

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549**

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 30, 2024

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: 001-38841

Precision BioSciences, Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

302 East Pettigrew St., Suite A-100
Durham, North Carolina

(Address of principal executive offices)

20-4206017

(I.R.S. Employer
Identification No.)

27701

(Zip Code)

(919) 314-5512

(Registrant's telephone number, including area code)

N/A

(Former name, former address and former fiscal year, if changed since last report)

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 \$0.000005 per share	DTIL	The Nasdaq Capital Market

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input checked="" type="checkbox"/>

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 October 31, 2024, the registrant had 7,671,059 shares of common stock, \$0.000005 par value per share, outstanding.

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FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. We intend such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in 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”). All statements other than statements of present and historical facts contained in this Quarterly Report on Form 10-Q, including, without limitation, statements regarding our future results of operations and financial position, business strategy and approach, including related results, prospective products, use and development of licensed products, planned preclinical studies and clinical trials, or discontinuance thereof, the status and results of our preclinical studies, expected release of interim data, expectations regarding the use and effects of ARCUS, including in connection with *in vivo* genome editing, collaborations and potential new partnerships or alternative opportunities for our product candidates, potential new application filings and regulatory approvals, research and development costs, timing, expected results and likelihood of success, as well as plans and objectives of management for future operations may be forward-looking statements. Without limiting the foregoing, in some cases, you can identify forward-looking statements by terms such as “aim,” “may,” “will,” “should,” “expect,” “exploring,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplate,” “believe,” “estimate,” “predict,” “potential,” “seeks,” or “continue” or the negative of these terms or other similar expressions, although not all forward-looking statements contain these words. No forward-looking statement is a guarantee of future results, performance, or achievements, and one should avoid placing undue reliance on such statements.

Forward-looking statements are based on our management’s beliefs and assumptions and on information currently available to us. Such beliefs and assumptions may or may not prove to be correct. Additionally, such forward-looking statements are subject to a number of known and unknown risks, uncertainties and assumptions, and actual results may differ materially from those expressed or implied in the forward-looking statements due to various factors, including, but not limited to, those identified in Part II. Item 1A. “Risk Factors” and Part I. Item 2. “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” These risks and uncertainties include, but are not limited to:

- our ability to become profitable;
- our ability to procure sufficient funding to advance our programs;
- risks associated with raising additional capital and requirements under our current debt instruments and effects of restrictions thereunder;
- our operating expenses and our ability to predict what those expenses will be;
- our limited operating history;
- the success of our programs and product candidates in which we expend our resources;
- our limited ability or inability to assess the safety and efficacy of our product candidates;
- the risk that other genome-editing technologies may provide significant advantages over our ARCUS technology;
- our dependence on our ARCUS technology;
- the initiation, cost, timing, progress, achievement of milestones and results of research and development activities and preclinical and clinical studies;
- public perception about genome editing technology and its applications;
- competition in the genome editing, biopharmaceutical, and biotechnology fields;
- our or our collaborators’ ability to identify, develop and commercialize product candidates;
- potential product liability lawsuits and penalties against us or our collaborators related to our technology and our product candidates;
- the U.S. and foreign regulatory landscape applicable to our and our collaborators’ development of product candidates;
- our or our collaborators’ or other licensees’ ability to advance product candidates into, and successfully design, implement and complete, clinical or field trials;
- potential manufacturing problems associated with the development or commercialization of any of our product candidates;
- delays or difficulties in our or our collaborators’ ability to enroll patients in clinical trials;
- changes in interim “top-line” and initial data that we announce or publish;

- if our product candidates do not work as intended or cause undesirable side effects;
- risks associated with applicable healthcare, data protection, privacy and security regulations and our compliance therewith;
- our ability to obtain orphan drug designation or fast track designation for our product candidates or to realize the expected benefits of these designations;
- our or our collaborators' ability to obtain and maintain regulatory approval of our product candidates, and any related restrictions, limitations and/or warnings in the label of an approved product candidate;
- the rate and degree of market acceptance of any of our product candidates;
- our ability to effectively manage the growth of our operations;
- our ability to attract, retain, and motivate executives and personnel;
- effects of system failures and security breaches;
- insurance expenses and exposure to uninsured liabilities;
- effects of tax rules;
- effects of any pandemic, epidemic, or outbreak of an infectious disease;
- the success of our existing collaboration and other license agreements and our ability to enter into new collaboration arrangements;
- our current and future relationships with and reliance on third parties including suppliers and manufacturers;
- our ability to obtain and maintain intellectual property protection for our technology and any of our product candidates;
- potential litigation relating to infringement or misappropriation of intellectual property rights;
- effects of natural and manmade disasters, public health emergencies and other natural catastrophic events;
- effects of sustained inflation, supply chain disruptions and major central bank policy actions;
- market and economic conditions;
- risks related to ownership of our common stock, including fluctuations in our stock price; and
- our ability to meet the requirements of and maintain listing of our common stock on Nasdaq or other public stock exchanges.

Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties.

You should read this Quarterly Report on Form 10-Q and the documents that we reference herein completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements. All forward-looking statements contained herein speak only as of the date of this Quarterly Report on Form 10-Q. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

As used in this Quarterly Report on Form 10-Q, unless otherwise stated or the context requires otherwise, references to "Precision," the "Company," "we," "us," and "our," refer to Precision BioSciences, Inc.

RISK FACTOR SUMMARY

Our business is subject to numerous risks and uncertainties, including those described in Part II. Item 1A. “Risk Factors” in this Quarterly Report on Form 10-Q. You should carefully consider these risks and uncertainties when investing in our common stock. Some of the principal risks and uncertainties include the following.

- *We have incurred significant operating losses since our inception and expect to continue to incur losses for the foreseeable future. We have not been profitable and may not achieve or maintain profitability.*
- *We will need substantial additional funding, and if we are unable to raise a sufficient amount of capital when needed on acceptable terms, or at all, we may be forced to delay, reduce or eliminate some or all of our research programs, product development activities and commercialization efforts.*
- *We have a limited operating history, which makes it difficult to evaluate our current business and future prospects and may increase the risk of your investment.*
- *ARCUS is a novel technology, making it difficult to predict the time, cost and potential success of product candidate development. We have not yet been able to assess the safety and efficacy of most of our product candidates in humans.*
- *We are heavily dependent on the successful development and translation of ARCUS, and due to the early stages of our product development operations, we cannot give any assurance that any product candidates will be successfully developed and commercialized.*
- *Adverse public perception of genome editing may negatively impact the developmental progress or commercial success of products that we develop alone or with collaborators.*
- *We face significant competition in industries experiencing rapid technological change, and there is a possibility that our competitors may achieve regulatory approval before us or develop product candidates or treatments that are safer or more effective than ours, which may harm our financial condition and our ability to successfully market or commercialize any of our product candidates.*
- *Our future profitability, if any, will depend in part on our ability and the ability of our collaborators to commercialize any products that we or our collaborators may develop in markets throughout the world. Commercialization of products in various markets could subject us to risks and uncertainties.*
- *Product liability lawsuits against us could cause us to incur substantial liabilities and could limit commercialization of any products that we develop alone or with collaborators.*
- *The regulatory landscape that will apply to development of therapeutic product candidates by us or our collaborators is rigorous, complex, uncertain and subject to change, which could result in delays or termination of development of such product candidates or unexpected costs in obtaining regulatory approvals.*
- *Clinical trials are difficult to design and implement, expensive, time-consuming and involve an uncertain outcome, and the inability to successfully and timely conduct clinical trials and obtain regulatory approval for our product candidates would substantially harm our business.*
- *Any product candidates that we or our collaborators or other licensees may develop will be novel and may be complex and difficult to manufacture, and if we experience manufacturing problems, it could result in delays in development and commercialization of such product candidates or otherwise harm our business.*
- *Even if we obtain regulatory approval for any products that we develop alone or with collaborators, such products will remain subject to ongoing regulatory requirements, which may result in significant additional expense.*
- *Even if any product we develop alone or with collaborators receives marketing approval, such product may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors and others in the medical community necessary for commercial success.*
- *Our future success depends on our key executives, as well as attracting, retaining and motivating qualified personnel.*
- *Our failure to meet the continued listing requirements of The Nasdaq Capital Market could result in the delisting of our common stock.*
- *Once we are no longer an emerging growth company, a smaller reporting company or otherwise no longer qualify for applicable exemptions, we will be subject to additional laws and regulations affecting public companies that will increase our costs and the demands on management and could harm our operating results.*

PART I. FINANCIAL INFORMATION

Item 1. Financial Statements.

PRECISION BIOSCIENCES, INC.
CONDENSED BALANCE SHEETS
(In thousands, except share and per share amounts)
(unaudited)

	<u>September 30, 2024</u>	<u>December 31, 2023</u>
Assets		
Current assets:		
Cash and cash equivalents	\$ 98,752	\$ 116,678
Accounts receivable	188	901
Marketable securities	2,450	—
Prepaid expenses	7,114	5,977
Convertible note receivable	—	11,897
Assets held for sale	189	487
Contract asset	1,359	—
Other current assets	471	419
Total current assets	<u>110,523</u>	<u>136,359</u>
Restricted cash	22,576	—
Property, equipment, and software—net	3,563	6,338
Intangible assets—net	388	400
Right-of-use assets—net	7,393	8,263
Investment in equity securities	3,206	3,206
Note receivable—net	5,385	4,990
Other assets	224	225
Total assets	<u>\$ 153,258</u>	<u>\$ 159,781</u>
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 958	\$ 2,968
Accrued compensation	3,592	4,978
Accrued research and development expenses	3,293	1,557
Deferred revenue	175	12,035
Loan payable—current portion	—	22,412
Lease liabilities	1,275	1,133
Other current liabilities	1,385	2,391
Current liabilities of discontinued operations	1,304	2,513
Total current liabilities	<u>11,982</u>	<u>49,987</u>
Loan payable—net of current portion	22,278	—
Deferred revenue	26,582	73,082
Lease liabilities	6,754	7,723
Warrant liability	10,608	—
Contract liabilities	10,000	10,000
Other noncurrent liabilities	188	—
Noncurrent liabilities of discontinued operations	—	128
Total liabilities	<u>88,392</u>	<u>140,920</u>
Stockholders' equity:		
Preferred stock: \$0.0001 par value— 10,000,000 shares authorized as of September 30, 2024 and December 31, 2023; no shares issued and outstanding as of September 30, 2024 and December 31, 2023	—	—
Common stock: \$0.000005 par value— 200,000,000 shares authorized as of September 30, 2024 and December 31, 2023; 7,507,536 shares issued and 7,480,521 shares outstanding as of September 30, 2024; 4,191,053 shares issued and 4,164,038 shares outstanding as of December 31, 2023	1	1
Additional paid-in capital	530,536	509,443
Accumulated deficit	(464,719)	(489,631)
Treasury stock	(952)	(952)
Total stockholders' equity	<u>64,866</u>	<u>18,861</u>
Total liabilities and stockholders' equity	<u>\$ 153,258</u>	<u>\$ 159,781</u>

See notes to condensed financial statements

PRECISION BIOSCIENCES, INC.
CONDENSED STATEMENTS OF OPERATIONS
(In thousands, except share and per share amounts)
(Unaudited)

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2024	2023	2024	2023
Revenue	\$ 576	\$ 13,120	\$ 68,058	\$ 41,689
Operating expenses				
Research and development	13,084	15,850	43,652	39,986
General and administrative	8,767	9,633	25,722	30,549
Total operating expenses	21,851	25,483	69,374	70,535
Operating loss	(21,275)	(12,363)	(1,316)	(28,846)
Other income (expense):				
Loss from equity method investment	(875)	(1,350)	(112)	(4,060)
Gain (loss) on changes in fair value	571	311	917	(458)
Gain on change in fair value of warrant liability	3,647	—	21,798	—
Interest expense	(256)	(576)	(1,390)	(1,651)
Interest income	1,763	1,870	5,269	5,859
(Loss) gain on disposal of assets	—	(2)	(254)	63
Total other income (expense)	4,850	253	26,228	(247)
(Loss) income from continuing operations	\$ (16,425)	\$ (12,110)	\$ 24,912	\$ (29,093)
Income (loss) from discontinued operations	—	4,031	—	(15,937)
Net (loss) income	\$ (16,425)	\$ (8,079)	\$ 24,912	\$ (45,030)
Net (loss) income per share				
Basic	\$ (2.25)	\$ (2.10)	\$ 3.87	\$ (11.90)
Diluted	\$ (2.25)	\$ (2.10)	\$ 3.78	\$ (11.90)
Weighted-average shares of common stock outstanding				
Basic	7,287,173	3,838,900	6,441,375	3,784,432
Diluted	7,287,173	3,838,900	6,590,885	3,784,432

See notes to condensed financial statements

PRECISION BIOSCIENCES, INC.
CONDENSED STATEMENTS OF CHANGES IN
STOCKHOLDERS' EQUITY
(In thousands, except share amounts)
(Unaudited)

	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Treasury Stock	Total Stockholders' Equity
	Shares	Amount				
Balance- December 31, 2022	3,725,689	\$ 1	\$ 489,696	\$ (428,312)	\$ (952)	\$ 60,433
Stock option exercises	1,718	—	30	—	—	30
Issuance of common stock under employee stock purchase plan	9,303	—	266	—	—	266
Share-based compensation expense	—	—	4,092	—	—	4,092
Restricted stock units vested	16,717	—	—	—	—	—
Proceeds from issuance of common stock, net of issuance cost	18,012	—	416	—	—	416
Net loss	—	—	—	(25,060)	—	(25,060)
Balance- March 31, 2023	3,771,439	\$ 1	\$ 494,500	\$ (453,372)	\$ (952)	\$ 40,177
Share-based compensation expense	—	—	3,874	—	—	3,874
Proceeds from issuance of common stock, net of issuance cost	77,509	—	1,881	—	—	1,881
Restricted stock units vested	13,499	—	—	—	—	—
Net loss	—	—	—	(11,891)	—	(11,891)
Balance- June 30, 2023	3,862,447	\$ 1	\$ 500,255	\$ (465,263)	\$ (952)	\$ 34,041
Share-based compensation expense	—	—	3,105	—	—	3,105
Issuance of common stock under employee stock purchase plan	8,798	—	104	—	—	104
Proceeds from issuance of common stock, net of issuance cost	11,494	—	(108)	—	—	(108)
Net loss	—	—	—	(8,079)	—	(8,079)
Balance- September 30, 2023	3,882,739	\$ 1	\$ 503,356	\$ (473,342)	\$ (952)	\$ 29,063
Balance- December 31, 2023	4,191,053	\$ 1	\$ 509,443	\$ (489,631)	\$ (952)	\$ 18,861
Issuance of common stock under employee stock purchase plan	9,037	—	112	—	—	112
Share-based compensation expense	—	—	2,906	—	—	2,906
Proceeds from issuance of common stock to collaboration partners and licensees	97,360	—	905	—	—	905
Proceeds from issuance of common stock and warrants through underwritten offering, net of issuance cost	2,500,000	—	4,610	—	—	4,610
Proceeds from issuance of common stock through ATM facility, net of issuance cost	98,943	—	1,224	—	—	1,224
Restricted stock units vested	46,861	—	—	—	—	—
Net income	—	—	—	8,588	—	8,588
Balance- March 31, 2024	6,943,254	\$ 1	\$ 519,200	\$ (481,043)	\$ (952)	\$ 37,206
Share-based compensation expense	—	—	2,928	—	—	2,928
Proceeds from issuance of common stock, net of issuance cost	25,000	—	300	—	—	300
Proceeds from issuance of common stock through ATM facility, net of issuance cost	144,735	—	1,531	—	—	1,531
Restricted stock units vested	37,396	—	—	—	—	—
Net income	—	—	—	32,749	—	32,749
Balance- June 30, 2024	7,150,385	\$ 1	\$ 523,959	\$ (448,294)	\$ (952)	\$ 74,714
Share-based compensation expense	—	—	3,199	—	—	3,199
Issuance of common stock under employee stock purchase plan	14,794	—	137	—	—	137
Proceeds from issuance of common stock through ATM facility, net of issuance cost	342,357	—	3,241	—	—	3,241
Net loss	—	—	—	(16,425)	—	(16,425)
Balance- September 30, 2024	7,507,536	\$ 1	\$ 530,536	\$ (464,719)	\$ (952)	\$ 64,866

See notes to condensed financial statements

PRECISION BIOSCIENCES, INC.
CONDENSED STATEMENTS OF CASH FLOWS
(In thousands)
(Unaudited)

	For the Nine Months Ended September 30,	
	2024	2023
Cash flows used in operating activities:		
Net income (loss)	\$ 24,912	\$ (45,030)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	2,950	5,538
Share-based compensation	9,033	11,071
Loss (gain) on disposal of assets	254	(63)
Gain on disposal of business	-	(8,446)
Non-cash interest expense	228	315
Amortization of right-of-use assets	870	1,161
(Gain) loss on changes in fair value	(917)	458
Loss from equity method investment	112	4,060
Amortization of discount on note receivable	(506)	(313)
Gain on change in fair value of warrant liability	(21,798)	—
Changes in operating assets and liabilities:		
Prepaid expenses	(1,137)	(1,047)
Marketable securities	607	—
Convertible note receivable	9,750	—
Accounts receivable	713	(2,773)
Contract asset	(1,359)	—
Other assets and other current assets	(147)	1,539
Accounts payable	(2,168)	(495)
Other liabilities and other current liabilities	(1,972)	(3,101)
Deferred revenue	(58,360)	(37,721)
Lease liabilities	(827)	(844)
Net cash used in operating activities	<u>(39,762)</u>	<u>(75,691)</u>
Cash flows (used in) provided by investing activities:		
Proceeds from disposal of business	-	8,000
Purchases of property, equipment and software	(153)	(1,983)
Purchases of intangible assets	(25)	(300)
Proceeds from sale of equipment	60	70
Net cash (used in) provided by investing activities	<u>(118)</u>	<u>5,787</u>
Cash flows provided by financing activities:		
Proceeds from stock option exercises	—	30
Proceeds from employee stock purchase plan	249	370
Proceeds from offering of common stock and warrants, net of issuance costs	43,393	2,159
Proceeds from issuance of common stock to collaboration partners and licensees	905	—
Repayment of revolving credit facility	(22,505)	—
Borrowings from term loan debt facility, net of issuance costs paid to lender	22,488	—
Net cash provided by financing activities	<u>44,530</u>	<u>2,559</u>
Net increase (decrease) in cash and cash equivalents	4,650	(67,345)
Cash, cash equivalents, and restricted cash — beginning of period	116,678	189,576
Cash, cash equivalents, and restricted cash — end of period	<u>\$ 121,328</u>	<u>\$ 122,231</u>
Reconciliation of cash, cash equivalents and restricted cash		
Cash and cash equivalents	\$ 98,752	\$ 122,231
Restricted cash	\$ 22,576	\$ —
Total of cash, cash equivalents and restricted cash	<u>\$ 121,328</u>	<u>\$ 122,231</u>
Supplemental disclosures of cash flow information:		
Fair value of convertible note received from disposal of business	\$ —	\$ 11,366
Cash paid for interest	<u>\$ 1,366</u>	<u>\$ 1,491</u>

See notes to condensed financial statements

Precision BioSciences, Inc.

Notes to Condensed Financial Statements (Unaudited)

NOTE 1: DESCRIPTION OF BUSINESS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Description of Business

Precision BioSciences, Inc. (the “Company”) was incorporated on January 26, 2006 under the laws of the State of Delaware and is based in Durham, North Carolina. The Company is a gene editing company dedicated to improving life by developing *in vivo* therapies for genetic and infectious diseases with the application of the Company’s wholly-owned proprietary ARCUS genome editing platform.

Since its inception, the Company has devoted substantially all of its efforts to research and development activities, recruiting skilled personnel, establishing its intellectual property portfolio and providing general and administrative support for these operations. The Company is subject to a number of risks similar to those of other companies conducting early-stage research and development of product candidates. Principal among these risks are the Company’s dependence on key individuals and intellectual property, competition from other products and companies, and the technical risks associated with the successful research, development and clinical manufacturing of its product candidates. The Company’s success is dependent upon its ability to continue to raise additional capital in order to fund ongoing research and development, obtain regulatory approval of its products, successfully commercialize its products, generate revenue, meet its obligations, and, ultimately, attain profitable operations.

Unaudited Interim Financial Information

The accompanying unaudited condensed financial statements and notes have been prepared pursuant to the rules and regulations of the Securities and Exchange Commission (“SEC”). Certain information and note disclosures normally included in the annual financial statements, prepared in accordance with accounting principles generally accepted in the U.S. (“GAAP”), have been condensed or omitted pursuant to those rules and regulations. These unaudited condensed financial statements should be read in conjunction with the Company’s audited financial statements and the notes thereto included in the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2023, filed with the SEC on March 27, 2024.

The unaudited condensed financial statements have been prepared on the same basis as the audited financial statements. In the opinion of management, all adjustments, consisting only of normal recurring adjustments necessary for a fair presentation of the Company’s condensed financial position as of September 30, 2024 and condensed results of operations for the three and nine months ended September 30, 2024 and 2023 and the condensed cash flows for the nine months ended September 30, 2024 and 2023, have been made. The Company’s condensed results of operations for the three and nine months ended September 30, 2024 are not necessarily indicative of the results of operations that may be expected for the year ending December 31, 2024.

Discontinued Operations

In August 2023, the Company announced its strategic decision to operate as a single platform company focused exclusively on developing *in vivo* gene editing therapies with the completion of the sale of its chimeric antigen receptor (“CAR”) T infrastructure to Imugene Limited, an Australian corporation (“Imugene Limited”), and its wholly-owned subsidiary Imugene (USA) Inc. (“Imugene US”), a Nevada corporation (collectively, “Imugene”). Additionally, the Company licensed its lead allogeneic CAR T candidate for cancer, azercabtagene zapreleucel (“azer-cel”), to Imugene.

Accordingly, the accompanying condensed financial statements have been recast for all periods presented to reflect the assets, liabilities and expenses related to the Company’s CAR T programs as discontinued operations (see Note 8, *Discontinued Operations*). The accompanying condensed financial statements are generally presented in conformity with the Company’s historical format.

Reverse Stock Split

On February 13, 2024, the Company amended its amended and restated certificate of incorporation in order to effect a 1-for-30 reverse stock split of its outstanding shares of capital stock (the "Reverse Stock Split"). As a result of the Reverse Stock Split, every 30 shares of the Company's common stock issued or outstanding were automatically reclassified into one new share of common stock, subject to the treatment of fractional shares as described below, without any action on the part of the holders. All historical share and per-share amounts reflected throughout the accompanying financial statements and other financial information in this Quarterly Report on Form 10-Q have been retroactively adjusted to reflect the Reverse Stock Split as if the split occurred as of the earliest period presented. The Reverse Stock Split did not affect the number of authorized shares of common stock or the par value of the common stock. No fractional shares were issued in connection with the Reverse Stock Split. Stockholders who would otherwise have been entitled to receive fractional shares as a result of the Reverse Stock Split were entitled to a cash payment in lieu thereof at a price equal to the fraction to which the stockholder would otherwise be entitled multiplied by the closing sales price per share of the common stock (as adjusted to give effect to the Reverse Stock Split) on The Nasdaq Capital Market on February 13, 2024, the last trading day immediately preceding the effective time of the Reverse Stock Split.

