurred; (b) Borrower shall have achieved the Approval Milestone; and (c) either (i) Company shall have delivered to Agent evidence in form and substance reasonably acceptable to Agent that, after Closing Date and prior to December 15, 2028, Company has received greater than or equal to [* * *] in unrestricted (including, not subject to any redemption, clawback, escrow or similar encumbrance or restriction) Qualified Equity Issuance Net Proceeds, subject to verification by Agent in its reasonable discretion (including supporting documentation reasonably requested by Agent); provided that no more than [* * *] Dollars ($[* * *]) of Qualified Equity Issuance Net Proceeds attributable to Permitted Convertible Debt (on a cumulative basis, inclusive of any amounts counted toward satisfaction of the Tranche 2 Milestone or Tranche 2 Early Draw Milestone) shall be included for purposes of this clause (c)(i) or (ii) Company's Market Capitalization shall be greater than or equal to [* * *] Dollars ($[* * *]) for [* * *] consecutive Trading Days following Borrower's announcement of its achievement of the Approval Milestone.

"Tranche 4 Commitment" means the obligation, if any, of any Lender to make a Term Loan Advance to Borrower in a principal amount not to exceed the amount set forth under the heading Tranche 4 Commitment opposite such Lender's name on Schedule 1.1.

"Tranche 4 Commitment Period" means the period beginning on the first date on which (i) Borrower shall have achieved the Tranche 4 Milestone and (ii) Borrower shall have drawn the entire amount of the Tranche 3 Commitment or the Tranche 3 Commitment shall have expired, and continuing through December 15, 2029.

"Tranche 4 Milestone" means the satisfaction of the following events: (a) no Default or Event of Default shall have occurred; (b) Borrower shall have achieved the Approval Milestone; (c) either (i) Company shall have delivered to Agent evidence in form and substance reasonably acceptable to Agent that, after Closing Date, Company has received greater than or equal to [* * *] in unrestricted (including, not subject to any redemption, clawback, escrow or similar encumbrance or restriction) Qualified Equity Issuance Net Proceeds, subject to verification by Agent in its reasonable discretion (including supporting documentation reasonably requested by Agent); provided that no more than [* * *] Dollars ($[* * *)] of Qualified Equity Issuance Net Proceeds attributable to Permitted Convertible Debt shall be included for purposes of this clause (c)(i); or (ii) Company's Market Capitalization shall be greater than or equal to [* * *] Dollars ($[* * *)] for [* * *] consecutive Trading Days following Borrower's announcement of its achievement of the Approval Milestone; and (d) Borrower shall have achieved Net Product Revenue from the sale of 4D-150 in the United States, measured on a trailing three (3) month basis, of greater than or equal to [* * *Dollars ($[* * *]) for any reporting period ending on or prior to October 31, 2029.

"Tranche 5 Commitment" means the obligation, if any, of any Lender to make a Term Loan Advance to Borrower in a principal amount not to exceed the amount set forth under the heading Tranche 5 Commitment opposite such Lender's name on Schedule 1.1.

"Tranche 5 Commitment Period" the period beginning on Closing Date and continuing through the day immediately preceding the Amortization Date.

"Tranche Facility Charge" means one percent (1.00%) of any Advance (other than a Tranche 1A Advance or Tranche 1B Advance).

SCHEDULE 1.1

COMMITMENTS

LENDERS	TRANCHE 1A COMMITMENT	TRANCHE 1B COMMITMENT	TRANCHE 2A COMMITMENT	TRANCHE 2B COMMITMENT[2]	TRANCHE 3 COMMITMENT	TRANCHE 4 COMMITMENT	TRANCHE 5 COMMITMENT[3]
[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]
[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]
[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]
[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]
[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]
[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]	[* * *]
TOTAL COMMITMENTS	**$20,000,000.00**	**$30,000,000.00**	**$12,500,000.00**	**$12,500,000.00**	**$50,000,000.00**	**$25,000,000.00**	**$50,000,000.00**

[2] The Tranche 2B Commitment for each Lender is the Tranche 2B Commitment amount set forth above plus the aggregate amount of the unfunded Tranche 2A Commitment for such Lender as of any date of determination.

[3] Conditioned on approval by Lenders' investment committee in its sole and unfettered discretion.

SCHEDULE 7.24

[* * *]

Exhibit 31.1

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

I, David Kirn, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of 4D Molecular Therapeutics, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 13, 2026

By: /s/ David Kirn
David Kirn
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

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

I, Kristian Humer, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of 4D Molecular Therapeutics, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 13, 2026

By: /s/ Kristian Humer
Kristian Humer
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

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

In connection with the Quarterly Report on Form 10-Q (the "Report") of 4D Molecular Therapeutics, Inc. (the "Company") for the period ended June 30, 2026, David Kirn, as President and Chief Executive Officer of the Company, and Kristian Humer, as 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 his knowledge:

a) the Company's Report for the period ended June 30, 2026 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

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

Dated: August 13, 2026

By: /s/ David Kirn
David Kirn
President and Chief Executive Officer
(Principal Executive Officer)

Dated: August 13, 2026

By: /s/ Kristian Humer
Kristian Humer
Chief Financial Officer
(Principal Financial and Accounting Officer)