Summary of Significant Accounting Policies

The Company's complete listing of significant accounting policies is set forth in Note 1, *Description of Business and Summary of Significant Accounting Policies*, to the Notes to Condensed Financial Statements on its Annual Report on Form 10-K for the fiscal year ended December 31, 2023.

Recent Accounting Guidance Not Yet Adopted

In November 2023, the FASB issued ASU 2023-07, *Segment Reporting—Improvements to Reportable Segment Disclosures* ("ASU 2023-07"). ASU 2023-07 requires public entities to disclose their significant segment expense categories and amounts for each reportable segment. A significant segment expense is an expense that is significant to the segment, regularly provided to or easily computed from information regularly provided to the chief operating decision maker and included in the reported measure of segment profit or loss. This updated standard is effective for public entities for fiscal years beginning after December 15, 2023, and interim periods in fiscal years beginning after December 15, 2024. The Company is in process of evaluating the impact of this new guidance on its disclosure.

Revenue Recognition for Contracts with Customers

The Company's revenues are generated primarily through collaborative research, license, development and commercialization agreements.

ASC 606, *Revenue from Contracts with Customers* ("ASC 606") applies to all contracts with customers, except for contracts that are within the scope of other standards. Under ASC 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that an entity determines are within the scope of ASC 606, the entity performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation.

At contract inception, once the contract is determined to be within the scope of ASC 606, the Company evaluates the performance obligations promised in the contract that are based on goods and services that will be transferred to the customer and determines whether those obligations are both (i) capable of being distinct and (ii) distinct in the context of the contract. Goods or services that meet these criteria are considered distinct performance obligations. If both these criteria are not met, the goods and services are combined into a single performance obligation. The Company then recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied. Arrangements that include rights to additional goods or services that are exercisable at a customer's discretion are generally considered options. The Company assesses if these options provide a material right to the customer and if so, these options are considered performance obligations. The exercise of a material right is accounted for as a contract modification for accounting purposes.

The Company recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) each performance obligation is satisfied at a point in time or over time, and if over time this is based on the use of an output or input method. For the nine months ended September 30, 2024, the Company did not record any cumulative catch-up adjustments on its contracts with customers. During the nine months ended September 30, 2024, the Company recorded \$58.0 million in revenue that was included in deferred revenue as of December 31, 2023.

Invoices issued as stipulated in contracts prior to revenue recognition are recorded as deferred revenue. Amounts expected to be recognized as revenue within the 12 months following the balance sheet date are classified as deferred revenue within current liabilities in the accompanying condensed balance sheets. Amounts not expected to be recognized as revenue within the 12 months following the balance sheet date are classified as noncurrent deferred revenue. Amounts recognized as revenue, but not yet invoiced are generally recognized as contract assets in the other current assets line item in the accompanying condensed balance sheets.

Milestone Payments – If an arrangement includes development and regulatory milestone payments, the Company evaluates whether the milestones are considered probable of being reached and estimates the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the associated milestone value is included in the transaction price. Milestone payments that are not within the Company’s or the licensee’s control, such as regulatory approvals, are not considered probable of being achieved until those approvals are received and therefore revenue recognized is constrained as management is unable to assert that a reversal of revenue would not be probable. The transaction price is then allocated to each performance obligation on a relative standalone selling price basis, for which the Company recognizes revenue as or when the performance obligations under the contract are satisfied. At the end of each subsequent reporting period, the Company re-evaluates the probability of achievement of such development milestones and any related constraint, and, if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect collaboration revenues and earnings in the period of adjustment.

Royalties – For arrangements that include sales-based royalties, including milestone payments based on a level of sales, which are the result of a customer-vendor relationship and for which the license is deemed to be the predominant item to which the royalties relate, the Company recognizes revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation linked to some or all of the royalty has been satisfied or partially satisfied. To date, the Company has not recognized any royalty revenue resulting from any of its licensing arrangements.

Significant Financing Component – In determining the transaction price, the Company adjusts consideration for the effects of the time value of money if the timing of payments provides the Company with a significant benefit of financing. The Company does not assess whether a contract has a significant financing component if the expectation at contract inception is such that the period between payment by the licensees and the transfer of the promised goods or services to the licensees will be one year or less. The Company assessed each of its revenue arrangements in order to determine whether a significant financing component exists and concluded that a significant financing component does not exist in any of its arrangements.

Collaborative Arrangements – The Company has entered into collaboration agreements, which are within the scope of ASC 606, to discover, develop, manufacture and commercialize product candidates. The terms of these agreements typically contain multiple promises or obligations, which may include: (1) licenses, or options to obtain licenses, to use the Company’s technology, (2) research and development activities to be performed on behalf of the collaboration partner, and (3) in certain cases, services in connection with the manufacturing of preclinical and clinical material. Payments the Company receives under these arrangements typically include one or more of the following: non-refundable, upfront license fees; option exercise fees; funding of research and/or development efforts; clinical and development, regulatory, and sales milestone payments; and royalties on future product sales.

The Company analyzes its collaboration arrangements to assess whether the collaboration agreements are within the scope of ASC 808, *Collaborative Arrangements* (“ASC 808”) to determine whether such arrangements involve joint operating activities performed by parties that are both active participants in the activities and exposed to significant risks and rewards dependent on the commercial success of such activities. This assessment is performed throughout the life of the arrangement based on changes in the responsibilities of all parties in the arrangement. For collaboration arrangements within the scope of ASC 808 that contain multiple elements, the Company first determines which elements of the collaboration are deemed to be within the scope of ASC 808 and those that are more reflective of a vendor-customer relationship and, therefore, are within the scope of ASC 606. For elements of collaboration arrangements that are accounted for pursuant to ASC 808, an appropriate recognition method is determined and applied

consistently, generally by analogy to ASC 606. For those elements of the arrangement that are accounted for pursuant to ASC 606, the Company applies the five-step model described above.

For additional discussion of accounting for collaboration revenues, see Note 6, *Collaboration and License Agreements*.

Derivative Financial Instruments

On March 1, 2024, the Company entered into an Underwriting Agreement with Guggenheim Securities, LLC (the “Underwriting Agreement”), relating to the offering, issuance and sale (the “March 2024 Public Offering”) of (a) 2,500,000 shares of the Company’s common stock, par value \$0.000005 per share, and (b) warrants to purchase up to an aggregate of 2,500,000 shares of the Company’s common stock. The warrants have a five-year term and an exercise price of \$20.00 per share. Each warrant is exercisable immediately upon issuance, subject to certain limitations on beneficial ownership.

The Company evaluates all of its financial instruments, including issued stock purchase warrants, to determine if such instruments are derivatives or contain features that qualify as embedded derivatives, pursuant to ASC 480, *Distinguishing Liabilities from Equity*, and ASC 815, *Derivatives and Hedging* (“ASC 815”). The classification of derivative instruments, including whether such instruments should be recorded as liabilities or as equity, will be re-assessed at the end of each reporting period.

The warrants issued in the March 2024 Public Offering were recognized as derivative warrant liabilities in accordance with ASC 815. Accordingly, the Company recognized the warrant instruments as liabilities at fair value and will remeasure the instruments to fair value at each balance sheet date, with changes in fair value recognized in the Company’s condensed statements of operations, until exercised or expiration. The fair value of the warrants were initially estimated using a Black-Scholes option pricing model. Derivative warrant liabilities are classified as non-current liabilities as their liquidation is not reasonably expected to require the use of current assets or require the creation of current liabilities.

The Company does not use derivative instruments to hedge exposures to cash flow, market, or foreign currency risks.

Restricted Cash

Restricted cash includes a cash security account with Banc of California pursuant to the 2024 Loan and Security Agreement (as defined in Note 3, *Debt*, below). The balance is classified as long-term on the Company’s balance sheets as the maturity date under the 2024 Loan and Security Agreement is June 30, 2027. As of September 30, 2024, the Company had a restricted cash balance of \$22.6 million. There was no restricted cash as of December 31, 2023.

NOTE 2: FAIR VALUE MEASUREMENTS

The following represents assets and liabilities measured at fair value on a recurring basis by the Company (in thousands):

September 30, 2024	Fair Value	Level 1	Level 2	Level 3
Assets:				
Money market funds	\$ 14,513	\$ 14,513	\$ —	\$ —
Investment in iECURE	3,206	—	—	3,206
Imugene Marketable Securities	2,450	2,450	—	—
Assets held for sale	189	—	—	189
	<u>\$ 20,358</u>	<u>\$ 16,963</u>	<u>\$ -</u>	<u>\$ 3,395</u>
Liabilities:				
Final payment fee	\$ 188	\$ —	\$ 188	\$ —
Warrant liability	10,608	—	—	10,608
	<u>\$ 10,796</u>	<u>\$ —</u>	<u>\$ 188</u>	<u>\$ 10,608</u>

December 31, 2023	Fair Value	Level 1	Level 2	Level 3
Assets:				
Money market funds	\$ 13,960	\$ 13,960	\$ —	\$ —
Investment in iECURE	3,206	—	—	3,206
Imugene convertible note	11,897	—	11,897	—
Assets held for sale	487	—	—	487
	<u>\$ 29,550</u>	<u>\$ 13,960</u>	<u>\$ 11,897</u>	<u>\$ 3,693</u>
Liabilities:				
Final payment fee	\$ 215	\$ —	\$ 215	\$ —
	<u>\$ 215</u>	<u>\$ —</u>	<u>\$ 215</u>	<u>\$ —</u>

The following represents a reconciliation of assets measured and carried at fair value on a recurring basis with the use of significant unobservable inputs (Level 3) for the nine months ended September 30, 2024 (in thousands). The warrant reconciliation is disclosed in Note 13, *Warrants*:

	Investment in iECURE	Assets held for sale
Balance December 31, 2023	\$ 3,206	\$ 487
Gains from changes in fair value included in earnings	—	—
Assets sold	—	(109)
Write-offs	—	(189)
Balance September 30, 2024	<u>\$ 3,206</u>	<u>\$ 189</u>

The carrying amounts of the Company's accounts receivable, accounts payable, and accrued expenses and other current liabilities, approximate their respective fair values due to their short-term nature. The Company uses a three-tier fair value hierarchy to classify and disclose all assets and liabilities measured at fair value on a recurring basis and to minimize the use of unobservable inputs when determining their fair value. The three tiers are defined as follows:

Level 1—Observable inputs based on unadjusted quoted prices in active markets for identical assets or liabilities

Level 2—Inputs, other than quoted prices in active markets, which are observable either directly or indirectly

Level 3—Unobservable inputs for which there is little or no market data, which require the Company to develop its own assumptions

Cash Equivalents

As of September 30, 2024 and December 31, 2023, the Company held cash equivalents which were composed of investments in money market funds. The Company classifies investments in money market funds within Level 1 of the fair value hierarchy as the prices are available from quoted prices in active markets.

Investment in iECURE

In August 2021, the Company entered into an Equity Issuance Agreement with iECURE, Inc. (“iECURE”), pursuant to which iECURE issued the Company common stock in iECURE (the “iECURE equity”) as additional consideration for a license to use the Company’s PCSK9-directed ARCUS nuclease to insert genes into the PCSK9 locus to develop treatments for four pre-specified rare genetic diseases. On issuance, the Company accounted for the iECURE equity at fair value under ASC 825, *Financial Instruments*. Accordingly, the Company adjusts the carrying value of the iECURE equity to fair value each reporting period with any changes in fair value recorded to other income (expense). There was no change in the fair value of the iECURE equity during the nine months ended September 30, 2024.

The Company classifies the iECURE equity within Level 3 of the fair value hierarchy as the assessed fair value was based on significant unobservable inputs given iECURE equity is not traded on a public exchange.

Assets Held for Sale

The fair values of property, plant, and equipment held for sale are classified as Level 3 in the fair value hierarchy due to a mix of unobservable inputs utilized such as independent research in the market as well as actual quotes from market participants.

Imugene Convertible Note

As partial consideration for the assets acquired by Imugene in connection with the asset purchase agreement (the “Imugene Purchase Agreement”), Imugene issued to the Company convertible notes pursuant to the terms and conditions set forth in a convertible note subscription deed (collectively, the “Imugene Convertible Note”) in an aggregate principal amount of \$13 million. The Imugene Convertible Note matured on August 30, 2024 and resulted in payment to the Company of \$9.75 million in cash and \$3.25 million in ordinary shares of Imugene Limited. The Company received 87,999,186 ordinary shares of Imugene Limited on August 30, 2024, of which the Company sold 16,107,500 shares as of September 30, 2024. The assessed fair value of the remaining ordinary shares at September 30, 2024 was \$2.5 million. During the nine months ended September 30, 2024, the Company recognized a gain of \$0.9 million on the Imugene Convertible Note and the ordinary shares still held by the Company. The Company classifies the Imugene ordinary shares within Level 1 of the fair value hierarchy as the prices are available from quoted prices in active markets.

Final Payment Fee

The final payment fee under the Banc of California Revolving Line was waived in connection with the Company entering into the 2024 Term Loan (the Revolving Line and the 2024 Term Loan each as defined in Note 3, *Debt*, below) and the Company will instead be required to pay a final payment fee of \$225,000 upon maturity of the 2024 Term Loan in June 2027. The final payment fee on the 2024 Term Loan was initially measured at fair value and recorded as debt discount to be amortized to interest expense over the life of the 2024 Term Loan. Accordingly, the Company will adjust the carrying value of the final payment fee to fair value each reporting period with any changes in fair value recorded to other income (expense). There was an assessed loss on change in fair value of the final payment fee of less than \$0.1 million during the nine months ended September 30, 2024.

The Company classifies the final payment fee within Level 2 of the fair value hierarchy as the assessed fair value is based on observable market inputs including the Company’s current borrowing rate on the 2024 Term Loan. The final payment fee is included in the other long term liabilities within the condensed balance sheet as of September 30, 2024 and was included in other current liabilities within the condensed balance sheet as of December 31, 2023.

Warrant Liability

As of September 30, 2024, warrants representing 2,500,000 shares of common stock issued in the March 2024 Public Offering were outstanding. These warrants are classified as a liability since the warrants meet the classification requirements for liability accounting pursuant to ASC 815. This liability is subject to remeasurement at each balance sheet date until the warrants are exercised or expire, and any change in fair value is recognized in the Company’s condensed statements of operations. The Company classifies the warrant liability within Level 3 of the fair value hierarchy as the assessed fair value is based on both observable and unobservable market inputs including the Company’s stock price, risk-free rate, and volatility.

NOTE 3: DEBT**Loan and Security Agreement**

Pursuant to the terms of the loan and security agreement, as amended (the “2019 Loan and Security Agreement”), with Banc of California (formerly known as Pacific Western Bank) the Company was entitled to request advances on a revolving line of credit of up to an aggregate principal amount of \$30.0 million (as amended from time to time, the “Revolving Line”) at an annual interest rate equal to the greater of (a) 0.75% above the Prime Rate (as defined in the 2019 Loan and Security Agreement) and (b) 4.25%.

On June 21, 2024, the Revolving Line maturity date was extended from June 23, 2024 to July 31, 2024, with all outstanding principal amounts due upon maturity. Pursuant to the terms of the 2019 Loan and Security Agreement, the Company was required to maintain an aggregate balance of unrestricted cash at Banc of California (not including amounts in certain specified accounts) equal to or greater than \$10.0 million.

On July 31, 2024, the Company entered into an amended and restated loan and security agreement (the “2024 Loan and Security Agreement”) with Banc of California pursuant to which Banc of California provided the Company with a term loan with a principal amount of \$22.5 million (the “2024 Term Loan”). The proceeds from the 2024 Term Loan were used to repay the \$22.5 million outstanding principal balance under the Revolving Line, and pursuant to the terms of the 2024 Loan and Security Agreement, the Revolving Line was terminated.

The maturity date under the 2024 Loan and Security Agreement is June 30, 2027 (the “2024 Term Loan Maturity Date”). The Company may prepay all or a portion of the amounts due under the 2024 Term Loan without penalty or premium at any time, provided that if the Company refinances the 2024 Term Loan with borrowings from another lender, the Company is required to pay Banc of California an early termination fee of \$100,000. Once repaid, the Company may not reborrow amounts under the 2024 Term Loan.

The 2024 Term Loan bears interest at an annual rate equal to the greater of (i) 1.50% below the Prime Rate (as defined in the 2024 Loan and Security Agreement) then in effect or (ii) 4.50%. As of September 30, 2024, the stated interest rate on the 2024 Term Loan was 6.50% and the effective interest rate was 6.99%.

Upon the earliest to occur of the Term Loan Maturity Date, the date that the Company repays the 2024 Term Loan and elects to terminate the 2024 Term Loan, and the date that the 2024 Term Loan becomes due or Banc of California elects to terminate the 2024 Loan and Security Agreement in connection with an event of default thereunder, the Company is required to pay Banc of California a fee of \$225,000.

Under the terms of the 2024 Loan and Security Agreement, the Company granted Banc of California a security interest in a cash security account at Banc of California (the “Cash Security Account”), and Banc of California agreed to terminate all other security interests it has in the Company’s assets. The Company is required to maintain an aggregate unencumbered balance in the Cash Security Account at least equal to the outstanding principal amount of the 2024 Term Loan then outstanding.

The 2024 Loan and Security Agreement includes customary representations, warranties and covenants (affirmative and negative), including restrictions on mergers by the Company with and into other companies, and the incurrence of secured indebtedness, in each case, subject to specified exceptions. Certain of the restrictive covenants, including covenants related to capital expenditures, transactions with affiliates, subordinated debt, inventory and equipment, and encumbrances on the Company’s assets (other than the Cash Security Account) included in the 2019 Loan and Security Agreement were deleted.

The 2024 Loan and Security Agreement also includes standard events of default, including in the event of a material adverse change. Upon the occurrence of an event of default, Banc of California may declare all outstanding obligations immediately due and payable, take such other actions as are set forth in the 2024 Loan and Security Agreement and increase the interest rate otherwise applicable to the amount outstanding under the 2024 Loan and Security Agreement by an additional 3.00%.

As of September 30, 2024, \$22.5 million in borrowings were outstanding under the 2024 Term Loan and the unamortized debt discount balance was \$0.2 million.

NOTE 4: COMMITMENTS AND CONTINGENCIES

Litigation

The Company is subject to various legal matters and claims in the ordinary course of business. Although the results of legal proceedings and claims cannot be predicted with certainty, in the opinion of management, there are currently no such known matters that will have a material effect on the financial condition, results of operations or cash flows of the Company.

Servier Program Purchase Agreement

On April 9, 2021, the Company entered into a program purchase agreement (the "Program Purchase Agreement") with Les Laboratoires Servier and Institut de Recherches Internationales Servier (collectively, "Servier"), pursuant to which the Company reacquired all of its global development and commercialization rights previously granted to Servier pursuant to the Development and Commercial License Agreement by and between Servier and the Company, dated February 24, 2016, as amended (the "Servier Agreement"), and mutually terminated the Servier Agreement.

The Program Purchase Agreement requires the Company to make certain payments to Servier based on the achievement of regulatory and commercial milestones for each product. Management assessed the likelihood of each of the regulatory and commercial milestones included in the Program Purchase Agreement in accordance with ASC 450, *Contingencies*. If the assessment of a contingency indicates that it is probable that the milestone will be achieved and the amount of the liability can be estimated, then the estimated liability would be accrued in the Company's condensed financial statements.

Accordingly, contingent liabilities of \$10.0 million related to the Program Purchase Agreement are accrued and included in contract liabilities in the condensed balance sheets as of September 30, 2024 and December 31, 2023.

Leases

The Company has an operating lease for real estate in North Carolina and does not have any finance leases.

The elements of lease expense were as follows:

(in thousands)	For the Nine Months Ended September 30,	
	2024	2023
Lease Cost		
Operating lease cost	\$ 1,458	\$ 1,410
Short-term lease cost	568	555
Variable lease cost	316	610
Sublease income	(320)	(45)
Total Lease Cost	\$ 2,022	\$ 2,530
Other Information		
Operating cash flows used for operating leases	1,403	1,799
Operating right-of-use assets obtained in exchange for lease obligations	—	2,491
Operating lease liabilities arising from obtaining right-of-use assets	—	(1,864)
Operating Leases		
Weighted-average remaining lease term (in years)	4.8	0.8
Operating Leases		
Weighted-average discount rate	9.2%	8.0%

Pursuant to the Imugene Purchase Agreement, Imugene subleases from the Company space at the Company's headquarters (the "Imugene Sublease"). As the Company is not relieved of its primary obligation to the lessor under the terms of the Imugene Sublease, the Company will continue to carry the related right-of-use assets and lease liabilities on its Condensed Balance Sheets and will net sublease income with lease cost in its condensed statements of operations.

Future minimum lease payments under non-cancelable operating leases with terms of greater than one year as of September 30, 2024, were as follows:

(in thousands)	Amount
2024 (remainder of year)	\$ 484
2025	1,962
2026	2,019
2027	2,078
2028	2,140
2029 and beyond	1,269
Total lease payments	9,952
Less: imputed interest	1,923
Total operating lease liabilities	\$ 8,029

Guarantees

The Company agreed to act as a guarantor of Imugene’s assumption of the Company’s lease for its Manufacturing Center for Advanced Therapeutics (the “MCAT Lease”) through the lease expiration date of August 31, 2027. If Imugene (including any successor or assignee of Imugene) fails to pay rent due on the MCAT Lease, the lessor may have contractual recourse against the Company.

As of September 30, 2024, the Company’s guarantee consists of a contingent liability for aggregate minimum lease payments of approximately \$4.7 million. No contract liability for the Company’s guarantee of Imugene’s performance on the MCAT Lease was recorded as of September 30, 2024, as it was not deemed probable that Imugene will be in default under the MCAT Lease.

Supply Agreements

The Company enters into contracts in the normal course of business with contract manufacturing organizations (“CMOs”) for the manufacture of clinical trial materials and contract research organizations (“CROs”) for clinical trial services. These agreements provide for termination at the request of either party with less than one-year’s notice and are, therefore, cancelable contracts. If canceled, these agreements are not anticipated to have a material effect on the financial condition, results of operations, or cash flows of the Company.

NOTE 5: STOCKHOLDERS’ EQUITY

Capital Structure

As a result of the Reverse Stock Split, every 30 shares of the Company’s common stock issued or outstanding were automatically reclassified into one new share of common stock, subject to the treatment of fractional shares as described below, without any action on the part of the holders. The Reverse Stock Split did not affect the number of authorized shares of common stock or the par value of the common stock.

On March 1, 2024, the Company entered into the Underwriting Agreement relating to the March 2024 Public Offering of (i) 2,500,000 shares of the Company’s common stock, par value \$0.000005 per share, and (ii) warrants to purchase up to an aggregate of 2,500,000 shares of the Company’s common stock. The warrants have a five-year term and an exercise price of \$20.00 per share. Each warrant is exercisable immediately upon issuance, subject to certain limitations on beneficial ownership. The price to the public in the March 2024 Public Offering was \$16.00 per share of common stock and accompanying warrants, which resulted in approximately \$37.0 million of net proceeds to the Company after deducting the underwriting discount and offering expenses of approximately \$3.0 million.

NOTE 6: COLLABORATION AND LICENSE AGREEMENTS

TG Therapeutics

On January 7, 2024, the Company entered into a license agreement (the “TG License Agreement”) with TG Cell Therapy, Inc. (“TG Subsidiary”) and its parent company, TG Therapeutics, Inc. (“TG Parent” and, together with TG Subsidiary, “TG Therapeutics”), pursuant to which the Company granted TG Subsidiary certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize the Company’s allogeneic CAR T therapy azer-cel for autoimmune diseases and other indications outside of cancer.

Under the TG License Agreement, the Company is entitled to receive an upfront cash payment of \$10.0 million (the “TG Upfront Payment”). The TG Upfront Payment of \$10.0 million is comprised of (i) a \$5.25 million cash payment that was paid to the Company on February 5, 2024, (ii) a \$2.25 million cash payment that was paid to the Company on February 5, 2024, in exchange for 97,360 shares of the Company’s common stock at a price of \$23.10 per share, a 100% premium to the 30-day VWAP prior to the date of the TG License Agreement, and (iii) a deferred cash payment of \$2.5 million due within 12 months following the date of the TG License Agreement, payable in exchange for such number of shares of the Company’s common stock determined based on a price per share equal to the greater of (A) a 100% premium to the VWAP of the Company’s common stock for the 30 trading days prior to the date of payment or (B) a minimum price of \$11.1660 determined in accordance with Nasdaq Listing Rule 5635(d) (the “Minimum Price”).

The Company is also entitled to an additional cash payment of \$7.5 million in the event that TG Therapeutics achieves a certain clinical milestone that is expected to be achieved in the near-term (the “Initial Milestone Payment”), and additional payments upon the achievement of additional specified milestones of up to \$288.6 million (the “Additional TG Milestone Payments”). As described below, up to \$10.0 million of the cash payments potentially payable to the Company are payable in exchange for the issuance to TG Subsidiary by the Company of shares of the Company’s common stock (the “Company Stock Issuances”). The Initial Milestone Payment of \$7.5 million, if payable, will consist of (i) a \$5.25 million cash milestone payment and (ii) a \$2.25 million cash payment payable in exchange for such number of shares of the Company’s common stock determined based on a price per share equal to the greater of (A) a 100% premium to the VWAP of the Company’s common stock for the 30 trading days prior to the achievement of such milestone or (B) the Minimum Price.

The Additional TG Milestone Payments become due upon the achievement of certain milestones as specified in the TG License Agreement. Included within the Additional TG Milestone Payments is a potential payment of \$3.0 million in connection with achievement of a milestone specified in the TG License Agreement, payable in exchange for such number of shares of the Company’s common stock determined based on a price per share equal to the greater of (A) a 100% premium to the VWAP of the Company’s common stock for the 30 trading days prior to the achievement of such milestone or (B) the Minimum Price.

Subject to the terms and conditions of the TG License Agreement, TG Therapeutics is permitted to pay up to 50% of the value of each additional milestone payment (other than the Additional Milestone Payment described above that would, upon achievement, involve the issuance of \$3.0 million of shares of the Company’s common stock) in freely tradable shares of common stock of TG Parent, valued based on the VWAP of the TG Parent shares of common stock on Nasdaq for the 30 trading days prior to the achievement of the applicable milestone.

If a licensed product under the TG License Agreement is approved and sold, TG Therapeutics is also required to pay the Company tiered royalties ranging from high-single-digit to low-double-digit percentages on net sales of the licensed product.

The Company assessed the TG License Agreement in accordance with ASC 606 and concluded that the promises in the TG License represent a transaction with a customer. The Company has concluded that the TG License Agreement contains the following promises: (i) the license to develop, manufacture, and commercialize non-oncological applications of azer-cel, (ii) deliver to TG Therapeutics a single batch of released clinical trial material (“CTM”) for azer-cel, (iii) designation of TG Therapeutics as the party with which Imugene must enter into a clinical supply agreement, and (iv) joint steering committee (“JSC”) participation. The designation of TG Therapeutics to Imugene and JSC participation were determined to be immaterial promises as the time commitment and related costs associated with performance are expected to be inconsequential to the total consideration in the contract. Accordingly, the Company concluded that the promise of the license and single batch of CTM are the two performance obligations.

The Company concluded the TG License Agreement represents functional intellectual property in accordance with ASC 606 as the Company will not be providing any additional services to TG Therapeutics outside of the right to use the licensed intellectual property and supply of CTM. During the nine months ended September 30, 2024, the Company recognized revenue under the TG License Agreement of \$8.0 million. There was no revenue recognized under the TG License Agreement in the three months ended September 30, 2024. A contract asset related to the TG License Agreement amounted to \$1.4 million as of September 30, 2024.

Sale of Azer-cel CAR T Platform to Imugene for Cancer

On August 15, 2023, the Company entered into the Imugene Purchase Agreement, pursuant to which Imugene US acquired the Company’s manufacturing infrastructure used in the development and manufacture of azer-cel, including assuming the lease to the Company’s manufacturing facility and certain contracts of the Company with respect to the Company’s manufacturing facility, and related equipment, supplies, azer-cel clinical trial inventory and other assets related to the Company’s CAR T cell therapy platform.

Additionally, in connection with the Imugene Purchase Agreement, on August 15, 2023, the Company and Imugene US entered into a license agreement (the “Imugene License Agreement”), pursuant to which the Company granted Imugene US certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize oncological applications of the Company’s allogeneic CAR

T therapy, azer-cel, and up to three additional research product candidates directed to targets that Imugene US may nominate prior to the fifth anniversary of the effective date of the Imugene License Agreement, pursuant to the terms of the Imugene License Agreement.

Under the Imugene License Agreement, the Company is eligible to receive milestone payments of up to an aggregate of \$206 million upon successful completion of certain development and regulatory milestones. In addition to the milestone payments, the Company is eligible to receive double-digit royalties on net sales of such licensed products. The Company is also eligible to receive mid-single digit percentage-based fees for certain change of control transactions involving Imugene and for partnering transactions involving a licensed product.

Unless earlier terminated, the Imugene License Agreement, including Imugene's obligations to pay royalties to the Company thereunder, will remain in effect on a licensed product-by-licensed product and country-by-country basis until the expiration of a defined royalty term for each licensed product and country as specified in the Imugene License Agreement.

As of September 30, 2024, management has constrained all variable consideration related to milestone payments in the Imugene License Agreement given the level of uncertainty associated with achievement of the milestone payments. Accordingly, no revenue was recognized under the Imugene License Agreement during the nine months ended September 30, 2024 and September 30, 2023.

Collaboration and License Agreement with Novartis

On June 14, 2022, the Company entered into a collaboration and license agreement (the "Novartis Agreement") with Novartis Pharma AG ("Novartis"), which became effective on June 15, 2022 (the "Novartis Effective Date"), to collaborate to discover and develop *in vivo* gene editing products incorporating the Company's custom ARCUS nucleases for the purpose of seeking to research and develop potential treatments for certain diseases (collectively referred to as licensed products). Any initial licensed products under the Novartis Agreement will be developed for the potential treatment of certain hemoglobinopathies, including sickle cell disease and beta thalassemia.

During the three months ended September 30, 2024, and 2023, the Company recognized revenue under the Novartis Agreement of \$0.6 million and \$7.6 million, respectively. During the nine months ended September 30, 2024, and 2023, the Company recognized revenue under the Novartis Agreement of \$5.9 million and \$18.2 million, respectively. Deferred revenue related to the Novartis Agreement amounted to \$26.8 million and \$32.4 million as of September 30, 2024 and December 31, 2023, respectively, of which \$0.2 million and \$7.4 million, respectively, was included in current liabilities within the condensed balance sheets.

Development and License Agreement with Prevail

On November 19, 2020, the Company entered into a development and license agreement with Eli Lilly and Company ("Lilly") to collaborate to discover and develop *in vivo* gene editing products incorporating the Company's ARCUS nucleases to utilize ARCUS for the research and development of potential *in vivo* therapies for genetic disorders, which was subsequently assigned to Prevail Therapeutics Inc., a wholly-owned subsidiary of Eli Lilly and Company ("Prevail"), effective November 1, 2022 (the "Original Prevail Agreement").

On June 30, 2023, the Company entered into an amended and restated development and license agreement (the "Prevail Agreement") with Prevail. The Prevail Agreement amended and restated the Original Prevail Agreement. Pursuant to the terms of the Prevail Agreement, Prevail and the Company continued to collaborate on developing the Company's ARCUS nucleases for the research and development of potential *in vivo* therapies for genetic disorders, including Duchenne muscular dystrophy, a liver-directed target, and a central nervous system directed target. Pursuant to the Prevail Agreement, manufacturing initial clinical trial material for the first licensed product, which was previously the Company's responsibility to conduct at Prevail's expense, instead became Prevail's responsibility at Prevail's expense.

On April 11, 2024, the Company received written notice from Prevail of its termination of the Prevail Agreement. Prevail's notice informed the Company that Prevail was exercising its right pursuant to Section 15.3.2 of the Prevail Agreement to terminate the Prevail Agreement in its entirety without cause upon 90 days' prior written notice to the Company. The Company subsequently exercised its rights to the return of the three programs. The termination was effective on July 10, 2024.

For the three months ended September 30, 2024, the Company recognized no revenue under the Prevail Agreement as it was terminated in the prior quarter. The Company recognized revenue of \$5.5 million for the three months ended September 30, 2023. During the nine months ended September 30, 2024 and 2023, the Company recognized revenue under the Prevail Agreement of \$52.7 million and \$23.4 million, respectively. The Company has no deferred revenue related to the Prevail Agreement as of September 30,

2024 due to the termination. Deferred revenue related to the Prevail Agreement amounted to \$52.7 million as of December 31, 2023, of which \$4.7 million was included in current liabilities within the condensed balance sheets.

Development and License Agreement with iECURE

In August 2021, the Company entered into a development and license agreement with iECURE and an equity issuance agreement, pursuant to which iECURE issued the Company common stock in iECURE.

The Company adjusts the carrying value of the iECURE equity to fair value each reporting period with any changes in fair value recorded to other income (expense). There was no change in the fair value of the iECURE equity during the nine months ended September 30, 2024. During the nine months ended September 30, 2023, the Company recorded a \$0.8 million decrease in the carrying value of its iECURE equity to adjust to fair value as a result of dilution from iECURE's Series A-1 equity issued in such period.

License Agreement with Caribou

In February 2024, the Company announced it had granted Caribou Biosciences, Inc. ("Caribou"), a leading CRISPR genome-editing cell therapy company, a non-exclusive, worldwide license, with the right to sublicense, to one of the Company's foundational cell therapy patent families for use with CRISPR-based therapies in the field of human therapeutics. Under the terms of the agreement, the Company received an upfront payment that has been recognized as revenue and, upon commercialization by Caribou, will receive royalties on net sales of licensed products. In addition, for each occurrence of certain strategic transactions involving Caribou, the Company is entitled to receive a specific tiered milestone payment.

NOTE 7: SHARE-BASED COMPENSATION

The Company previously granted stock options under its 2015 Stock Incentive Plan (the "2015 Plan"). As of September 30, 2024 there were 29,935 stock options outstanding under the 2015 Plan and no remaining stock options available to be granted under the 2015 Plan.

On March 12, 2019, the Company's board of directors adopted, and, on March 14, 2019 the Company's stockholders approved, the Precision BioSciences, Inc. 2019 Incentive Award Plan and the 2019 Employee Stock Purchase Plan ("2019 ESPP"), both of which became effective on March 27, 2019. On April 24, 2024, the Company's board of directors adopted, and on June 4, 2024, the Company's stockholders approved, the amendment and restatement of the Precision BioSciences, Inc. 2019 Incentive Award Plan (as amended and restated, the "2019 Plan").

The 2019 Plan provides for the grant of incentive stock options, non-qualified stock options, stock appreciation rights, restricted stock, restricted stock units and other share-based awards. The 2019 Plan had 196,007 stock options and 989,440 restricted stock units ("RSUs") outstanding as of September 30, 2024.

The number of shares available for issuance under the 2019 Plan initially equaled 158,333 shares of common stock. The 2019 Plan provides for an annual increase to the number of shares of common stock available for issuance on the first day of each calendar year beginning January 1, 2020 and ending on and including January 1, 2029 by an amount equal to the lesser of (i) 4% of the aggregate number of shares of common stock outstanding on the final day of the immediately preceding calendar year and (ii) such smaller number of shares of common stock as determined by the board of directors. As of September 30, 2024, the aggregate number of shares available for issuance under the 2019 Plan has been increased by 534,177 pursuant to this provision. Additionally, the number of shares available for issuance under the plan was increased by an additional 630,000 shares in connection with the amendment and restatement of the 2019 Plan approved at the Company's annual meeting of stockholders on June 4, 2024. Any shares that are subject to awards outstanding under the Company's 2006 Plan and 2015 Plan as of the effective date of the 2019 Plan that expire, lapse, or are terminated, exchanged for cash, surrendered, repurchased, or canceled without having been fully exercised or forfeited, to the extent so unused, will become available for award grants under the 2019 Plan. As of September 30, 2024, 82,264 shares were available to be issued under the 2019 Plan.

Up to 17,500 shares of the Company's common stock were initially reserved for issuance under the 2019 ESPP. The 2019 ESPP provides for an annual increase to the number of shares available for issuance on the first day of each calendar year beginning January 1, 2020 and ending on and including January 1, 2029 by an amount equal to the lesser of (i) 1% of the shares outstanding on the final day of the immediately preceding calendar year and (ii) such smaller number of shares as is determined by our board of directors. As of September 30, 2024, the aggregate number of shares available for issuance under the 2019 ESPP has been increased by 133,543 shares pursuant to this provision. The purchase price of the shares under the 2019 ESPP, in the absence of a contrary designation, will be 85% of the lower of the fair market value of our common stock on the first trading day of the offering period or on the purchase

date. As of September 30, 2024, we had issued 56,911 shares under the 2019 ESPP. As of September 30, 2024, 94,132 shares were available to be issued under the 2019 ESPP. The Company recognized share-based compensation expense related to the 2019 ESPP of less than \$0.1 million during the nine months ended September 30, 2024 and September 30, 2023.

On August 9, 2021, the Company's board of directors approved the adoption of the Precision BioSciences, Inc. 2021 Employment Inducement Incentive Award Plan (as amended, the "Inducement Award Plan").

The Inducement Award Plan provides for the grant of non-qualified stock options, stock appreciation rights, restricted stock, RSUs and other share-based awards to newly hired employees who have not previously been an employee or member of the board, or an employee who is being rehired following a bona fide period of non-employment by the Company. No more than 500,000 shares of the Company's common stock may be issued under the Inducement Award Plan. As of September 30, 2024, 288,254 shares were available to be issued under the Inducement Award Plan. The Inducement Award Plan had 185,327 stock options and 18,965 RSUs outstanding as of September 30, 2024.

The Company recorded employee and nonemployee share-based compensation expense as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
Employee	\$ 2,730	\$ 2,742	\$ 7,800	\$ 9,802
Nonemployee	469	363	1,233	1,269
	<u>\$ 3,199</u>	<u>\$ 3,105</u>	<u>\$ 9,033</u>	<u>\$ 11,071</u>

Share-based compensation expense is included in the following line items in the condensed statements of operations (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
Research and development	\$ 512	\$ 914	\$ 1,985	\$ 3,515
General and administrative	2,687	2,191	7,048	7,556
	<u>\$ 3,199</u>	<u>\$ 3,105</u>	<u>\$ 9,033</u>	<u>\$ 11,071</u>

Determining the appropriate fair value model to measure the fair value of the stock option grants on the date of grant and the related assumptions requires judgment. The fair value of each stock option grant is estimated using a Black-Scholes option-pricing model on the date of grant using the following inputs:

	Three Months Ended September 30,	Nine Months Ended September 30,
	2024	2024
Estimated dividend yield	0.00%	0.00%
Weighted-average expected stock price volatility	87.69%	87.93%
Weighted-average risk-free interest rate	3.44%	3.67%
Expected term of options (in years)	5.65	5.63
Weighted-average fair value per option	\$ 7.55	\$ 7.76

The expected volatility rates are estimated based on the actual volatility of a peer group comprising the Company and other comparable public companies over the expected term. The expected term represents the average time that stock options are expected to be outstanding. The Company does not have sufficient history of stock option exercises to estimate the expected term of employee stock options and thus utilizes a weighted-average value considering actual history and estimated expected term based on the midpoint between the final vesting date and the expiration date. The risk-free rate is based on the United States Treasury yield curve at the time of grant for the expected term of the option.

The following table summarizes activity in the Company's stock option plans for the nine months ended September 30, 2024:

	<u>Outstanding Option Shares</u>	<u>Weighted-Average Exercise Price</u>
Balance as of December 31, 2023	349,662	\$ 172.13
Granted	85,034	10.58
Exercised	—	—
Forfeited/canceled	(23,427)	229.09
Balance as of September 30, 2024	<u>411,269</u>	<u>\$ 135.48</u>

The fair value of each RSU was determined based on the closing market price of the Company's common stock on the date of grant. The fair value of the RSUs will be recognized as expense over the requisite vesting period.

The following table summarizes the Company's RSU activity for the nine months ended September 30, 2024:

	<u>RSU Awards</u>	<u>Weighted-Average Grant Date Fair Value</u>
Unvested RSUs as of December 31, 2023	214,857	\$ 51.03
Granted	881,233	10.33
Forfeited	(3,428)	56.02
Vested	(84,257)	58.89
Unvested RSUs as of September 30, 2024	<u>1,008,405</u>	<u>\$ 14.79</u>

There was approximately \$16.7 million of total unrecognized compensation cost related to unvested stock options and RSUs as of September 30, 2024, which is expected to be recognized over a weighted-average period of 1.8 years.

NOTE 8: DISCONTINUED OPERATIONS

The Company determined that the sale of its cell therapy operations qualified for discontinued operations accounting treatment in accordance with ASC 205-20, *Presentation of Financial Statements – Discontinued Operations*.

The historical balance sheet and statements of operations of the Company and the related notes to the financial statements have been presented as discontinued operations in the financial statements and prior periods have been recast. Discontinued operations include the results of the Company's historical cell therapy operations.

The following table shows amounts included in assets and liabilities of discontinued operations, respectively, on the Company's balance sheets as of September 30, 2024 and December 31, 2023:

	<u>September 30, 2024</u>	<u>December 31, 2023</u>
Current liabilities of discontinued operations		
Accounts payable	—	158
Accrued research and development expenses	1,304	2,355
Total current liabilities of discontinued operations	1,304	2,513
Noncurrent liabilities of discontinued operations		
Other liabilities	—	128
Total noncurrent liabilities of discontinued operations	—	128
Total liabilities of discontinued operations	<u>1,304</u>	<u>2,641</u>

The following table summarizes the results of operations of the Company's discontinued operations for the three and nine months ended September 30, 2024 and September 30, 2023:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
Classes of expenses constituting loss from discontinued operations				
Research and development expense	—	(4,415)	—	(24,383)
Loss from discontinued operations related to classes of expenses	—	(4,415)	—	(24,383)
Gain from disposal of discontinued operations	—	8,446	—	8,446
Income (loss) from discontinued operations	—	4,031	—	(15,937)

The following table presents the significant non-cash items and proceeds from sales of assets related to discontinued operations for the nine months ended September 30, 2024 and September 30, 2023 that are included in the accompanying statements of cash flows:

	Nine Months Ended September 30,	
	2024	2023
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	—	1,566
Share-based compensation	—	713
Gain on disposal of business	—	(8,446)
Cash flows provided by (used in) investing activities:		
Proceeds from disposal of business	—	8,000

NOTE 9: ELO TRANSACTION

It was determined that the Company possesses the ability to exercise significant influence over the operating and financial policies of Elo, an independent entity as of December 2021. Accordingly, the Company accounts for its investment in Elo under the equity method.

The Company owned approximately 37% of Elo's voting shares outstanding as of December 31, 2023. In January 2024, Elo raised additional funding from its Series A-2 financing. The Company recognized a \$2.7 million gain on dilution under the equity method during the nine months ended September 30, 2024. The Company owned approximately 26% of Elo's voting shares outstanding as of September 30, 2024. The Company's proportionate share of Elo's net loss for the nine months ended September 30, 2024 and 2023 was \$2.8 million and \$4.1 million, respectively.

Note Receivable

The Company received common stock in Elo and a \$10.0 million promissory note payable from Elo (the "Note Receivable") which matures on the earlier of (i) December 1, 2028 or (ii) a Deemed Liquidation Event (as defined in the Elo's Amended and Restated Certificate of Incorporation). As of September 30, 2024, the carrying value of the Note Receivable was \$5.4 million including a \$2.9 million decrease in the carrying value as a result of equity method investment losses. The remaining \$4.8 million discount on the Note Receivable will be amortized to interest income over the life of the Note Receivable.

NOTE 10: INCOME TAXES

The Company estimates an annual effective tax rate of 0% for the year ending December 31, 2024 as the Company incurred losses for tax purposes for the nine months ended September 30, 2024 and is forecasting additional losses for tax purposes through the remainder of the year ending December 31, 2024. For financial statement purposes, the Company may have net book income for the year ending December 31, 2024 as a result of fair market value adjustments that have no tax basis. All fair market value adjustments recognized for GAAP will be reversed as a permanent difference for tax purposes and will not generate taxable income. Therefore, no federal or state income taxes are expected and none have been recorded at this time. Income taxes have been accounted for using the liability method in accordance with ASC 740, *Income Taxes*. Due to the Company's history of losses since inception, there is not enough evidence at this time to support that the Company will generate future income of a sufficient amount and nature to utilize the benefits of its net deferred tax assets. Accordingly, the deferred tax assets have been reduced by a full valuation allowance, since the Company does not currently believe that realization of its deferred tax assets is more likely than not.

As of September 30, 2024, the Company had no unrecognized tax that would reduce the Company's effective tax rate if recognized.

NOTE 11: EARNINGS PER SHARE

The Company calculates basic net income (loss) per share by dividing net loss for each respective period by the weighted-average number of common shares outstanding for each respective period. The Company computes diluted net income (loss) per share after giving consideration to the dilutive effect of unvested RSUs, stock options, unsettled ESPP contributions, and warrants that are outstanding during the period, except where such securities would be anti-dilutive.

The computations of basic and diluted net loss per share attributable to common stockholders are as follows:

	<u>Three Months Ended September 30,</u>		<u>Nine Months Ended September 30,</u>	
	<u>2024</u>	<u>2023</u>	<u>2024</u>	<u>2023</u>
(Loss) income from continuing operations (in thousands)	\$ (16,425)	\$ (12,110)	\$ 24,912	\$ (29,093)
Income (loss) from discontinued operations (in thousands)	\$ —	\$ 4,031	\$ —	\$ (15,937)
Net (loss) income (in thousands)	<u>\$ (16,425)</u>	<u>\$ (8,079)</u>	<u>\$ 24,912</u>	<u>\$ (45,030)</u>
Basic weighted-average common shares	7,287,173	3,838,900	6,441,375	3,784,432
Dilutive impact of share-based awards	—	—	149,510	—
Diluted weighted-average common shares (1)	7,287,173	3,838,900	6,590,885	3,784,432
Basic net (loss) income per share:				
Basic (loss) income from continuing operations	(2.25)	(3.15)	3.87	(7.69)
Basic income (loss) from discontinued operations	—	1.05	—	(4.21)
Basic net (loss) income per share	<u>(2.25)</u>	<u>(2.10)</u>	<u>3.87</u>	<u>(11.90)</u>
Diluted net (loss) income per share:				
Diluted (loss) income from continuing operations	(2.25)	(3.15)	3.78	(7.69)
Diluted income (loss) from discontinued operations	—	1.05	—	(4.21)
Diluted net (loss) income per share	<u>(2.25)</u>	<u>(2.10)</u>	<u>3.78</u>	<u>(11.90)</u>

(1) 3,012,363 total common stock equivalents were excluded from the diluted weighted-average common shares calculation for the nine months ended September 30, 2024 as their inclusion would have been anti-dilutive. For the three months ended September 30, 2024 and the three and nine months ended September 30, 2023 all outstanding total common stock equivalents were excluded from the diluted calculation as their inclusion would have been anti-dilutive.

NOTE 12: SEGMENT REPORTING

The Company has determined that the Chief Executive Officer (“CEO”) is the Company’s chief operating decision maker (“CODM”) as the CEO makes decisions as it relates to allocation of resources and key market strategies. The CODM reviews financial information presented on an aggregated basis. Additionally, resource allocation and key market strategy decisions are made by the CODM based on aggregated results. As such, it was concluded that the Company operates as one segment.

NOTE 13: WARRANTS

The warrants issued in the March 2024 Public Offering are classified as a liability in accordance with ASC 815, since these warrants met the definition of a derivative instrument and did not qualify for equity classification. These warrant agreements include a fundamental transaction clause whereby, in the event that another person or entity becomes the beneficial owner of 50% of the outstanding shares of the Company’s common stock, and if other conditions are met, the Company may be required to purchase the warrants from the holders by paying cash in an amount equal to the Black-Scholes value of the remaining unexercised portion of the warrants on the date of such fundamental transaction. This liability is subject to remeasurement at each balance sheet date until the warrants are exercised or expire, and any change in fair value is recognized in the Company’s condensed statements of operations.

The warrants were recorded at their fair value of \$32.4 million at issuance based on the Black-Scholes option-pricing model. The following assumptions were used to estimate the fair value of the warrants at issuance:

Estimated dividend yield		0.00 %
Weighted-average expected stock price volatility		89.03 %
Weighted-average risk-free interest rate		4.17 %
Expected term (in years)		5.00
Weighted-average fair value per option	\$	12.96

The fair value adjustment for the three months ended September 30, 2024 was \$3.6 million using the Black-Scholes option-pricing model. As of September 30, 2024 all of the 2,500,000 warrants are outstanding. The Company estimated the fair value of the warrant liability using the following assumptions as of September 30, 2024:

Estimated dividend yield		0.00 %
Weighted-average expected stock price volatility		81.08 %
Weighted-average risk-free interest rate		3.58 %
Expected term (in years)		4.42
Weighted-average fair value per option	\$	4.24

The following table summarizes the Company's warrant liability (in thousands):

	Warrant Liability	
Balance at January 1, 2024	\$	—
Issuance of warrants		32,406
Change in fair value of warrant liability		(10,386)
Balance at March 31, 2024	\$	22,020
Issuance of warrants		—
Change in fair value of warrant liability	\$	(7,764)
Balance at June 30, 2024	\$	14,256
Issuance of warrants		—
Change in fair value of warrant liability		(3,648)
Balance at September 30, 2024	\$	10,608

NOTE 14: SUBSEQUENT EVENTS

The Company has evaluated all subsequent events through the issuance date of these financial statements and no subsequent events occurred that required disclosure.

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our financial statements and the related notes to those statements included elsewhere in this Quarterly Report on Form 10-Q. Some of the information contained in this discussion and analysis or set forth elsewhere in this Quarterly Report on Form 10-Q, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. As a result of many important factors, including those set forth in Part II. Item 1A. “Risk Factors” of this Quarterly Report on Form 10-Q, our actual results could differ materially from the results described in, or implied by, these forward-looking statements. As used in this Quarterly Report on Form 10-Q, unless the context otherwise requires, references to “we,” “us,” “our,” the “Company” and “Precision” refer to Precision BioSciences, Inc.

Overview

We are a clinical stage gene editing company dedicated to improving life by developing *in vivo* therapies for genetic and infectious diseases with the application of our wholly-owned proprietary ARCUS genome editing platform. The foundation of ARCUS is a natural homing endonuclease which allows us to replicate precise gene editing as it evolved in nature for sophisticated gene edits, including gene insertion, excision, and elimination. ARCUS is also unique in its relatively small size which potentially allows delivery to a wider range of cells and tissues using viral and non-viral gene delivery methods.

Business Updates

Since mid-2023, we have solely focused on leveraging our proprietary ARCUS genome editing platform to advance *in vivo* gene editing programs that go beyond gene knockouts in the liver and carry out more sophisticated edits such as gene insertions, gene excision, and gene elimination, unlocking a broader potential for ARCUS *in vivo* gene editing in human therapeutics.

In January 2024 we entered into a license agreement with TG Cell Therapy, Inc. (“TG Subsidiary”) and its parent company TG Therapeutics, Inc. (“TG Parent” and, together with TG Subsidiary, “TG Therapeutics”) for non-oncological applications of azercabtagene zapreleucel (“azer-cel”) (the “TG License Agreement”) in January 2024. In connection with the TG License Agreement, we received upfront, and are also entitled to receive potential near-term, economics valued in the aggregate at \$17.5 million. We are also entitled to receive additional payments upon the achievement of additional specified milestones of up to \$288.6 million. If a licensed product under the TG License Agreement is approved and sold, TG Therapeutics is also required to pay us tiered royalties ranging from high-single-digit to low-double-digit percentages on net sales of the licensed product. In August 2024, we announced TG Therapeutics received U.S. Food and Drug Administration (“FDA”) clearance for its investigational new drug (“IND”) application to investigate azer-cel in human clinical trials for the treatment of progressive forms of multiple sclerosis. TG Therapeutics anticipates commencing a phase 1 clinical trial in 2024.

In February 2024, we announced that we had granted Caribou Biosciences, Inc. (“Caribou”), a leading CRISPR genome-editing cell therapy company, a non-exclusive, worldwide license, with the right to sublicense, to one of our foundational cell therapy patent families for use with CRISPR-based therapies in the field of human therapeutics. Under the terms of the agreement, we received an upfront payment and, upon commercialization by Caribou, will receive royalties on net sales of licensed products. In addition, for each occurrence of certain strategic transactions involving Caribou, we are entitled to receive a specific tiered milestone payment.

In April 2024, we received written notice from Prevail Therapeutics, Inc. (“Prevail”), a wholly-owned subsidiary of Eli Lilly and Company, of its termination of the amended and restated development and license agreement between the Company and Prevail (the “Prevail Agreement”). Prevail’s notice informed us that Prevail was exercising its right pursuant to Section 15.3.2 of the Prevail Agreement to terminate the Prevail Agreement in its entirety without cause upon 90 days’ prior written notice to us. We subsequently exercised our rights to the return of the three programs. We are continuing to evaluate these returned programs to determine the appropriate next steps with each of them, including a novel gene excision approach for treatment of Duchenne Muscular Dystrophy (“DMD”), a liver target for gene insertion, and a gene editing program targeting neurons to address a disease of the central nervous system.

In July 2024, we entered into an amended and restated loan and security agreement (the “2024 Loan and Security Agreement”) with Banc of California (formerly known as Pacific Western Bank) pursuant to which Banc of California provided us with a term loan with a principal amount of \$22.5 million (the “2024 Term Loan”). The proceeds from the 2024 Term Loan were used to repay the \$22.5 million outstanding principal balance under our revolving line of credit with Banc of California (the “Revolving Line”), and pursuant to the terms of the 2024 Loan and Security Agreement, the Revolving Line was terminated.

In October 2024, we received approval of our clinical trial application (“CTA”) in Moldova for our wholly-owned *in vivo* gene editing program PBGENE-HBV for the potential treatment of chronic hepatitis B virus (“HBV”) and are working towards dosing patients. We have submitted additional global regulatory applications which are pending approval.

HBV causes inflammation and damage to the liver, leading to chronic infection and increased risk of death from liver cancer or cirrhosis. There is no cure for chronic hepatitis B and current treatments rarely result in functional cure, primarily due to persistence of viral DNA in the liver. In patients with chronic HBV, genetic material of the virus is converted within infected liver cells into cccDNA that acts as a template to make HBV copies. HBV also inserts its DNA into the human genome of infected liver cells. This integrated HBV DNA produces the viral protein, hepatitis B surface antigen (“HBsAg”), which is secreted in the blood. Presence of HBsAg is associated with poorer outcomes and suppression of HBsAg is necessary for functional cure of chronic hepatitis B.

PBGENE-HBV is designed to eliminate cccDNA with direct edits as well as to inactivate integrated HBV DNA with the goal of long-lasting reductions in HBsAg. We believe specificity is of particular importance for developing a safe gene editing approach to eliminating HBV, as a lack of nuclease specificity can lead to unfavorable off-target results including increased integrations of HBV genomes into the human genome, as well as translocations between integrations. Preclinical data from the PBGENE-HBV program was presented in June 2024 at a poster presentation and panel discussion at the European Association for the Study of the Liver Congress, highlighting the ability of ARCUS to make efficient, durable, and targeted elimination edits. Data presented further supported the ability of PBGENE-HBV to specifically target and eliminate cccDNA and inactivate integrated HBV DNA. The data also demonstrated a lack of detectable off-target editing for PBGENE-HBV at therapeutically relevant doses, including no editing-associated translocations in HBV infected primary human hepatocytes. PBGENE-HBV was well-tolerated in non-human primates (“NHP”) across multiple dose administrations. Preclinical safety data supports the advancement of PBGENE-HBV to clinical trials as a potentially curative treatment for chronic hepatitis B.

The PBGENE-3243 program, previously known as PBGENE-PMM, is our wholly-owned, first of its kind potential treatment for m.3243 associated mitochondrial disease. The program's updated nomenclature more accurately describes its intended target patient population – those who have the m.3243 mutation and muscle-related symptoms. Mitochondrial diseases are the most common hereditary metabolic disorder, affecting 1 in 4,300 people. In particular, the m.3243 associated mitochondrial disease that our program intends to address affects about 20,000 people in the United States alone. The highly specific mitochondria-targeted ARCUS nucleases are designed to shift heteroplasmy by editing and eliminating mutant mitochondrial DNA while allowing normal (wild-type) mitochondrial DNA to repopulate in the mitochondria, thus improving cellular function. Preclinical data from the PBGENE-3243 program presented in June 2024 at the United Mitochondrial Disease Foundation’s Mitochondrial Medicine 2024 Conference and in March 2024 at a poster presentation at the Mitochondrial Medicine – Therapeutic Development Annual Conference demonstrated ARCUS’ ability to efficiently eliminate mutant mitochondrial DNA without nuclear off-target editing. We expect to submit an IND and/or CTA application in 2025 with respect to PBGENE-3243.

In October 2024, we presented a poster at the European Society of Gene & Cell Therapy 31st Annual Congress. The poster highlighted preclinical data demonstrating the ability of ARCUS to achieve high-efficiency gene insertion, gene replacement, and base correction via homology-directed repair (“HDR”). In the preclinical work presented, we showed that targeted gene insertion can be achieved using ARCUS in greater than 85% of T-cells and 39% of non-dividing primary human hepatocytes. These high rates of gene insertion were accomplished primarily through HDR, which the research demonstrated was dependent on homology arms in the repair template and on the characteristic ARCUS 3’ overhang cut in the direction of DNA replication.

We, along with our collaboration partners, intend to continue to evaluate the ARCUS platform with regards to safety, on-target editing, gene insertion, complex gene edits, and compatibility with viral and non-viral delivery.

In partnership with iECURE, Inc. (“iECURE”), an ARCUS-mediated gene insertion approach is being pursued as a potential treatment option for neonatal onset ornithine transcarbamylase (“OTC”) deficiency. NHP data presented by researchers from the University of Pennsylvania’s Gene Therapy Program demonstrated sustained gene insertion of a therapeutic OTC transgene one-year post-dosing in newborn and infant NHPs with high efficiency. iECURE has received regulatory approvals in the United States, the United Kingdom, Spain, and Australia for initiation of the OTC-HOPE study, a first-in-human Phase 1/2 trial evaluating ECUR-506 as a potential treatment for OTC deficiency, and has begun recruiting patients. In May 2024, iECURE announced that it had received Fast Track designation from the FDA for ECUR-506 and expects initial data from this trial to be available in 2025.

In June 2022, we announced we entered into an exclusive *in vivo* gene editing research and development collaboration and license agreement (the “Novartis Agreement”) with Novartis Pharma AG (“Novartis”). In connection with this partnership, we are developing a custom ARCUS nuclease that will be designed to insert, *in vivo*, a therapeutic transgene at a “safe harbor” location in the genome as a potential one-time transformative treatment option for diseases including certain hemoglobinopathies such as sickle cell disease and

beta thalassemia. Under the terms of the Novartis Agreement, we will develop an ARCUS nuclease and conduct *in vitro* characterization, with Novartis then assuming responsibility for all subsequent research, development, manufacturing and commercialization activities.

Reverse Stock Split

On January 18, 2024, our stockholders approved a proposal to amend our amended and restated certificate of incorporation to effect a reverse stock split of our common stock at a ratio of not less than 1-for-10 and not more than 1-for-30, with such ratio and the implementation and timing of such reverse stock split to be determined by our board of directors in its sole discretion. On February 6, 2024, our board of directors approved a 1-for-30 reverse stock split of our issued and outstanding common stock, and on February 13, 2024, we filed with the Secretary of State of the State of Delaware a certificate of amendment to our amended and restated certificate of incorporation in order to effect the reverse stock split. Trading of our common stock on The Nasdaq Capital Market commenced on a split-adjusted basis on February 14, 2024. As a result of the reverse stock split, every 30 shares of our common stock issued or outstanding were automatically reclassified into and became one new share of common stock, and the number of our issued and outstanding shares of common stock was reduced to 4,191,053 and 4,164,038, respectively. All references to numbers of shares of common stock and per-share information in this Quarterly Report on Form 10-Q have been adjusted retroactively, as appropriate, to reflect the reverse stock split.

Common Stock Offering

In March 2024, we entered into an underwriting agreement relating to the offering, issuance and sale (the “March 2024 Public Offering”) of an aggregate of 2,500,000 shares of our common stock and warrants to purchase up to an aggregate of 2,500,000 shares of our common stock at a combined offering price of \$16.00 per share. Each warrant has an exercise price per share of \$20.00, is immediately exercisable and will expire on March 5, 2029. The offering was made pursuant to a registration statement on Form S-3.

Components of Our Results of Operations

Revenue

To date, we have not generated any revenue from product sales and do not expect to generate any revenue from product sales in the foreseeable future. We record revenue from collaboration and license agreements, including amounts related to upfront payments, milestone payments, fees for licenses of our intellectual property, and research and development funding.

TG Therapeutics

During the nine months ended September 30, 2024, we recognized revenue under the TG License Agreement of \$8.0 million. There was no revenue recognized under the TG License Agreement in the three months ended September 30, 2024. A contract asset related to the TG License Agreement amounted to \$1.4 million as of September 30, 2024.

Imugene

On August 15, 2023 we entered into an asset purchase agreement with Imugene Limited, and its wholly-owned subsidiary Imugene (USA) Inc. (“Imugene US” and together with Imugene Limited, “Imugene”). Additionally, we entered into a license agreement with Imugene (the “Imugene License Agreement”) on August 15, 2023, pursuant to which we granted Imugene US certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize oncological applications of our allogeneic CAR T therapy, azer-cel, and up to three additional research product candidates directed to targets that Imugene US may nominate prior to the fifth anniversary of the effective date of the Imugene License Agreement, pursuant to the terms of the Imugene License Agreement.

As of September 30, 2024, management has constrained all variable consideration related to milestone payments in the Imugene License Agreement given the level of uncertainty associated with achievement of the milestone payments. Accordingly, no revenue was recognized under the Imugene License Agreement during the three and nine months ended September 30, 2024.

Novartis Pharma AG

During the three months ended September 30, 2024 and 2023, we recognized revenue under the Novartis Agreement of \$0.6 million and \$7.6 million, respectively. During the nine months ended September 30, 2024 and 2023, we recognized revenue under the Novartis Agreement of \$5.9 million and \$18.2 million, respectively. Deferred revenue related to the Novartis Agreement amounted to \$26.6 million and \$32.4 million as of September 30, 2024 and December 31, 2023, respectively, of which \$0.2 million and \$7.4 million, respectively, was included in current liabilities within the condensed balance sheets.

Prevail Therapeutics, Inc.

For the three months ended September 30, 2024, we did not recognize any revenue under the Prevail Agreement as it was terminated in the prior quarter. We recognized revenue of \$5.5 million for the three months ended September 30, 2023. During the nine months ended September 30, 2024 and 2023, we recognized revenue under the Prevail Agreement of \$52.7 million and \$23.4 million, respectively. We have no deferred revenue related to the Prevail Agreement as of September 30, 2024 due to termination of the agreement. Deferred revenue related to the Prevail Agreement amounted to \$52.7 million as of December 31, 2023, of which \$4.7 million was included in current liabilities within the condensed balance sheet.

Research and Development Expenses

Research and development expenses consist primarily of costs incurred for our research activities, including our discovery efforts and the development of our product candidates. These include the following:

- salaries, benefits and other related costs, including share-based compensation expense, for personnel engaged in research and development functions;
- expenses incurred under agreements with third parties, including third parties that conduct preclinical research and development activities on our behalf;
- costs of manufacturing drug products for use in our preclinical studies, including the costs of contract manufacturing organizations (“CMOs”);
- costs of outside consultants;
- costs of laboratory supplies and acquiring, developing and manufacturing preclinical study materials;
- license payments made for intellectual property used in research and development activities; and
- facility-related expenses, which include direct depreciation costs and expenses for rent and maintenance of facilities and other operating costs if specifically identifiable to research activities.

We expense research and development costs as incurred. We track external research and development costs by product candidate beginning when it is publicly named as a development program. Internal and external costs that are not identifiable to specific development candidates are included in the platform development expenses category.

Research and development activities are central to our business model. We expect that our research and development expenses will increase over the long term and will comprise a larger percentage of our total expenses as we progress development of our product candidates.

We cannot determine with certainty the duration and costs of future clinical trials for our product candidates we may develop or if, when or to what extent we will generate revenue from the commercialization and sale of any product candidate for which we obtain marketing approval. We may never succeed in obtaining marketing approval for any product candidate. The duration, costs and timing of clinical trials and development of our product candidates will depend on a variety of factors, including:

- the scope, rate of progress, expense and results of future clinical trials of our product candidates and other research and development activities that we may conduct;
- the ability to collaborate and partner with third parties to fund any or all of our programs;
- uncertainties in clinical trial design and patient enrollment rates;
- the actual probability of success for our product candidates, including their safety and efficacy, early clinical data, competition, manufacturing capability and commercial viability;
- significant and changing government regulation and regulatory guidance;
- the timing and receipt of any marketing approvals; and
- the expense of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights.

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. For example, if the FDA or another regulatory authority were to require us to conduct clinical trials beyond those that we anticipate will be required for the completion of clinical development of a product candidate, or if we experience significant delays in our clinical trials due to slower than expected

patient enrollment or other reasons, we would be required to expend significant additional financial resources and time on the completion of clinical development.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries, consulting fees, recruitment-related costs and other employee-related costs, including share-based compensation, for personnel in our executive, finance, business development, operations and administrative functions. General and administrative expenses also include legal fees relating to intellectual property and corporate matters; information technology costs; insurance costs; travel expenses; and facility-related expenses, which include direct depreciation costs and expenses for rent and maintenance of facilities and other operating costs that are not specifically attributable to research activities.

Impairment Charges

Impairment charges represent our impairment of intangible assets and long-term prepaid assets. An impairment loss is assessed when future undiscounted cash flows are less than the assets' carrying value and is recognized when the carrying value of the asset exceeds fair value. An impairment charge is recognized for the amount by which the carrying amount exceeds the fair value of the asset.

Loss on Disposal of Assets

Loss on disposal of assets represents the remaining net book value of disposed assets at the time of their disposal and impairment recognized on assets held for sale.

Gain (Loss) on Changes in Fair Value

The change in fair value represents the assessed changes in fair value of assets and liabilities carried at fair value.

As partial consideration for the assets acquired by Imugene in connection with the asset purchase agreement (the "Imugene Purchase Agreement"), Imugene issued convertible notes to us pursuant to the terms and conditions set forth in a convertible note subscription deed (collectively, the "Imugene Convertible Note") in an aggregate principal amount of \$13 million. The Imugene Convertible Note matured on August 30, 2024 and resulted in payment to us in cash and ordinary shares of Imugene Limited.

We adjust the carrying value of the ordinary shares issued under the Imugene Convertible Note to its fair value each reporting period with any changes in fair value recorded to other income (expense).

Gain on Change in Fair Value of Warrant Liability

The change in fair value of warrant liability represents the mark-to-market fair value adjustments to the outstanding warrants issued in connection with the March 2024 Public Offering.

Loss from Equity Method Investment

Loss from equity method investment represents our proportionate share of the net loss of our equity method investee, Elo Life Systems, Inc. ("Elo").

Interest Expense

Interest expense consists of interest payments incurred and discount amortization on debt outstanding.

Interest Income

Interest income consists of interest income earned on our cash and cash equivalents and note receivable from Elo.

Income from Discontinued Operations

Gain from discontinued operations represents the gain on the sale of our CAR T infrastructure to Imugene and the results of operations of our historical cell therapy operations.

Results of Operations

Comparison of the Three Months Ended September 30, 2024 and September 30, 2023

The following table summarizes our results of operations for the three months ended September 30, 2024 and September 30, 2023, together with the changes in those items:

(in thousands)	Three Months Ended September 30,		Change
	2024	2023	
Revenue	\$ 576	\$ 13,120	\$ (12,544)
Operating expenses:			
Research and development	13,084	15,850	(2,766)
General and administrative	8,767	9,633	(866)
Total operating expenses	21,851	25,483	(3,632)
Operating loss	(21,275)	(12,363)	(8,912)
Other income (expense):			
Loss from equity method investment	(875)	(1,350)	475
Gain on changes in fair value	571	311	260
Gain on change in fair value of warrant liability	3,647	—	3,647
Interest expense	(256)	(576)	320
Interest income	1,763	1,870	(107)
Loss on disposal of assets	—	(2)	2
Total other income	4,850	253	4,597
Loss from continuing operations	(16,425)	(12,110)	(4,315)
Income from discontinued operations	—	4,031	(4,031)
Net loss	\$ (16,425)	\$ (8,079)	\$ (8,346)

Revenue

Revenue for the three months ended September 30, 2024 was \$0.6 million, compared to \$13.1 million for the three months ended September 30, 2023. The decrease of \$12.5 million in revenue during the three months ended September 30, 2024 was primarily the result of a \$7.0 million decrease in revenue recognized under the Novartis Agreement during the three months ended September 30, 2024 compared to the three months ended September 30, 2023 as we near the completion of our pre-clinical workplan and a \$5.5 million decrease in revenue recognized under the Preval Agreement during the three months ended September 30, 2024 compared to the three months ended September 30, 2023 following conclusion of the collaboration in April 2024.

Research and Development Expenses

(in thousands)	Three Months Ended September 30,		Change
	2024	2023	
Direct research and development expenses:			
PBGENE-HBV external development costs	\$ 2,484	\$ 5,149	\$ (2,665)
PBGENE-3243 external development costs	2,616	183	2,433
Platform development and unallocated expenses:			
Employee-related costs (other than share based compensation)	4,654	4,929	(275)
Share based compensation	512	885	(373)
Laboratory supplies and services	739	1,449	(710)
Outsourced research and development	163	1,013	(850)
CMOs and research organizations	73	—	73
Laboratory equipment and maintenance	221	220	1
Facility-related costs	528	524	4
Depreciation and amortization	589	1,004	(415)
Licensing fees	504	494	10
Other research and development costs	1	—	1
Total research and development expenses	\$ 13,084	\$ 15,850	\$ (2,766)

Research and development expenses for the three months ended September 30, 2024 were \$13.1 million, compared to \$15.9 million for the three months ended September 30, 2023. The decrease of \$2.8 million was primarily due to a reduction in platform

development and unallocated expenses of \$2.5 million. Additionally contributing to the decrease was a \$0.3 million decrease in our direct expenses in PBGENE-HBV and PBGENE-3243 programs.

Contributing to the decrease in platform development and development expenses was a \$0.9 million decrease in outsourced research and development costs, a \$0.7 million decrease in laboratory supplies and services expenses, and a \$0.4 million decrease in share based compensation expense. Direct expenses increased due to a \$2.4 million increase in PBGENE-3243 development costs as it continues to advance toward an IND and/or CTA in 2025, partially offset by a \$2.7 million decrease in PBGENE-HBV primarily due to a decrease in expenses for nonclinical studies.

General and Administrative Expenses

General and administrative expenses were \$8.8 million for the three months ended September 30, 2024 compared to \$9.6 million for the three months ended September 30, 2023. The decrease of \$0.8 million was primarily due to a \$0.4 million decrease in consulting fees in addition to decreases in tax and insurance expenses.

Loss from Equity Method Investment

Loss from equity method investment was \$0.9 million during the three months ended September 30, 2024 compared to \$1.4 million during the three months ended September 30, 2023, which represented our proportionate share of Elo's net loss in each period.

Gain on Changes in Fair Value

Gain on changes in fair value was \$0.6 million for the three months ended September 30, 2024, which was primarily attributed to an increase during such period in the fair value of the Imugene Convertible Note and the ordinary shares issued thereunder and still held by us at the end of the period. Gain on changes in fair value was \$0.3 million for the three months ended September 30, 2023, which was primarily attributable to an increase during such period in the fair value of the Imugene Convertible Note.

Change in Fair Value of Warrant Liability

Gain from change in fair value of the warrant liability of \$3.6 million for the three months ended September 30, 2024 represents the mark-to-market fair value adjustment to the outstanding warrants issued in connection with the March 2024 Public Offering. There was no warrant liability in the three months ended September 30, 2023.

Interest Expense

Interest expense was \$0.3 million for the three months ended September 30, 2024 compared to \$0.6 million for the three months ended September 30, 2023. The decrease of \$0.3 million of interest expense was primarily driven by lower interest rates during the three months ended September 30, 2024 as compared to the three months ended September 30, 2023 as well as the waived final payment fee on the Revolving Line.

Interest Income

Interest income was \$1.8 million during the three months ended September 30, 2024 compared to \$1.9 million during the three months ended September 30, 2023. The \$0.1 million decrease in interest income was the result of lower interest rates during the three months ended September 30, 2024 as compared to the three months ended September 30, 2023.

Income (Loss) from Discontinued Operations

There was no income from discontinued operations during the three months ended September 30, 2024 compared to income of \$4.0 million during the three months ended September 30, 2023. The \$4.0 million of income during the three months ended September 30, 2023 consisted of the \$8.4 million gain on disposal of our CAR T infrastructure to Imugene, partially offset by research and development expenses for our historical cell therapy operations.

Comparison of the Nine Months Ended September 30, 2024 and September 30, 2023

The following table summarizes our results of operations for the nine months ended September 30, 2024 and September 30, 2023, together with the changes in those items:

(in thousands)	Nine Months Ended September 30,		Change
	2024	2023	
Revenue	\$ 68,058	\$ 41,689	\$ 26,369
Operating expenses:			
Research and development	43,652	39,986	3,666
General and administrative	25,722	30,549	(4,827)
Total operating expenses	69,374	70,535	(1,161)
Operating loss	(1,316)	(28,846)	27,530
Other income (expense):			
Loss from equity method investment	(112)	(4,060)	3,948
Gain (loss) on changes in fair value	917	(458)	1,375
Gain on change in fair value of warrant liability	21,798	—	21,798
Interest expense	(1,390)	(1,651)	261
Interest income	5,269	5,859	(590)
(Loss) gain on disposal of assets	(254)	63	(317)
Total other income (expense)	26,228	(247)	26,475
Gain (loss) from continuing operations	24,912	(29,093)	54,005
Loss from discontinued operations	—	(15,937)	15,937
Net income (loss)	\$ 24,912	\$ (45,030)	\$ 69,942

Revenue

Revenue for the nine months ended September 30, 2024 was \$68.1 million, compared to \$41.7 million for the nine months ended September 30, 2023. The increase of \$26.4 million in revenue during the nine months ended September 30, 2023 was primarily the result of a \$29.3 million increase in revenue related to the Prevail Agreement as the remaining revenue under the agreement was recognized during the nine months ended September 30, 2024 following conclusion of the collaboration in April 2024. Additionally, there was a \$9.5 million increase in revenue in the nine months ended September 30, 2024 as a result of the TG License Agreement and the license agreement with Caribou. Partially offsetting the increase was a \$12.4 million decrease in revenue recognized under the Novartis Agreement during the nine months ended September 30, 2024 compared to the nine months ended September 30, 2023 as we near the completion of our pre-clinical workplan.

Research and Development Expenses

(in thousands)	Nine Months Ended September 30,		Change
	2024	2023	
Direct research and development expenses:			
PBGENE-HBV external development costs	\$ 13,194	\$ 6,107	\$ 7,087
PBGENE-3243 external development costs	4,792	183	4,609
Platform development and unallocated expenses:			
Employee-related costs (other than share based compensation)	13,930	15,195	(1,265)
Share based compensation	1,985	2,801	(816)
Laboratory supplies and services	2,222	5,088	(2,866)
Outsourced research and development	704	3,520	(2,816)
CMOs and research organizations	134	2	132
Laboratory equipment and maintenance	758	737	21
Facility-related costs	1,618	1,690	(72)
Depreciation and amortization	2,322	3,058	(736)
Licensing fees	1,977	1,574	403
Other research and development costs	16	31	(15)
Total research and development expenses	\$ 43,652	\$ 39,986	\$ 3,666

Research and development expenses for the nine months ended September 30, 2024 were \$43.7 million, compared to \$40.0 million for the nine months ended September 30, 2023. The increase of \$3.7 million was primarily due a \$7.1 million increase in PBGENE-HBV external development costs and a \$4.6 million increase in PBGENE-3243 external development costs as the programs continue to advance towards the clinic. The increase in direct research and development expenses was offset by an \$8.0 million decrease in platform development and unallocated expenses, including a \$2.9 million decrease in laboratory supplies and services expenses, a \$2.8 million decrease in outsourced research and development costs, and a \$2.1 million decrease in employee-related costs and share based compensation expense.

General and Administrative Expenses

General and administrative expenses were \$25.7 million for the nine months ended September 30, 2024 compared to \$30.5 million for the nine months ended September 30, 2023. The decrease of \$4.8 million was primarily due to a \$2.1 million decrease in employee-related costs and share based compensation expense as a result of a reduced headcount, a \$1.0 million decrease in consulting fees, and decreases in insurance expense and legal fees.

Loss from Equity Method Investment

Loss from equity method investment was \$0.1 million during the nine months ended September 30, 2024. Loss from equity method investment was \$4.1 million during the nine months ended September 30, 2023, which represented our proportionate share of Elo's net loss for such periods.

Gain (Loss) on Changes in Fair Value

Gain on changes in fair value was \$0.9 million for the nine months ended September 30, 2024, which was primarily attributed to an increase during such period in the fair value of the Imugene Convertible Note and the ordinary shares issued thereunder and still held by us at the end of the period. Loss on changes in fair value was \$0.5 million for the nine months ended September 30, 2023, which was attributed to a decrease in the assessed fair value of our equity investment in iECURE as a result of dilution from iECURE's Series A-1 equity raise in such period, partially offset by an increase in the fair value of the Imugene Convertible Note.

Change in Fair Value of Warrant Liability

Gain from change in fair value of the warrant liability of \$21.8 million for the nine months ended September 30, 2024 represents the mark-to-market fair value adjustment to the outstanding warrants issued in connection with the March 2024 Public Offering. There was no warrant liability in the nine months ended September 30, 2023.

Interest Expense

Interest expense was \$1.4 million and \$1.7 million for the nine months ended September 30, 2024 and 2023, respectively. The \$0.3 million decrease in interest expense was the result of lower interest rates during the nine months ended September 30, 2024 as compared to the nine months ended September 30, 2023.

Interest Income

Interest income was \$5.3 million during the nine months ended September 30, 2024 compared to \$5.9 million during the nine months ended September 30, 2023. The \$0.6 million decrease in interest income was the result of lower interest rates during the nine months ended September 30, 2024 as compared to the nine months ended September 30, 2023.

Loss on Disposal of Assets

Loss on disposal of assets was \$0.3 million during the nine months ended September 30, 2024 compared to a gain of less than \$0.1 million during the nine months ended September 30, 2023.

Loss from Discontinued Operations

There was no loss from discontinued operations during the nine months ended September 30, 2024 compared to a loss of \$15.9 million during the nine months ended September 30, 2023. The \$15.9 million loss during the nine months ended September 30, 2023 consisted of the \$8.4 million gain on disposal of our CAR T infrastructure to Imugene, partially offset by research and development expenses for our historical cell therapy operations.

Liquidity and Capital Resources

Since our formation in 2006, we have devoted substantially all of our resources to developing ARCUS, conducting research and development activities, recruiting skilled personnel, developing manufacturing processes, establishing our intellectual property portfolio and providing general and administrative support for these operations.

We have incurred significant operating losses since our inception and have not generated any revenue from the sale of products. Our ability to generate any product revenue or product revenue sufficient to achieve profitability will depend on the successful development and eventual commercialization of one or more of our product candidates or the product candidates of our collaborators or other licensees for which we may receive milestone payments or royalties. As of September 30, 2024, we had an accumulated deficit of \$464.7 million.

We expect to incur significant expenses and operating losses for the foreseeable future as we advance the development of our product candidates. We expect that our research and development and general and administrative costs will increase over the long term, including in connection with conducting preclinical studies and potential clinical trials for our product candidates, contracting with contract research organizations (“CROs”) and CMOs, expanding our intellectual property portfolio and providing general and administrative support for our operations. If we obtain regulatory approval for any of our product candidates, we expect to incur significant expenses related to developing our commercialization capability to support product sales, marketing and distribution. As a result, we will need additional capital to fund our operations, which we may obtain from additional equity or debt financings, collaborations, licensing arrangements or other sources.

As of September 30, 2024, we had cash and cash equivalents of \$98.8 million and \$22.6 million in restricted cash under the 2024 Term Loan, which replaced our Revolving Line on July 31, 2024. Pursuant to our July 31, 2024 amended and restated loan and security agreement with Banc of California (the “2024 Loan and Security Agreement”), we are not entitled to borrow any additional amounts under the 2024 Term Loan and are required to maintain an aggregate balance in a cash security account with Banc of California (the “Cash Security Account”) at least equal to the outstanding principal amount of the 2024 Term Loan then outstanding.

Our sources of funding to finance our cash needs include proceeds from third parties through a combination of financings including our initial public offering (“IPO”), preferred stock and convertible note financings, underwritten offerings of our common stock and warrants, at-the-market (“ATM”) offerings of our common stock as part of our shelf registration statement, upfront and milestone payments from partners, borrowings under bank facilities and funding from other strategic alliances and grants.

There are no assurances that we will be successful in obtaining an adequate level of financing as and when needed to finance our operations on terms acceptable to us or at all, particularly in light of current global macroeconomic conditions. If we are unable to obtain sufficient financing on a timely basis or on favorable terms, we may be required to significantly delay, alter, reduce or eliminate one or more of our research or product development programs and/or commercialization efforts, or to grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves. We may also be otherwise unable to execute our business plan or growth strategy or capitalize on business opportunities as desired. Any of these events could materially adversely affect our financial condition and business prospects.

Because of the numerous risks and uncertainties associated with the development of therapeutic products, we are unable to predict the timing or amount of increased expenses or when or if we will be able to achieve or maintain profitability. Even if we are able to generate revenue from product sales, we may not become profitable. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be required to raise additional capital, potentially on terms that are unfavorable to us, or we may be unable to continue our operations at planned levels and be forced to reduce or terminate operations.

Cash Flows

Our cash, cash equivalents, and restricted cash totaled \$121.3 million and \$122.2 million as of September 30, 2024 and 2023, respectively.

The following table summarizes our sources and uses of cash for the periods presented:

(in thousands)	Nine Months Ended September 30,	
	2024	2023
Components of cash used in operating activities:		
Net income (loss)	24,912	(45,030)
Non-cash adjustments	(9,774)	13,781
Changes in operating assets and liabilities	(54,900)	(44,442)
Net cash used in operating activities	(39,762)	(75,691)
Net cash (used in) provided by investing activities	(118)	5,787
Net cash provided by financing activities	44,530	2,559
Increase (decrease) in cash, cash equivalents, and restricted cash	\$ 4,650	\$ (67,345)

Cash Used in Operating Activities

Our primary use of cash is to fund operating expenses, which consist primarily of research and development and general and administrative costs.

Cash used in operating activities during the nine months ended September 30, 2024 was \$39.8 million compared to \$75.7 million during the nine months ended September 30, 2023. The \$35.9 million decrease in cash used in operating activities was primarily driven by a \$69.9 million increase in net income. This was offset by decreases of \$23.5 million in non-cash adjustments and \$10.5 million in changes in operating assets and liabilities.

The decrease in non-cash adjustments was primarily driven by decreases in the change in fair value of warrants which we did not have in the nine months ended September 30, 2023, loss from equity method investment, depreciation and amortization, and share-based compensation. These decreases were partially offset by a gain on disposal of the cell therapy business which occurred in the nine months ended September 30, 2023.

The change in cash used in operating assets and liabilities is primarily driven by a decrease in net changes of deferred revenue as a result of the conclusion of the Prevail collaboration offset by increases from the maturity of the Imugene Convertible Note in the nine months ended September 30, 2024 and net changes of accounts receivable.

Cash (Used in) Provided by Investing Activities

Cash used in investing activities primarily relates to cash expenditures to acquire leasehold additions, equipment, software and intangible assets. Net cash used in investing activities during the nine months ended September 30, 2024 was \$0.1 million, compared to \$5.8 million provided by investing activities in the nine months ended September 30, 2023. The \$5.9 million decrease in cash provided by investing activities was primarily the result of the \$8.0 million proceeds from the disposal of CAR T infrastructure, partially offset by \$2.0 million of property, equipment, and software purchases during the nine months ended September 30, 2024.

Cash Provided by Financing Activities

Net cash provided by financing activities during the nine months ended September 30, 2024 was \$44.5 million, compared to \$2.6 million during the nine months ended September 30, 2023. The \$41.9 million increase in cash provided by financing activities during the nine months ended September 30, 2024 was primarily due to a \$41.2 million increase in net proceeds from offerings of common stock in the nine months ended September 30, 2024 as compared to the nine months ended September 30, 2023 and \$0.9 million in net proceeds from the issuance of common stock to TG Therapeutics in the nine months ended September 30, 2024.

Debt Obligations

Revolving Line & Term Loan

On July 31, 2024, we replaced the Revolving Line with the 2024 Term Loan with an aggregate principal amount of \$22.5 million. The stated interest rate under the 2024 Term Loan is equal to the greater of 1.50% below the Prime Rate or 4.5%. As of July 31, 2024, the stated interest rate was 7.00%. As of September 30, 2024, the outstanding principal balance on the 2024 Term Loan was \$22.5 million, the stated interest rate was 6.5% and the effective interest rate was 6.99%.

Under the terms of the 2024 Loan and Security Agreement, we granted Banc of California a security interest in a cash security account at Banc of California (the "Cash Security Account"), and Banc of California agreed to terminate all other security interests it had in our assets. We are required to maintain an aggregate unencumbered balance in the Cash Security Account at least equal to the outstanding principal amount of the 2024 Term Loan then outstanding.

Funding Requirements

We will continue to have funding requirements in connection with the continuation of our research and development efforts, potential IND and CTA submissions, potential clinical trials, and expected growth in our *in vivo* portfolios.

We believe that, as of the date of this Quarterly Report on Form 10-Q, existing cash and cash equivalents, expected operational receipts, including upfront and potential near-term consideration to be received from licensees, operational efficiencies gained from divestment of our historical CAR T operations, and availability of our ATM facility will be sufficient to fund our operating expenses and capital expenditure requirements into the second half of 2026. We expect our cash runway to be sufficient to achieve first-in-human Phase 1 clinical data for two wholly-owned *in vivo* gene editing programs. We have based these estimates on assumptions that

may prove to be imprecise, and we could utilize our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of pharmaceutical products, it is difficult to estimate with certainty the amount of our working capital requirements. Our future funding requirements will depend on many factors, including:

- the ability to collaborate and partner with third parties to fund any or all of our programs;
- the progress, costs and results of our additional research and preclinical development programs including our *in vivo* pipeline and our planned IND or CTA submissions and potential biologics license application (“BLA”) submissions;
- the outcome, timing and cost of meeting regulatory requirements established by the FDA and other comparable foreign regulatory authorities;
- our ability to establish and maintain strategic collaborations, licensing or other agreements and the financial terms of such agreements;
- the scope, progress, results and costs of any product candidates that we may derive from ARCUS or any other product candidates we may develop alone or with collaborators;
- the extent to which we in-license or acquire rights to other products, product candidates or technologies;
- the costs and timing of preparing, filing and prosecuting patent applications, maintaining and protecting our intellectual property rights and defending against any intellectual property-related claims; and
- the costs and timing of future commercialization activities, including product manufacturing, marketing, sales and distribution, for any product candidates for which we or our collaborators obtain marketing approval.

Until such time, if ever, that we can generate product revenue sufficient to achieve profitability, we expect to finance our cash needs through a combination of public or private equity or debt financings, collaboration agreements, other third-party funding, strategic alliances, licensing arrangements and marketing and/or distribution arrangements. See “*Risk Factors – We will need substantial additional funding, and if we are unable to raise a sufficient amount of capital when needed on acceptable terms, or at all, we may be forced to delay, reduce or eliminate some or all of our research programs, product development activities and commercialization efforts.*” in Part II, Item 1A. of this Quarterly Report on Form 10-Q for a further discussion of our ability to generate and obtain adequate amounts of funding in connection with our continuing operations.

To the extent that we raise additional capital through the sale of equity or convertible debt securities, our stockholders’ ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our shareholders. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through other third-party funding, collaboration agreements, strategic alliances, licensing arrangements or marketing and distribution arrangements, we may have to relinquish valuable rights to our technologies, future revenue streams, product development and research programs or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to significantly delay, alter, reduce or eliminate one or more of our research or product development programs and/or commercialization efforts, or to grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves. We may also be otherwise unable to execute our business plan, growth strategy, or capitalize on business opportunities as desired.

Common Stock Offering

In March 2024, we entered into an underwriting agreement relating to the offering, issuance and sale of an aggregate of 2,500,000 shares of our common stock and warrants to purchase up to an aggregate of 2,500,000 shares of our common stock at a combined offering price of \$16.00 per share. Each warrant has an exercise price per share of \$20.00, is immediately exercisable and will expire on March 5, 2029. The offering was made pursuant to a registration statement on Form S-3. Gross proceeds from the transaction were \$40.0 million before deducting underwriting discounts and commissions and offering expenses of approximately \$3.0 million. We intend to use the net proceeds of the offering to fund ongoing and planned research and development, and for working capital and other general corporate purposes.

Contractual Obligations and Commitments

In addition to the contractual obligations and commitments as described elsewhere in this Quarterly Report on Form 10-Q with respect to leases, outstanding indebtedness, and intellectual property licenses, we also enter into contracts in the normal course of business

with CMOs, universities, and other third parties for preclinical research studies, testing, manufacturing services, and other services and products for operating purposes. These contracts are generally cancelable upon written notice. There have been no material changes to our contractual obligations from those described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023.

The Company does not have any material capital expenditure commitments as of September 30, 2024.

Critical Accounting Policies and Use of Estimates

Our critical accounting policies and estimates are described in “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Critical Accounting Policies and Use of Estimates” in our Annual Report on Form 10-K. We have reviewed those critical accounting policies and estimates for the nine months ended September 30, 2024. Other than the derivative financial instruments basis of accounting outlined in Note 1, there have been no significant changes in our critical accounting policies and estimates from those disclosed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023.

Emerging Growth Company Status

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”), and we may take advantage of reduced reporting requirements that are otherwise applicable to public companies. Section 107 of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies are required to comply with those standards. We have elected to take advantage of the extended transition period for complying with new or revised accounting standards. As an “emerging growth company,” we are also exempted from having to provide an auditor attestation of internal control over financial reporting under Sarbanes-Oxley Act Section 404(b).

We will remain an “emerging growth company” until the earliest of (1) the last day of the fiscal year in which we have total annual gross revenues of \$1.235 billion or more, (2) December 31, 2024, (3) the date on which we have issued more than \$1.0 billion in nonconvertible debt during the previous three years or (4) the date on which we are deemed to be a large accelerated filer under the rules of the SEC, which means the market value of our common stock held by non-affiliates exceeds \$700 million as of the prior June 30th.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risks in the ordinary course of our business. These risks primarily include interest rate sensitivities. Our interest-earning assets consist of cash and cash equivalents, which are denominated in U.S. dollars. We had cash and cash equivalents of \$98.8 million, or 64% of our total assets, on September 30, 2024 and \$116.7 million, or 73% of our total assets, on December 31, 2023. Interest income earned was \$5.3 million and \$5.9 million for the nine months ended September 30, 2024 and 2023, respectively. Our interest income is sensitive to changes in the general level of interest rates, primarily U.S. interest rates, however, we do not anticipate fluctuations in interest rates to have a material impact on our condensed financial statements. A hypothetical 10% change in interest rates would not have a material impact on the value of our cash and cash equivalents.

Item 4. Controls and Procedures.

Limitations on Effectiveness of Controls and Procedures

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

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated, as of the end of the period covered by this Quarterly Report on Form 10-Q, the effectiveness of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of September 30, 2024.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the three months ended September 30, 2024 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings.

From time to time, we may be involved in claims and proceedings arising in the course of our business. The outcome of any such claims or proceedings, regardless of the merits, is inherently uncertain. We are not currently party to any material legal proceedings.

Item 1A. Risk Factors.

Investing in our common stock involves a high degree of risk. Before investing in our common stock, you should consider carefully the risks described below, together with the other information included or incorporated by reference in this Quarterly Report on Form 10-Q. The occurrence of any of the following risks could materially adversely affect our business, financial condition, results of operations and future growth prospects. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment.

Risks Related to Our Financial Condition, Limited Operating History and Need for Additional Capital

We have incurred significant operating losses since our inception and expect to continue to incur losses for the foreseeable future. We have not been profitable and may not achieve or maintain profitability.

We do not expect to be profitable in the foreseeable future. Since inception, we have incurred significant operating losses. If our product candidates are not successfully developed and approved, we may never generate any revenue from product sales. Our net income was \$24.9 million for the nine months ended September 30, 2024. As of September 30, 2024, we had an accumulated deficit of \$464.7 million. In addition, we have not commercialized any products and have never generated any revenue from product sales. Substantially all of our losses have resulted from expenses incurred in connection with our research and development activities, including our preclinical development activities, and from general and administrative costs associated with our operations. We have financed our operations primarily through proceeds from upfront and milestone payments from collaboration and licensing agreements, our IPO, private placements of our common stock, convertible preferred stock and convertible debt financings, underwritten and ATM offerings of common stock and warrants, and borrowings on credit facilities. The amount of our future net losses will depend, in part, on the amount and growth rate of our expenses and our ability to generate revenues.

All of our current or future product candidates will require substantial additional development time and resources before we may realize revenue from product sales, if at all. We expect to continue to incur significant expenses and operating losses for the foreseeable future. We anticipate our expenses will increase if and as we:

- continue our current research and development programs, including conducting laboratory and preclinical studies for product candidates;
- initiate potential clinical trials for product candidates;
- seek to identify, assess, acquire or develop additional research programs or product candidates;
- maintain, expand and protect our intellectual property portfolio;
- seek marketing approvals for any product candidates that may successfully complete development;
- establish a sales, marketing and distribution infrastructure to commercialize any products that may obtain marketing approval;
- change or add additional manufacturers or suppliers of biological materials or product candidates;
- further develop our genome editing technology;
- acquire or in-license other technologies;
- seek to attract new and retain existing personnel;
- expand our facilities; and
- incur increased costs as a result of operating as a public company.

It will be several years, if ever, before we obtain regulatory approval for, and are ready for commercialization of, a therapeutic product candidate. Even if a therapeutic product candidate receives regulatory approval, future revenues for such product candidate will depend upon many factors, such as, as applicable, the size of any markets in which such product candidate is approved for sale, the

market share captured by such product candidate, including as a result of the market acceptance of such product candidate and the effectiveness of manufacturing, sales, marketing and distribution operations related to such product candidate, the terms of any collaboration, license, or other strategic arrangement we may have with respect to such product candidate and levels of reimbursement from third-party payors. If we are unable to develop and commercialize one or more product candidates either alone or with collaborators, or if revenues from any product candidate that receives marketing approval or is commercialized are insufficient, we may not achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability. If we are unable to achieve and maintain profitability, the value of our common stock will be materially adversely affected.

We will need substantial additional funding, and if we are unable to raise a sufficient amount of capital when needed on acceptable terms, or at all, we may be forced to delay, reduce or eliminate some or all of our research programs, product development activities and commercialization efforts.

The process of identifying product candidates and conducting preclinical studies and potential clinical trials is time-consuming, expensive, uncertain and takes years to complete. We expect our expenses to increase in connection with our ongoing activities, particularly as we identify, continue the research and development of, initiate potential clinical trials of, and seek marketing approval for, product candidates. In addition, if any therapeutic product candidate that we develop alone or with collaborators obtains marketing approval, we may incur significant commercialization expenses related to product manufacturing, sales, marketing and distribution efforts. Furthermore, we have incurred, and expect to continue to incur, additional costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to obtain sufficient funding on a timely basis or on favorable terms, we may be required to significantly delay, alter, reduce, or eliminate one or more of our research or product development programs and/or commercialization efforts, or to grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves. We may also be otherwise unable to execute our business plan or growth strategy or capitalize on business opportunities as desired. Any of these events could materially adversely affect our financial condition and business prospects.

We believe that, as of the date of this Quarterly Report on Form 10-Q, existing cash and cash equivalents, expected operational receipts, including upfront and potential near-term consideration to be received from our licensees, operational efficiencies gained from divestment of our historical CAR T operations, and availability of our ATM facility will be sufficient to fund our operating expenses and capital expenditure requirements into the second half of 2026. We expect our cash runway to be sufficient to achieve first-in-human Phase I clinical data for two wholly-owned programs. We have based this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we currently expect. Our operating plans and other demands on our cash resources may change as a result of many factors, including factors unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings or other sources, such as strategic collaborations and licensing arrangements.

Attempting to secure additional financing may divert our management from our day-to-day activities, which may adversely affect our ability to develop product candidates. Our future capital requirements will depend on many factors, including:

- the timing, scope, progress, costs, results and analysis of results of research activities, preclinical studies and potential clinical trials for any of our product candidates;
- the costs of future activities, including product manufacturing, sales, marketing and distribution activities for any product candidates that receive regulatory approval;
- the success of our existing collaborative and other out-licensing relationships;
- the extent to which we exercise any development or commercialization rights under collaborative relationships;
- our ability to establish and maintain additional collaborative or other out-licensing relationships on favorable terms, or at all;
- the extent to which we expand our operations and the timing of such expansion, including with respect to facilities, employees and product development platforms;
- the costs of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property and proprietary rights and defending intellectual property-related claims;
- the extent to which we acquire or in-license other technologies or product candidates;

- the extent to which we acquire or invest in other businesses;
- the costs of continuing to operate as a public company; and
- the amount of revenues, if any, received from commercial sales of any products that we develop alone or with collaborators that receive regulatory approval.

Even if we believe we have sufficient funds for our current or future operating plans, we may continue to seek additional capital if market conditions are favorable or in light of specific strategic considerations. Adequate additional financing may not be available to us on acceptable terms, or at all.

Provisions of our debt instruments may restrict our ability to pursue our business strategies, and our ability to access credit on favorable terms, if necessary, for the funding of our operations, trials and programs may be limited due to changes in credit

markets.

Pursuant to the terms of the 2024 Loan and Security Agreement, we have outstanding \$22.5 million of principal amounts due to Banc of California under the 2024 Term Loan. Pursuant to the terms of the 2024 Loan and Security Agreement, we granted Banc of California a security interest in the Cash Security Account.

The 2024 Loan and Security Agreement requires us to comply with various covenants that limit our ability to, among other things:

- change our name, location, executive office or executive management, business, fiscal year, or control;
- complete mergers with or into other entities;
- incur indebtedness; and
- maintain less than \$22.5 million of unencumbered cash in the Cash Security Account.

In addition, the agreements and instruments governing future indebtedness that we may enter into may include such restrictions or additional restrictions and financial covenants. Restrictions in our current and future indebtedness could inhibit our ability to pursue our business strategies.

Additionally, the credit markets and the financial services industry have been experiencing disruption characterized by the bankruptcy, failure, collapse or sale of various financial institutions, increased volatility in securities prices, diminished liquidity and credit availability and intervention from the U.S. and other governments. As a result, the cost and availability of credit has been and may continue to be adversely affected. We cannot be certain that funding will be available when and as needed, and if available, on acceptable terms if at all. If we are unable to obtain funding when needed and on acceptable terms, our financial condition and business prospects could be adversely impacted.

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

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity and/or debt financings and collaborations, licensing agreements or other strategic arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, including in underwritten and ATM offerings, stockholders' ownership interest will be diluted, and the terms of such securities may include liquidation or other preferences that adversely affect common stockholders' rights. For example, in March 2024, we entered into an underwriting agreement relating to the offering, issuance and sale of an aggregate of 2,500,000 shares of our common stock and warrants to purchase up to an aggregate of 2,500,000 shares of our common stock at a combined offering price of \$16.00 per share which resulted in dilution to our existing stockholders. Moreover, there is a provision in each warrant under which we may be required to purchase the warrants from the holders by paying cash in an amount equal to the Black-Scholes value of the remaining unexercised portion of the warrants in certain specified situations involving a "fundamental transaction" (as defined in the warrants), which generally includes a merger with another person or entity, the sale, transfer or other disposition of all or substantially all of our assets, another person or entity becoming the beneficial owner of 50% of the outstanding shares of our common stock, any reclassification, reorganization or recapitalization of our common stock, any compulsory share exchange pursuant to which our common stock is effectively converted into or exchanged for other securities, cash or property, any plan or proposal for our voluntary or involuntary dissolution, liquidation or the winding up of our affairs, or if other conditions are met. It may be uncertain whether a particular transaction or series of transactions will trigger the cash-settlement provision or if the provision is triggered, what the actual payment due to a warrant holder would be in such circumstance, but any such

payment could be material to us and could materially and adversely affect our financial condition. Furthermore, we may find it more difficult to raise additional equity capital needed for our business or to pursue strategic alternatives or other corporate transactions while the warrants are outstanding.

To the extent that we raise additional capital through debt financing, it would result in increased fixed payment obligations and a portion of our operating cash flows, if any, being dedicated to the payment of principal and interest on such indebtedness. In addition, debt financing may involve agreements that include restrictive covenants that impose operating restrictions, such as restrictions on the incurrence of additional debt, the making of certain capital expenditures or the declaration of dividends. To the extent we raise additional capital through arrangements with collaborators or otherwise, we may be required to relinquish some of our technologies, research programs, product development activities, product candidates and/or future revenue streams, license our technologies and/or product candidates on unfavorable terms or otherwise agree to terms unfavorable to us. Furthermore, any capital raising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to advance research programs, product development activities or product candidates.

We have a limited operating history, which makes it difficult to evaluate our current business and future prospects and may increase the risk of your investment.

We are a genome editing company with a limited operating history. We formed our company in 2006 and spent the first nine years of our company's history developing and refining our core technology, and only during the past several years have we focused our efforts on advancing the development of product candidates.

Investment in biopharmaceutical product development is a highly speculative endeavor. It entails substantial upfront capital expenditures, and there is significant risk that any product candidate will fail to demonstrate adequate efficacy or an acceptable safety profile, obtain any required regulatory approvals or become commercially viable. Our genome editing platform and the technologies we are using are new and unproven. We have not yet demonstrated an ability to successfully complete any clinical trials, obtain any required marketing approvals, manufacture products, conduct sales, marketing and distribution activities, or arrange for a third party to do any of the foregoing on our behalf. Consequently, any predictions made about our future success or viability may not be as accurate as they could be if we had a history of successfully developing and commercializing products.

Additionally, we encounter risks and difficulties frequently experienced by new and growing companies in rapidly developing and changing industries, particularly the nascent and swiftly evolving gene editing field, including challenges in forecasting accuracy, determining appropriate investments of our limited resources, gaining market acceptance of our technology, managing a complex regulatory landscape and developing new product candidates, which may make it more difficult to evaluate our likelihood of success. Our current operating model may require changes in order for us to adjust to these challenges or scale our operations efficiently. Our limited operating history, particularly in light of the rapidly evolving nature of the biopharmaceutical industry and the genome editing field, may make it difficult to evaluate our technology and business prospects or to predict our future performance. Additionally, due to the stage of our operations, we expect that our financial condition and operating results may fluctuate significantly from quarter to quarter as a result of many factors as we build our business, and you should not rely upon the results of any particular quarterly or annual period as indications of future operating performance.

We may expend our limited resources on pursuing particular research programs or product candidates that may be less successful or profitable than other programs or product candidates.

Research programs to identify new product candidates and product development platforms require substantial technical, financial and human resources. We are continually evaluating our business strategy and may modify this strategy in light of developments in our business and other factors. We may focus our efforts and resources on potential programs, product candidates or product development platforms that ultimately prove to be unsuccessful. Any time, effort and financial resources we expend on identifying and researching new product candidates and product development platforms may divert our attention from, and adversely affect our ability to continue, development and commercialization of existing research programs, product candidates and product development platforms. Clinical trials of any of our product candidates may never commence despite the expenditure of significant resources in pursuit of their development, and our spending on current and future research and development programs, product candidates and product development platforms may not yield any commercially viable products. As a result of having limited financial and managerial resources, we may forego or delay pursuit of opportunities that later prove to have greater commercial potential. For example, as part of the ongoing strategic prioritization exercise, in 2023 we announced that while we will continue to pursue gene knock-out opportunistically, the proof-of-concept data continues to lead toward prioritizing programs involving complex edits and gene insertion. As such, we made the decision to cease pursuit of PBGENE-PCSK9 for familial hypercholesterolemia with iECURE as our partner in December 2022. We also made the choice to look for a partner in the kidney disease arena for further development of PBGENE-PH1 and will no longer develop the program on our own. There is no guarantee that this ongoing prioritization review will ultimately lead to any viable commercial products, profitable market opportunities or other value-enhancing activities. Our resource

allocation decisions may cause us to fail to timely capitalize on viable commercial products or profitable market opportunities. Additionally, if we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing or other strategic arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

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

ARCUS is a novel technology, making it difficult to predict the time, cost and potential success of product candidate development. We have not yet been able to assess the safety and efficacy of most of our product candidates in humans.

Our success depends on our ability to develop and commercialize product candidates using our novel genome editing technology. The novel nature of our technology makes it difficult to accurately predict the developmental challenges we may face for product candidates as they proceed through research, preclinical studies and clinical trials. There have been a limited number of clinical trials of products created with genome editing technologies, four of which have utilized our technology. Because our therapeutic research programs are all in preclinical or early clinical stages, we have only been able to assess limited safety and efficacy data of our product candidates in human trials. Current or future product candidates may not meet safety and efficacy requirements for continued development or ultimate approval in humans and may cause significant adverse events or toxicities. All of our product candidates are designed to act at the level of DNA, and because animal DNA differs from human DNA, it will be difficult for us to test our therapeutic product candidates in animal models for either safety or efficacy, and any testing that we conduct may not translate to their effects in humans. Moreover, animal models may not exist for some of the targets, diseases or indications that we intend to pursue. Our product candidates may not be able to properly implement desired genetic edits with sufficient accuracy to be viable therapeutic products, and there may be long-term effects associated with them that we cannot predict at this time. Any problems we experience related to the development of our genome editing technology or any of our or our collaborators' research programs or product candidates may cause significant delays or unanticipated costs, and we may not be able to satisfactorily solve such problems. These factors may prevent us or our collaborators from completing our preclinical studies or any clinical trials that we or our collaborators have ongoing or may initiate, or profitably commercializing any product candidates on a timely basis, or at all. We may also experience delays in developing a sustainable, reproducible and scalable manufacturing process as we develop and prepare to commercialize product candidates. These factors make it more difficult for us to predict the time, cost and potential success of product candidate development. If our product development activities take longer or cost more than anticipated, or if they ultimately are not successful, it would materially adversely affect our business and results of operations.

The genome editing field is relatively new and evolving rapidly, and other existing or future technologies may provide significant advantages over our ARCUS platform, which could materially harm our business.

To date, we have focused our efforts on optimizing our proprietary genome editing technology and exploring its potential applications. ARCUS is a novel genome editing technology using sequence-specific DNA-cutting enzymes, or nucleases, that is designed to perform modifications in the DNA of living cells and organisms. Other companies have previously undertaken research and development of genome editing technologies using zinc finger nucleases, transcription activator-like effector nucleases ("TALENs") and clustered regularly interspaced short palindromic repeats associated protein-9 nuclease ("CRISPR/Cas9"), although none has obtained marketing approval for an *in vivo* gene editing product candidate developed using such technologies. Other genome editing technologies in development or commercially available, or other existing or future technologies, may lead to treatments or products that may be considered better suited for use in human therapeutics, which could reduce or eliminate our commercial opportunity.

We are heavily dependent on the successful development and translation of ARCUS, and due to the early stages of our product development operations, we cannot give any assurance that any product candidates will be successfully developed and commercialized.

We are at an early stage of development of the product candidates currently in our programs and are continuing to develop our ARCUS technology. To date, we have invested substantially all of our efforts and financial resources to develop ARCUS and advance our current product development programs, including conducting preclinical studies, early stage clinical trials and other early research and development activities, and providing general and administrative support for these operations. Due to the strategic transaction with Imugene for our azer-cel for cancer, as well as our CAR T infrastructure and cell therapy teams, and the TG License Agreement, we are now solely focused on leveraging our ARCUS genome editing platform to advance a new potential class of gene editing programs that go beyond gene knockouts in the liver and carry out sophisticated edits such as gene insertions, gene excision, and gene elimination in human therapeutics. We are also currently using our ARCUS technology to develop our lead *in vivo* gene editing programs targeting HBV, DMD, and certain hemoglobinopathies, among other indications. Our future success is dependent on our ability to successfully develop and, where applicable, obtain regulatory approval for, including marketing approval for, and then successfully commercialize, product candidates, either alone or with collaborators. We have not yet developed and commercialized any product candidates, and we may not be able to do so, alone or with collaborators.

Our research and development programs may not lead to the successful identification, development or commercialization of any products.

The success of our business depends primarily upon our ability to identify, develop and commercialize products using our genome editing technology. All of our *in vivo* product candidates and product development programs we are currently pursuing are still in the discovery or preclinical stages. We may be unsuccessful in advancing those product candidates into clinical development or in identifying any developing additional product candidates. Our ability to identify and develop product candidates is subject to the numerous risks associated with preclinical and early stage biotechnology development activities, including that:

- the use of ARCUS may be ineffective in identifying additional product candidates;
- we may not be able to assemble sufficient resources to acquire or discover additional product candidates;
- we may not be able to enter into collaborative arrangements to facilitate development of product candidates, the terms of our collaborative arrangements may change, or our collaborative arrangements may be terminated;
- competitors may develop alternatives that render our product candidates obsolete or less attractive;
- our product candidates may be covered by third parties' patents or other exclusive rights;
- the regulatory pathway for a product candidate may be too complex, expensive or otherwise difficult to navigate successfully; or
- our product candidates may be shown to not be effective, have harmful side effects or otherwise pose risks not outweighed by such product candidate's benefits or have other characteristics that may make the products impractical to manufacture, unlikely to receive any required marketing approval, unlikely to generate sufficient market demand or otherwise not achieve profitable commercialization.

Our current and future product candidates may never be approved. Failure to successfully identify and develop new product candidates and obtain regulatory approvals for our products would have a material adverse effect on our business and financial condition and could cause us to cease operations.

If our product candidates do not achieve projected development milestones or commercialization in the announced or expected timeframes, the further development or commercialization of such product candidates may be delayed, and our business will be harmed.

We sometimes estimate, or may in the future estimate, the timing of the accomplishment of various scientific, clinical, manufacturing, regulatory and other product development objectives. These milestones may include our expectations regarding the commencement or completion of scientific studies or clinical trials, the submission of regulatory filings, the receipt of marketing approval or the realization of other commercialization objectives. The achievement of many of these milestones may be outside of our control. All of these milestones are based on a variety of assumptions, including assumptions regarding capital resources, constraints and priorities, progress of and results from development activities, participation of third parties including outside collaborators or vendors, the receipt of key regulatory approvals or actions, and other factors, any of which may cause the timing of achievement of the milestones to vary considerably from our estimates. If we or our collaborators fail to achieve announced milestones in the expected timeframes, the commercialization of the product candidates may be delayed, our credibility may be undermined, our business and results of operations may be harmed, and the trading price of our common stock may decline.

Adverse public perception of genome editing may negatively impact the developmental progress or commercial success of products 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 genome editing technology for the prevention or treatment of human diseases. Adverse public perception of applying genome editing technology for these purposes may negatively impact our ability to raise capital or enter into strategic agreements for the development of product candidates.

Any therapeutic product candidates may involve editing the human genome. The commercial success of any such potential therapeutic products, if successfully developed and approved, may be adversely affected by claims that genome editing is unsafe, unethical or immoral. This may lead to unfavorable public perception and the inability of any therapeutic 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 therapeutic product candidates. Moreover, success in commercializing any therapeutic 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, including, without limitation, patient deaths, or with respect to the studies or trials of our competitors or of academic researchers utilizing genome editing technologies, even if not ultimately attributable to our technology or product candidates, could negatively influence public opinion. Negative public perception about the use of genome editing 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 have a negative impact on our business and financial condition.

We face significant competition in industries experiencing rapid technological change, and there is a possibility that our competitors may achieve regulatory approval before us or develop product candidates or treatments that are safer or more effective than ours, which may harm our financial condition and our ability to successfully market or commercialize any of our product candidates.

The development and commercialization of new drug products is highly competitive, and the genome editing field is characterized by rapidly changing technologies, significant competition and a strong emphasis on intellectual property. We will face competition with respect to our current and future therapeutic product candidates from major pharmaceutical companies, specialty 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 of products.

There are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of products for the treatment of the disease indications for which we have research programs. Some of these competitive products and therapies are based on scientific approaches that are similar to our approach, and others are based on entirely different approaches. We principally compete with others developing and utilizing genome editing technology in the human health sector. Several companies have obtained FDA approval for autologous immunotherapies, and a number of companies are pursuing allogeneic immunotherapies. We expect that our operations focused on developing products for *in vivo* gene editing will face substantial competition from others focusing on gene therapy treatments, especially those that may focus on conditions that our product candidates target. Moreover, any human therapeutics products that we develop alone or with collaborators will compete with existing standards of care for the diseases and conditions that our product candidates target and other types of treatments, such as small molecule, antibody or protein therapies.

Many of our current or potential competitors, either alone or with their collaborators, 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 programs. 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 we develop alone or with collaborators or that would render any such products obsolete or non-competitive. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we or our collaborators may obtain approval for any that we develop, which could result in our competitors establishing a strong market position before we are able to enter the market. Additionally, technologies developed by our competitors may render our product candidates uneconomical or obsolete, and we or our collaborators may not be successful in marketing any product candidates we may develop against competitors. The availability of our competitors' products could limit the demand, and the price we are able to charge, for any products that we develop alone or with collaborators.

Our future profitability, if any, will depend in part on our ability and the ability of our collaborators or other licensees to commercialize any products that we, our collaborators, or our other licensees may develop in markets throughout the world. Commercialization of products in various markets could subject us to risks and uncertainties, including:

- obtaining, on a country-by-country basis, the applicable marketing authorization from the competent regulatory authority;
- the burden of complying with complex and changing regulatory, tax, accounting, labor and other legal requirements in each jurisdiction that we or our collaborators pursue;

- reduced protection for intellectual property rights;
- differing medical practices and customs affecting acceptance in the marketplace;
- import or export licensing requirements;
- governmental controls, trade restrictions or changes in tariffs;
- economic weakness, including inflation, political instability in particular foreign economies and markets, or civil unrest or war, such as the current conflict between Russia and Ukraine;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad;
- longer accounts receivable collection times;
- longer lead times for shipping;
- language barriers;
- foreign currency exchange rate fluctuations;
- foreign reimbursement, pricing and insurance regimes; and
- the interpretation of contractual provisions governed by foreign laws in the event of a contract dispute.

We have limited or no prior experience in these areas, and our collaborators may have limited experience in these areas. Failure to successfully navigate these risks and uncertainties may limit or prevent market penetration for any products that we or our collaborators may develop, which would limit their commercial potential and our revenues.

Product liability lawsuits against us could cause us to incur substantial liabilities and could limit commercialization of any products that we develop alone or with collaborators.

We face an inherent risk of product liability and professional indemnity exposure related to the testing in clinical trials of our product candidates. We will face an even greater liability risk if we commercially sell any products that we or our collaborators may develop for human use. Manufacturing defects, errors in product distribution or storage processes, improper administration or application and known or unknown side effects of product usage may result in liability claims against us or third parties with which we have relationships. These actions could include claims resulting from acts by our collaborators, licensees and subcontractors over which we have little or no control.

For example, our liability could be sought by patients participating in clinical trials for potential therapeutic product candidates as a result of unexpected side effects, improper product administration or the deterioration of a patient's condition, patient injury or even death. Criminal or civil proceedings might be filed against us by patients, regulatory authorities, biopharmaceutical companies and any other third party using or marketing any product candidates or products that we develop alone or with collaborators. On occasion, large judgments have been awarded in class action lawsuits based on products that had unanticipated adverse effects. If we cannot successfully defend ourselves against claims that product candidates or products we develop alone or with collaborators caused harm, we could incur substantial liabilities.

Regardless of merit or eventual outcome, liability claims may result in:

- significant time and costs to defend the related litigation;
- injury to our reputation and significant negative media attention;
- diversion of management's attention from pursuing our strategy;
- withdrawal of clinical trial participants;
- delay or termination of clinical trials;
- decreased demand for any products that we develop alone or with collaborators;
- substantial monetary awards to trial participants or patients;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue; and
- the inability to further develop or commercialize any products.

Although the clinical trial process is designed to identify and assess potential side effects, clinical development does not always fully characterize the safety and efficacy profile of a new medicine, and it is always possible that a drug or biologic, even after regulatory approval, may exhibit unforeseen side effects. If our product candidates were to cause adverse side effects during clinical trials or after approval, we may be exposed to substantial liabilities. Physicians and patients may not comply with any warnings that identify known potential adverse effects and patients who should not use our product candidates. If any of our product candidates are approved for commercial sale, we will be highly dependent upon consumer perceptions of us and the safety and quality of such products. We could be adversely affected if we are subject to negative publicity associated with illness or other adverse effects resulting from patients' use or misuse of such products or any similar products distributed by other companies.

Although we maintain product liability insurance coverage, it may not be adequate to cover all liabilities that we may incur. We anticipate that we will need to increase our insurance coverage if we or our collaborators successfully commercialize any products. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liabilities to which we may become subject.

Additional Risks Related to the Identification, Development and Commercialization of Our Therapeutic Product Candidates

The regulatory landscape that will apply to development of therapeutic product candidates by us or our collaborators is rigorous, complex, uncertain and subject to change, which could result in delays or termination of development of such product candidates or unexpected costs in obtaining regulatory approvals.

Regulatory requirements governing products created with genome editing technology or involving gene therapy treatment have changed frequently and will likely continue to change in the future. Approvals by one regulatory agency may not be indicative of what any other regulatory agency may require for approval, and there has historically been substantial, and sometimes uncoordinated, overlap in those responsible for regulation of gene therapy products, cell therapy products and other products created with genome editing technology. For example, in the United States, the FDA has established the Office of Therapeutic Products within its Center for Biologics Evaluation and Research ("CBER") to consolidate the review of gene therapy and related products, and the Cellular, Tissues, and Gene Therapies Advisory Committee to advise CBER on its review. Our product candidates will need to meet safety, purity, and potency standards applicable to any new biologic under the regulatory framework administered by the FDA.

In addition to the submission of an IND to the FDA, before initiation of a clinical trial in the United States, certain human clinical trials subject to the NIH Guidelines are subject to review and oversight by an institutional biosafety committee ("IBC"), a local institutional committee that reviews and oversees research utilizing recombinant or synthetic nucleic acid molecules at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment, 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 to the government regulators, 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, would need to review and approve the proposed clinical trial.

The same applies in the EU. The European Medicine Agency ("EMA") has a Committee for Advanced Therapies ("CAT") that is responsible for assessing the quality, safety and efficacy of advanced therapy medicinal products ("ATMPs"). ATMPs include gene therapy medicine, somatic-cell therapy medicines and tissue-engineered medicines. The role of the CAT is to prepare a draft opinion on an application for marketing authorization for a gene therapy medicinal product candidate that is submitted to the EMA. In the EU, the development and evaluation of a gene therapy medicinal product must be considered in the context of the relevant EU guidelines. The EMA may issue new guidelines concerning the development and marketing authorization for gene therapy medicinal products and require that we comply with these new guidelines. Similarly complex regulatory environments exist in other jurisdictions in which we might consider seeking regulatory approvals for our product candidates, further complicating the regulatory landscape. As a result, the procedures and standards applied to gene therapy products and cell therapy products may be applied to any of our gene therapy or genome editing product candidates, but that remains uncertain at this point.

The clinical trial requirements of the FDA, the EMA and other foreign regulatory authorities and the criteria these regulators use to evaluate the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty and intended use and market of the potential products. The regulatory approval process for product candidates created with novel genome editing technology such as ours can be more lengthy, rigorous and expensive than the process for other better known or more extensively studied product candidates and technologies. Since we are developing novel treatments for diseases in which there is little clinical experience with new endpoints and methodologies, there is heightened risk that the FDA, the EMA or comparable 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. This may be a particularly significant risk for many of the genetically defined diseases for which we may

develop product candidates alone or with collaborators due to small patient populations for those diseases, and designing and executing a rigorous clinical trial with appropriate statistical power is more difficult than with diseases that have larger patient populations. Regulatory agencies administering existing or future regulations or legislation may not allow production and marketing of products utilizing genome editing technology in a timely manner or under technically or commercially feasible conditions. Even if our product candidates obtain required regulatory approvals, such approvals may later be withdrawn as a result of changes in regulations or the interpretation of regulations by applicable regulatory agencies.

Changes in applicable regulatory guidelines may lengthen the regulatory review process for our product candidates, require additional studies or trials, increase development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of such product candidates, or lead to significant post-approval limitations or restrictions. Additionally, adverse developments in clinical trials conducted by others of gene therapy products or products created using genome editing technology, such as products developed through the application of a CRISPR/Cas9 technology, or adverse public perception of the field of genome editing, may cause the FDA, the EMA and other regulatory bodies to revise the requirements for approval of any product candidates we may develop or limit the use of products utilizing genome editing technologies, either of which could materially harm our business. For example, on November 28, 2023, the FDA announced that it was investigating reports of T-cell malignancies, including CAR-positive lymphoma, in patients who received treatment with BCMA- or CD19-directed autologous CAR T cell immunotherapies, and in January 2024, the FDA required the manufacturers of certain CAR-T therapies to add boxed warnings to product labeling cautioning against the risk of T-cell malignancies. Although we are no longer pursuing the development of CAR-T candidates following our strategic divestment of azer-cel, issues associated with these novel treatment modalities could lead to adverse public perceptions or otherwise affect the manner in which the FDA regulates gene editing products, such as those we are seeking to develop. Furthermore, regulatory action or private litigation could result in expenses, delays or other impediments to our research programs or the development or commercialization of current or future product candidates.

As we advance product candidates alone or with collaborators, we will be required to consult with these regulatory and advisory groups and comply with all applicable guidelines, rules and regulations. If we fail to do so, we or our collaborators may be required to delay or terminate development of such product candidates. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a product candidate to market could decrease our ability to generate sufficient product revenue to maintain our business.

We may not be able to submit INDs to the FDA or CTAs to comparable foreign authorities to commence clinical trials on the timelines we expect, and even if we are able to, the FDA or comparable foreign authorities may not permit us to proceed.

We plan to submit INDs and CTAs to enable us to conduct clinical trials for product candidates in the future, and we expect to file IND amendments to enable us to conduct clinical trials under existing INDs. We cannot be sure that submission of an IND, CTA, or IND amendment will result in us being allowed to proceed with clinical trials, or that, once begun, issues will not arise that could result in the suspension or termination of such clinical trials. The manufacturing of *in vivo* therapies for genetic and infectious diseases remains an emerging and evolving field. Accordingly, we expect CMC related topics, including product specifications, will be a focus of IND and CTA reviews, which may delay receipt of authorization to proceed under INDs and CTAs. Additionally, even if such regulatory authorities agree with the design and implementation of the clinical trials set forth in an IND or CTA, we cannot guarantee that such regulatory authorities will not change their requirements in the future. Similar risks may exist in foreign jurisdictions where we intend to conduct clinical trials.

The regulatory approval processes of the FDA and comparable foreign authorities are lengthy, time consuming and inherently unpredictable, and if we are ultimately unable to obtain regulatory approval for our product candidates, 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 authorities is unpredictable, but typically takes many years following the commencement of clinical trials and depends upon numerous factors, including substantial discretion of the regulatory authorities and sufficient resources at the FDA or foreign regulatory authorities. In addition, approval policies, regulations or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions. To date, we have not submitted a BLA or other marketing authorization application to the FDA or similar drug approval submissions to comparable foreign regulatory authorities 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.

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

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our or our collaborators' clinical trials;
- we or our collaborators may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that a product candidate is safe and effective for its proposed indication;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we or our collaborators may be unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our or our collaborators' interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of 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 our manufacturing processes or facilities or those of third-party manufacturers with which we or our collaborators contract for clinical and commercial supplies;
- the FDA, comparable foreign regulatory authorities or notified bodies may fail to approve or certify the companion diagnostics we may contemplate developing with collaborators; 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 future clinical trial results may result in our failing to obtain regulatory approval to market our product candidates, which would significantly harm our business, results of operations and prospects.

In addition, even if we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may impose significant limitations in the form of narrow indications, warnings, or a REMS or similar risk management measures. Regulatory authorities 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 materially harm the commercial prospects for our product candidates.

In addition, FDA and foreign regulatory authorities may change their approval policies and new regulations may be enacted. For instance, the EU pharmaceutical legislation is currently undergoing a complete review process, in the context of the Pharmaceutical Strategy for Europe initiative, launched by the European Commission in November 2020. The European Commission's proposal for revision of several legislative instruments related to medicinal products (potentially revising the duration of regulatory exclusivity, eligibility for expedited pathways, etc.) was published in April 2023. The proposal revisions, once they are agreed and adopted by the European Parliament and European Council (not expected before 2026), may have a significant impact on the biopharmaceutical industry in the long term.

Clinical trials are difficult to design and implement, expensive, time-consuming and involve an uncertain outcome, and the inability to successfully and timely conduct clinical trials and obtain regulatory approval for our product candidates would substantially harm our business.

Clinical testing is expensive and usually takes many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process, and product candidates in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through preclinical studies and initial clinical trials. We do not know whether any of our planned or future clinical trials will need to be redesigned, recruit and enroll patients on time or be completed on schedule, or at all. Clinical trials have been and may in the future be delayed, suspended or terminated for a variety of reasons, including in connection with:

- the inability to generate sufficient preclinical, toxicology or other *in vivo* or *in vitro* data to support the initiation of clinical trials;
- applicable regulatory authorities disagreeing as to the design or implementation of the clinical trials;
- obtaining regulatory authorization to commence a trial;

- reaching an agreement on acceptable terms with prospective CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- obtaining IRB or ethics committee approval or positive opinion at each site;
- developing and validating the companion diagnostic to be used in a clinical trial, if applicable;
- insufficient or inadequate supply or quality of product candidates or other materials, including identification of lymphocyte donors meeting regulatory standards necessary for use in clinical trials, or delays in sufficiently developing, characterizing or controlling a manufacturing process suitable for clinical trials;
- recruiting and retaining enough suitable patients to participate in a trial;
- having enough patients complete a trial or return for post-treatment follow-up;
- adding a sufficient number of clinical trial sites;
- inspections of clinical trial sites or operations by applicable regulatory authorities, or the imposition of a clinical hold;
- clinical sites deviating from trial protocol or dropping out of a trial;
- the inability to demonstrate the efficacy and benefits of a product candidate;
- discovering that product candidates have unforeseen safety issues, undesirable side effects or other unexpected characteristics;
- addressing patient safety concerns that arise during the course of a trial;
- receiving untimely or unfavorable feedback from applicable regulatory authorities regarding the trial or requests from regulatory authorities to modify the design of a trial;
- non-compliance with applicable regulatory requirements by us or third parties or changes in such regulations or administrative actions;
- suspensions or terminations by IRBs of the institutions at which such trials are being conducted, by the Data Safety Monitoring Board for such trial or by the FDA or other foreign regulatory authorities due to a number of factors, including those described above;
- third parties being unable or unwilling to satisfy their contractual obligations to us;
- competitive pressures and other market conditions;
- changes in our financial priorities, greater than anticipated costs of completing a trial or our inability to continue funding the trial; or
- unforeseen events, such as natural or manmade disasters, public health emergencies, such as natural catastrophic events.

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. Additionally, we or our collaborators may experience unforeseen events during or resulting from clinical trials that could delay or prevent receipt of marketing approval for or commercialization of product candidates. For example, clinical trials of product candidates may produce negative, inconsistent or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon development programs. Regulators may also revise the requirements for approving the product candidates, or such requirements may not be as we anticipate. If we or our collaborators are required to conduct additional clinical trials or other testing of product candidates beyond those that we or our collaborators currently contemplate, if we or our collaborators are unable to successfully complete clinical trials or other testing of such product candidates, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we may:

- incur unplanned costs;
- be delayed in obtaining or fail to obtain marketing approval for product candidates;
- obtain marketing approval in some countries and not in others;
- obtain marketing approval for indications or patient populations that are not as broad as intended or desired;
- obtain marketing approval with labeling that includes significant use or distribution restrictions or safety warnings, including boxed warnings;

- be subject to additional post-marketing testing requirements;
- be subject to changes in the way the product is administered;
- have regulatory authorities withdraw or suspend their approval of the product or impose restrictions on its distribution;
- be sued; or
- experience damage to our reputation.

If we or our collaborators experience delays in the commencement or completion of our clinical trials, or if we or our collaborators terminate a clinical trial prior to completion, we may experience increased costs, have difficulty raising capital and/or be required to slow down the development and approval process timelines. Furthermore, the product candidates that are the subject of such trials may never receive regulatory approval, and their commercial prospects and our ability to generate product revenues from them could be impaired or not realized at all.

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

If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies governing clinical trials, our development plans may also be impacted.

Any product candidates that we or our collaborators may develop will be novel and may be complex and difficult to manufacture, and if we experience manufacturing problems, it could result in delays in development and commercialization of such product candidates or otherwise harm our business.

Our product candidates involve or will involve novel genome editing technology and will require processing steps that are more complex than those required for most small molecule drugs, resulting in a relatively higher manufacturing cost. Moreover, unlike small molecules, the physical and chemical properties of biologics generally cannot be fully characterized. As a result, assays of the finished product may not be sufficient to ensure that such product will perform in the intended manner. Although we intend to employ multiple steps to control the manufacturing process, we may experience manufacturing issues with any of our product candidates that could cause production interruptions, including contamination, equipment or reagent failure, improper installation or operation of equipment, facility contamination, raw material shortages or contamination, natural disasters, disruption in utility services, human error, disruptions in the operations of our suppliers, inconsistency in cell growth and variability in product characteristics. We may encounter problems achieving adequate quantities and quality of clinical-grade materials that meet FDA, EMA or other comparable applicable standards or specifications with consistent and acceptable production yields and costs. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If microbial, viral or other contaminations are discovered in our product candidates or in the manufacturing facilities in which such product candidates are made, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. 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, delays in initiating or completing clinical trials, product recalls, product liability claims or insufficient inventory.

As product candidates are developed through preclinical to late-stage clinical trials towards approval and commercialization, we expect that various aspects of the development program, such as manufacturing methods, may be altered along the way in an effort to help optimize processes and results. Such changes carry the risk that they will not achieve the intended objectives, and any of these changes could cause our product candidates to perform differently and affect the results of future clinical trials or our reliance on results of trials that have previously been conducted using the product candidate in its previous form. If the manufacturing process is changed during the course of product development, we or our collaborators may be required to repeat some or all of the previously conducted trials or conduct additional bridging trials, which could increase our costs and delay or impede our ability to obtain marketing approval.

We expect our manufacturing strategy for one or more of our product candidates may involve the use CMOs. The facilities used by us and our contract manufacturers to manufacture therapeutic product candidates must be evaluated for the manufacture of our product candidates by the FDA or foreign regulatory authorities pursuant to inspections that will be conducted after we submit a BLA to the FDA, or similar foreign applications to foreign regulatory authorities. We do not control the manufacturing process of our contract

manufacturers and are dependent on their compliance with current good manufacturing practices (“cGMP”) or similar foreign requirements for their manufacture of our product candidates. We may establish multiple manufacturing facilities as we expand our commercial footprint to multiple geographies, which will be costly and time consuming and may lead to regulatory delays. Even if we are successful, our manufacturing capabilities could be affected by cost-overruns, potential problems with scale-out, process reproducibility, stability issues, lot inconsistency, timely availability of reagents or raw materials, unexpected delays, equipment failures, labor shortages, natural disasters, utility failures, regulatory issues and other factors that could prevent us from realizing the intended benefits of our manufacturing strategy and have a material adverse effect on our business.

The FDA, the EMA and other foreign regulatory authorities may require us to submit samples of any lot of any product that may receive approval together with the protocols showing the results of applicable tests at any time. Under some circumstances, the FDA, the EMA or other foreign regulatory authorities may require that we not distribute a lot until the relevant 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 or our collaborators to delay product launches or clinical trials, which could be costly to us and otherwise harm our business. Problems in our manufacturing process also could restrict our or our collaborators’ ability to meet market demand for products.

Any problems in our manufacturing process or facilities could make us a less attractive collaborator for potential partners, including larger pharmaceutical companies and academic research institutions, which could limit our access to additional attractive development opportunities.

Any delays or difficulties in our or our collaborators’ ability to enroll patients in clinical trials, could delay or prevent receipt of regulatory approvals.

We or our collaborators may not be able to initiate or continue clinical trials on a timely basis or at all for any product candidates we or our collaborators identify or develop 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. Additionally, some of our competitors may have ongoing clinical trials for product candidates that would treat the same indications as one or more of our product candidates, and patients who would otherwise be eligible for our clinical trials may instead enroll in our competitors’ clinical trials.

Patient enrollment may also be affected by many factors, including:

- severity and difficulty of diagnosing of the disease under investigation;
- the difficulty in recruiting and/or identifying eligible patients suffering from rare diseases being evaluated under our trials;
- size of the patient population and process for identifying subjects;
- eligibility and exclusion criteria for the trial in question, including unforeseen requirements by the FDA or other regulatory authorities that we restrict one or more entry criteria for the study for safety reasons;
- our or our collaborators’ ability to recruit clinical trial investigators with the appropriate competencies and experience;
- design of the trial protocol;
- availability and efficacy of approved medications or therapies, or other clinical trials, for the disease or condition under investigation;
- perceived risks and benefits of the product candidate under trial or testing, or of the application of genome editing to human indications;
- 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;
- risk that enrolled subjects will drop out before completion of the trial;

- ability to monitor patients adequately during and after treatment;
- proximity and availability of clinical trial sites for prospective patients; and
- unforeseen events, such as natural or manmade disasters, public health emergencies may impact our operations, or other natural catastrophic events.

We expect that some of our product candidates will focus on rare genetically defined diseases with limited patient pools from which to draw for enrollment in clinical trials. The eligibility criteria of our clinical trials will further limit the pool of available trial participants. In addition to the factors identified above, patient enrollment in any clinical trials we or our collaborators may conduct may be adversely impacted by any negative outcomes our competitors may experience, including adverse side effects, clinical data showing inadequate efficacy or failures to obtain regulatory approval.

Furthermore, our or our collaborators' ability to successfully initiate, enroll and conduct a clinical trial outside the United States is subject to numerous additional risks, including:

- difficulty in establishing or managing relationships with CROs and physicians;
- differing standards for the conduct of clinical trials;
- differing standards of care for patients with a particular disease;
- an inability to locate qualified local consultants, physicians and partners; and
- the potential burden of complying with a variety of foreign laws, medical standards and regulatory requirements, including the regulation of pharmaceutical and biotechnology products and treatments.

Enrollment delays in clinical trials may result in increased development costs for any of our product candidates, which may cause the value of our company to decline and limit our ability to obtain additional financing. If we or our collaborators have difficulty enrolling a sufficient number of patients to conduct clinical trials as planned, we may need to delay, limit or terminate ongoing or planned clinical trials, any of which may have an adverse effect on our results of operations and prospects.

Results of preclinical studies and early clinical trials of product candidates may not be predictive of results of later studies or trials. Our product candidates may not have favorable results in later clinical trials, if any, or receive regulatory approval.

Preclinical and clinical drug development is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the preclinical study or clinical trial process. Despite promising preclinical or clinical results, any product candidate can unexpectedly fail at any stage of preclinical or clinical development. The historical failure rate for product candidates in our industry is high.

The results from preclinical studies or early clinical trials of a product candidate may not be predictive of the results from later preclinical studies or clinical trials, and interim results of a clinical trial are not necessarily indicative of final results. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy characteristics despite having progressed through preclinical studies and initial clinical trials. Many companies in the biopharmaceutical and biotechnology industries have suffered significant setbacks at later stages of development after achieving positive results in early stages of development, and we may face similar setbacks. These setbacks have been caused by, among other things, preclinical findings made while clinical trials were underway or safety or efficacy observations made in clinical trials, including previously unreported adverse events. Moreover, non-clinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that believed their product candidates performed satisfactorily in preclinical studies and clinical trials nonetheless failed to obtain regulatory approval. Our *in vivo* gene editing technology and product candidates have never undergone testing in humans and have only been tested in a limited manner in animals, and results from animal studies may not be predictive of clinical trial results. Even if product candidates progress to clinical trials, these product candidates may fail to show the safety and efficacy in clinical development required to obtain regulatory approval, despite the observation of positive results in animal studies. Our or our collaborators' failure to replicate positive results from early research programs and preclinical studies may prevent us from further developing and commercializing those or other product candidates, which would limit our potential to generate revenues from them and harm our business and prospects.

For the foregoing reasons, we cannot be certain that any ongoing or future preclinical studies or clinical trials will be successful. Any safety or efficacy concerns observed in any one of our preclinical studies or clinical trials in a targeted area could limit the prospects for regulatory approval of product candidates in that and other areas, which could have a material adverse effect on our business and prospects.

Interim, “top-line” and initial 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 may publish interim, initial or “top-line” data from preclinical studies or clinical trials, which is 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 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 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. Initial or “top-line” data also remain subject to audit and verification procedures that may result in the final data being materially different from these initial data we previously published. As a result, interim, initial and “top-line” data should be viewed with caution until the final data are available.

Additionally, 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 initial or interim data and final data could significantly harm our business prospects.

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 is typically extensive 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 data that we report differ from actual results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, product candidates may be harmed, which could significantly harm our business prospects.

Our product candidates may not work as intended or cause undesirable side effects that could hinder or prevent receipt of regulatory approval or realization of commercial potential for them or our other product candidates and substantially harm our business.

Our product candidates may be associated with off-target editing or other serious adverse events, undesirable side effects or unexpected characteristics, including large deletions and translocations or chromosomal abnormalities. Results of clinical trials could reveal severe or recurring side effects, toxicities or unexpected events, including death. Off-target cuts could lead to disruption of a gene or a genetic regulatory sequence at an unintended site in the DNA. In those instances where we also provide a segment of DNA, it is possible that following off-target cut events, such DNA could be integrated into the genome at an unintended site, potentially disrupting another important gene or genomic element. There may also be delayed adverse events following exposure to therapeutics made with genome editing technologies due to persistent biologic activity of the genetic material or other components of products used to carry the genetic material. In addition to serious adverse events or side effects caused by product candidates we develop alone or with collaborators, the administration process or related procedures may also cause undesirable side effects.

Further, any side effects may not be appropriately recognized or managed by the treating medical staff. We or our collaborators expect to have to educate medical personnel using any product candidates we may develop to understand the side effect profiles for our clinical trials and upon any commercialization of such product candidates. Inadequate recognition or management of the potential side effects of such product candidates could result in patient injury or death.

If any such 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 and reputation could suffer substantial harm. Treatment-related side effects could 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 revenues from them or other product candidates that we develop may be delayed or eliminated.

Additionally, if we successfully develop a product candidate alone or with collaborators and it receives marketing approval, the FDA or foreign regulatory authorities could require us to adopt a REMS or similar risk management measures to ensure that the benefits of treatment with such product candidate outweigh the risks for each potential patient, which may include, among other things, a communication plan to health care practitioners, patient education, extensive patient monitoring or distribution systems and processes that are highly controlled, restrictive and more costly than what is typical for the industry. We or our collaborators may also be required to adopt a REMS or similar risk management measures or engage in similar actions, such as patient education, certification of health care professionals or specific monitoring, if we or others later identify undesirable side effects caused by any product that we develop alone or with collaborators. Such identification could also have several additional significant negative consequences, such as:

- regulatory authorities may suspend, withdraw or limit 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 create a medication guide outlining the risks of such side effects for distribution to patients;
- we may be required to change the way a product is administered or conduct additional trials;
- the product may become less competitive;
- we or our collaborators may decide to remove the product from the marketplace;
- we may be subject to fines, injunctions or the imposition of civil or criminal penalties;
- we could be sued and be held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us or our collaborators from achieving or maintaining market acceptance of any potential product, or otherwise have a negative impact on our business.

We are subject to federal, state and foreign healthcare laws and regulations relating to our business and could face substantial penalties if we are determined not to have fully complied with such laws, which would have an adverse impact on our business.

Our business operations, as well as our current and anticipated future arrangements with investigators, healthcare professionals, consultants, third-party payors, customers and patients, expose or will expose us to broadly applicable foreign, federal, and state fraud and abuse and other healthcare laws and regulations. These laws constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute any potential products for which we may obtain marketing approval. Such laws include:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under a U.S. healthcare program such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the U.S. federal Anti-Kickback Statute or specific intent to violate it in order to have committed a violation;
- U.S. federal civil and criminal false claims laws, including the civil False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalties laws, prohibits, among other things, individuals and entities from knowingly presenting, or causing to be presented, to the U.S. 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. government. In addition, the government may assert that a claim including items or services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- the U.S. 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, including private third-party payors, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;

- the U.S. Physician Payments Sunshine Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program (with certain exceptions) to report annually to the Centers for Medicare and Medicaid Services (“CMS”) information related to payments or other “transfers of value” made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), certain non-physician practitioners such as physician assistants and nurse practitioners, and teaching hospitals, and requires applicable manufacturers and group purchasing organizations to report annually to the CMS, ownership and investment interests held by the physicians described above and their immediate family members; and
- analogous state and foreign laws and regulations, such as state anti-kickback and anti-corruption 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 non-governmental third-party payors, including private insurers, or by the patients themselves; state laws and foreign laws and regulations that require pharmaceutical and device companies to comply with the industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. government or foreign governmental authorities, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state and local laws and regulations and foreign laws and regulations that require manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures and pricing information; state and local laws and foreign laws and regulations which require the registration of pharmaceutical sales representatives.

Efforts to ensure that our current and future business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities may conclude that our business practices, including our relationships with certain physicians, some of whom are compensated in the form of stock options for consulting services provided, do not comply with current or future statutes, regulations, agency guidance or case law involving applicable healthcare laws. If our operations are found to be in violation of any of these or any other health regulatory laws that may apply to us, we may be subject to significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, individual imprisonment, possible exclusion from participation in Medicare, Medicaid and other U.S. or foreign healthcare programs, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, contractual damages, reputational harm, diminished profits and future earnings, and curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations. Defending against any such actions can be costly, time-consuming and may require significant financial and 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. If any of the above occur, it could adversely affect our ability to operate our business and our results of operations.

Actual or perceived failures to comply with applicable data protection, privacy and security laws, regulations, standards and other requirements, and the increasing use of social media, 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 U.S. 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 can be 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 have a material adverse effect on our operations, financial performance and 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 U.S., HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 and their implementing regulations, imposes, among other things, certain standards relating to the privacy, security, transmission and breach reporting of individually identifiable health information on covered entities (defined as health plans, health care clearinghouses and certain health care providers) and their respective business associates, individuals or entities that create, receive, maintain or transmit protected health information in connection with providing a service for or on behalf of a covered entity. HIPAA mandates the reporting of certain breaches of health information to the Department of Health and Human Services (“HHS”), affected individuals and if the breach is large enough, the media. Most healthcare providers, including research institutions from which we obtain patient health information, are subject to privacy and security regulations promulgated under HIPAA. While we do not believe that we are currently acting as a covered entity or business associate under HIPAA and thus

are not directly regulated under HIPAA, any person may be prosecuted under HIPAA's criminal provisions either directly or under aiding-and-abetting or conspiracy principles. Consequently, depending on the facts and circumstances, we could face substantial criminal penalties if we knowingly receive individually identifiable health information from a HIPAA-covered healthcare provider or research institution that has not satisfied HIPAA's requirements for disclosure of individually identifiable health information.

Certain states have also adopted comparable privacy and security laws and regulations, some of which may be more stringent than HIPAA. 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, California enacted the California Consumer Privacy Act of 2018 ("CCPA"), which went into effect on January 1, 2020. The CCPA creates individual privacy rights for California consumers and increases the privacy and security obligations of entities handling certain personal information. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that has increased the likelihood of, and risks associated with, data breach litigation. Further, the California Privacy Rights Act ("CPRA") generally went into effect on January 1, 2023, and significantly amends the CCPA. The CPRA imposes additional data protection obligations on covered businesses, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses of sensitive data. It also creates a new California data protection agency authorized to issue substantive regulations and could result in increased privacy and information security enforcement. Similar laws have passed in a number of states, and have been proposed in other states and at the federal level, 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, the CPRA 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.

In Europe, the European Union General Data Protection Regulation ("GDPR") went into effect in May 2018 and imposes strict requirements for processing the personal data of individuals within the European Economic Area ("EEA"). 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 or 4% of the annual global revenues of the noncompliant company, whichever is greater. Since January 1, 2021 we have also been subject to compliance with the GDPR and the UK GDPR, which, together with the amended UK Data Protection Act 2018, retains the GDPR in UK national law. The UK GDPR mirrors the fines under the GDPR, i.e., fines up to the greater of €20 million/ £17 million or 4% of global turnover.

Legal developments in Europe have created complexity and uncertainty regarding transfers of personal data from the EEA and the UK to the U.S. Most recently, on July 16, 2020, the Court of Justice of the European Union ("CJEU") invalidated the EU-US Privacy Shield Framework, also known as the Privacy Shield, under which personal data could be transferred from the EEA to US entities who had self-certified under the Privacy Shield scheme. In March 2022, the U.S. and EU announced a new regulatory regime intended to replace the invalidated regulations; however, this new EU-US Data Privacy Framework has not been implemented beyond an executive order signed by President Biden on October 7, 2022 on Enhancing Safeguards for Untied States Signals Intelligence Activities. European court and regulatory decisions subsequent to the CJEU decision of July 16, 2020 have taken a restrictive approach to international data transfers. Additionally, the EU adopted the EU Clinical Trials Regulation, which came into effect on January 31, 2022. This regulation imposes obligations on the use of data generated from clinical trials and enables European patients to have the opportunity to access information about clinical trials.

These recent developments may require us to review and amend the legal mechanisms by which we make and/or receive personal data transfers to/in the U.S. As supervisory authorities issue further guidance on personal data export mechanisms, including circumstances where the standard contractual clauses 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 provide our services, the geographical location or segregation of our relevant systems and operations, and could adversely affect our financial results.

Despite our efforts to monitor evolving social media communication guidelines and comply with applicable rules, there is risk that the use of social media by us or our employees to communicate about our product candidates or business may cause us to be found in violation of applicable requirements. In addition, our employees may knowingly or inadvertently make use of social media in ways that may not comply with our internal policies or other legal or contractual requirements, which may give rise to liability, lead to the loss of trade secrets or other intellectual property, or result in public exposure of personal information of our employees, clinical trial patients, customers and others. Our potential patient population may also be active on social media and use these platforms to comment on the effectiveness of, or adverse experiences with, our product candidates. Negative posts or comments about us or our product candidates on social media could seriously damage our reputation, brand image and goodwill.

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 adversely affect our business and results of operations.

We may seek orphan drug designation for our product candidates, but we may be unable to obtain such designations or to maintain the benefits associated with orphan drug designation, which may negatively impact our ability to develop or obtain regulatory approval for such product candidates and may reduce our revenue if we obtain such approval.

We may seek orphan drug designation for some or all of our product candidates in specific orphan indications in which there is a medically plausible basis for the use of these products. Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, defined as a disease or condition with a patient population of fewer than 200,000 in the United States, or a patient population greater than 200,000 in the United States when there is no reasonable expectation that the cost of developing and making available the drug or biologic in the United States will be recovered from sales in the United States for that drug or biologic. Orphan drug designation must be requested before submitting a BLA. 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 user-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. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. Although we may seek orphan product designation for some or all of our other product candidates, we may never receive such designations.

If a product that has orphan drug designation subsequently receives the first FDA approval for the disease or condition for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications, including a BLA, to market the same biologic for the same disease or condition for seven years, except in limited circumstances such as a showing of clinical superiority to the product with orphan product exclusivity or if FDA finds that the holder of the orphan drug exclusivity has not shown that it can ensure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the drug was designated. Even if we or our collaborators or licensees obtain orphan drug designation for a product candidate, we or they may not be the first to obtain marketing approval for any particular orphan indication due to the uncertainties associated with developing pharmaceutical products. Exclusive marketing rights in the United States may be limited if we or our collaborators or licensees 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 or if the manufacturer is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition. Further, even if a product obtains orphan drug exclusivity, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is safer, more effective, or makes a major contribution to patient care. Furthermore, the FDA can waive orphan exclusivity if we or our collaborators or licensees are unable to manufacture sufficient supply of the product.

Similarly, in the EU, a medicinal product may receive orphan designation from the European Commission after receiving the opinion of the EMA's Committee for Orphan Medicinal Products, under Article 3 of Regulation (EC) 141/2000. This applies to products (1) that are intended for a life-threatening or chronically debilitating condition; and (2) either (a) such condition affects not 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 be unlikely to generate sufficient returns in the EU to justify the necessary investment, and (3) 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 product will be of significant benefit to those affected by the condition. In the EU, orphan designation entitles a party to financial incentives such as reduction of fees, fee waivers, specific regulatory assistance and scientific advice, and access to the centralized marketing authorization procedure. Upon grant of marketing authorization (MA) and assuming the requirements for orphan designation are also met at the time the marketing authorization is granted, orphan medicinal products are entitled to 10 years of market exclusivity for the approved therapeutic indication, during which time no similar medicinal product for the same indication may be placed on the market. An orphan product can also obtain an additional two years of market exclusivity in the EU for complying with an agreed Pediatric Investigation Plan. However, the 10-year market exclusivity may be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan designation, for example, if the product is judged as sufficiently profitable not to justify maintenance of market exclusivity, or when the prevalence of the condition has increased above the orphan designation threshold. Additionally, marketing authorization may be granted to a similar product for the same indication at any time if:

- the second applicant can establish that its product, although similar, is safer, more effective or otherwise clinically superior;
- the first applicant consents to a second orphan medicinal product application; or
- the first applicant cannot supply enough orphan medicinal product.

Post-Brexit, the UK has retained the EU Regulation which governs the designation of medicinal products as orphan drugs and which establishes incentives thereto (Regulation (EC) No. 141/2000) as part of UK law by virtue of the European Union (Withdrawal) Act 2018. However, any future changes to the legal requirements could lead to greater regulatory complexity and increased costs to our business.

The Medicines and Healthcare products Regulatory Agency (“MHRA”) is responsible for reviewing applications from companies for orphan designation at the time of a marketing authorization application. If a medicinal product has been designated orphan in the EU under Regulation (EC) 141/2000, a Great Britain orphan marketing authorization application (“MAA”) can be made under regulation 50G of the Human Medicines Regulation 2012 (as amended). A UK-wide orphan MAA can only be considered in the absence of an active EU orphan designation.

If a UK-wide orphan marketing authorization is granted and the medicinal product subsequently receives EU orphan designation, the market authorization holder would need to submit a variation to change this to a Great Britain orphan MAA.

If we or our collaborators or licensees do not receive or maintain orphan drug designation for product candidates for which we seek such designation, it could limit our ability to realize revenues from such product candidates.

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 candidate and adversely affect 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 adversely affect our business.

Current and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize any product candidates we or our collaborators develop and may adversely affect the prices for such product candidates.

In the United States and certain foreign jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could, among other things, prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our or our collaborators’ ability to profitably sell any product candidates that obtain marketing approval.

For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively the ACA, was enacted in the United States. Among the provisions of the Affordable Care Act of importance to our product candidates, the ACA established an annual, nondeductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents, increased the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program, extended manufacturers’ Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations, expanded eligibility criteria for Medicaid programs, expanded the entities eligible for discounts under the Public Health program, addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, created a new Medicare Part D coverage gap discount program, in which manufacturers must now agree to offer 70% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer’s outpatient drugs to be covered under Medicare Part D, and created a licensure framework for follow-on biologic products.

Since its enactment, there have been judicial, administrative, executive, and legislative challenges to certain aspects of the ACA, and the most recent judicial challenge to the ACA brought before the Supreme Court was dismissed in June 2021 resulting in the ACA remaining in effect in its current form.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. These changes include the American Rescue Plan Act of 2021, which, effective January 1, 2024, eliminated the statutory Medicaid drug rebate cap, which was previously set at 100% of a drug's average manufacturer price.

Further, there has been heightened governmental scrutiny recently over pharmaceutical pricing practices in light of the rising cost of prescription drugs and biologics. Such scrutiny has resulted in several Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies, rebates and price negotiation for pharmaceutical products. Most recently, on August 16, 2022, the Inflation Reduction Act of 2022 (the "IRA"), was signed into law. Among other things, the IRA requires manufacturers of certain drugs to engage in price negotiations with Medicare (beginning in 2026), 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); and replaces the Part D coverage gap discount program with a new discounting program (beginning in 2025). The IRA permits the Secretary of the HHS to implement many of these provisions through guidance, as opposed to regulation, for the initial years. On August 29, 2023, HHS announced the list of the first ten drugs that will be subject to price negotiations. HHS has issued and will continue to issue guidance implementing the IRA, although the Medicare drug price negotiation program is currently subject to legal challenges. For that and other reasons, it is currently unclear how the IRA will be effectuated. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical product and medical device pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and medical devices to purchase and which suppliers will be included in their prescription drug and other healthcare programs.

We expect that other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria, new payment methodologies and in additional downward pressure on the price that we or our collaborators may receive for any approved or cleared product. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we or our collaborators are slow or unable to adapt to new requirements or policies, or if we or our collaborators are not able to maintain regulatory compliance, any of our product candidates may lose any regulatory approval that may have been obtained and we may not achieve or sustain profitability, which would adversely affect our business.

In the EU, similar 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.

On December 13, 2021, Regulation No 2021/2282 on Health Technology Assessment ("HTA") amending Directive 2011/24/EU, was adopted. While the Regulation entered into force in January 2022, it will only begin to apply from January 2025 onwards, with preparatory and implementation-related steps to take place in the interim. Once applicable, it will have a phased implementation depending on the concerned products. The Regulation intends to boost cooperation among EU member states in assessing health technologies, including new medicinal products, and provide the basis for cooperation at the EU level for joint clinical assessments in these areas. It will permit EU member states to use common HTA tools, methodologies, and procedures across the EU, working together in four main areas, including joint clinical assessment of the innovative health technologies with the highest potential impact for patients, joint scientific consultations whereby developers can seek advice from HTA authorities, identification of emerging health technologies to identify promising technologies early, and continuing voluntary cooperation in other areas. Individual EU member states will continue to be responsible for assessing non-clinical (e.g., economic, social, ethical) aspects of health technology, and making decisions on pricing and reimbursement.

Even if we obtain regulatory approval for any products that we develop alone or with collaborators, such products will remain subject to ongoing regulatory requirements, which may result in significant additional expense.

Even if products we develop alone or with collaborators receive regulatory approval, they will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, distribution, storage, advertising, promotion, sampling, record-keeping and submission of safety and other post-market information, among other things. Any regulatory approvals received for such products may also be subject to limitations on the approved indicated uses for which they may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing and surveillance studies. For example, the holder of an approved BLA in the United States is obligated to monitor and report adverse events and any failure of a product to meet the specifications in the BLA. FDA guidance advises that patients treated with some types of gene therapy undergo follow-up observations for potential adverse events for as long as 15 years. Similarly, in the EU, pharmacovigilance obligations are applicable to all medicinal products. In addition to those, holders of a marketing authorization for gene or cell therapy products must detail, in their application, the measures they envisage to ensure follow-up of the efficacy and safety of these products. In cases of particular concern, marketing authorization holders for gene or cell therapy products in the EU may be required to design a risk management system with a view to identifying, preventing or minimizing risks and may be obliged to carry out post-marketing studies. In the United States, the holder of an approved BLA must also submit new or supplemental applications and obtain FDA approval for certain changes to the approved product, product labeling or manufacturing process. Similar provisions apply in the EU. Advertising and promotional materials must comply with FDA rules and are subject to FDA review, in addition to other potentially applicable federal and state laws. Similarly, in the EU any promotion of medicinal products is highly regulated and, depending on the specific jurisdiction involved, may require prior vetting by the competent national regulatory authority.

In addition, product manufacturers and their facilities are subject to payment of user fees and continual review and periodic inspections by the FDA and other regulatory authorities for compliance with GMP requirements and adherence to commitments made in the BLA or foreign marketing application. If we, our collaborators or 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 that product, a regulatory agency may impose restrictions relative to that product, the manufacturing facility or us or our collaborators, including requiring recall or withdrawal of the product from the market or suspension of manufacturing.

Moreover, if any of our product candidates are approved, our product labeling, advertising, promotion and distribution will be subject to regulatory requirements and continuing regulatory review. The FDA and foreign regulatory authorities strictly regulate the promotional claims that may be made about drug products. In particular, a product may not be promoted for uses that are not approved by the FDA and foreign regulatory authorities as reflected in the product's approved labeling.

If we or our collaborators fail to comply with applicable regulatory requirements following approval of any potential products we may develop, authorities may:

- issue an untitled enforcement letter or a warning letter asserting a violation of the law;
- seek an injunction, impose civil and criminal penalties, and impose monetary fines, restitution or disgorgement of profits or revenues;
- suspend or withdraw regulatory approval;
- suspend or terminate any ongoing clinical trials or implement requirements to conduct post-marketing studies or clinical trials;
- refuse to approve a pending BLA or comparable foreign marketing application (or any supplements thereto) submitted by us or our collaborators;
- restrict the labeling, marketing, distribution, use or manufacturing of products;
- seize or detain products or otherwise require the withdrawal or recall of products from the market;
- refuse to approve pending applications or supplements to approved applications that we or our collaborators submit;
- refuse to permit the import or export of products; or

- refuse to allow us or our collaborators to enter into government contracts.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response and could generate negative publicity. The occurrence of any event or penalty described above may inhibit our or our collaborators' ability to commercialize products and our ability to generate revenues.

In addition, the FDA's policies, and policies of foreign regulatory agencies, may change, and additional regulations may be enacted that could prevent, limit or delay regulatory approval of 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 or our collaborators are slow or unable to adapt to changes in existing requirements or the adoption of new requirements, or if we or our collaborators are unable to maintain regulatory compliance, we or they may be subject to enforcement action and we may not achieve or sustain profitability.

It is currently unclear to what extent the UK will seek to align its regulations with the EU. The UK regulatory framework in relation to clinical trials is derived from existing EU legislation (as implemented into UK law, through secondary legislation).

On January 17, 2022, the UK MHRA launched an eight-week consultation on reframing the UK legislation for clinical trials. The consultation closed on March 14, 2022 and aims to streamline clinical trials approvals, enable innovation, enhance clinical trials transparency, enable greater risk proportionality, and promote patient and public involvement in clinical trials. The MHRA published its consultation outcome on March 21, 2023 in which it confirmed that it would update the existing legislation. The resulting legislative changes, which are yet to be published, will ultimately determine the extent to which the UK regulations align with the (EU) Clinical Trials Regulation ("CTR"). Under the terms of the Protocol on Ireland/Northern Ireland, provisions of the CTR which relate to the manufacture and import of investigational medicinal products and auxiliary medicinal products apply in Northern Ireland. A decision by the UK Government not to closely align its regulations with the new approach that has been adopted in the EU may have an effect on the cost of conducting clinical trials in the UK as opposed to other countries.

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

The FDA and other regulatory agencies strictly regulate the promotional claims that may be made about prescription products, as our product candidates would be, if approved. In particular, a product may not be promoted for uses that are not approved by the FDA or such other regulatory agencies as reflected in the product's approved labeling. If we are found to have promoted such off-label uses, we may become subject to significant liability. The federal government has levied large civil and criminal fines against companies for alleged improper promotion and has enjoined several companies from engaging in off-label promotion. The FDA has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed. If we cannot successfully manage the promotion and avoid off-label promotion of our product candidates, if approved, we could become subject to significant liability, which would materially adversely affect our business and financial condition.

Disruptions at the FDA and other government agencies caused by funding shortages or global health concerns 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, which could negatively impact our business.

The ability of the FDA and foreign regulatory authorities to review and approve new products can be affected by a variety of factors, including government budget and funding levels, statutory, regulatory and policy changes, the FDA's or 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, such as the EMA following its relocation to Amsterdam and resulting staff changes, may also slow the time necessary for new biologics or modifications to approved 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.

Separately, in response to the COVID-19 pandemic, the FDA postponed most inspections of domestic and foreign manufacturing facilities at various points. Even though the FDA has since resumed standard inspection operations, any resurgence of the virus or emergence of new variants may lead to further inspectional or administrative delays. If a prolonged government shutdown occurs, or if global health concerns prevent the FDA or other regulatory authorities from conducting their regular inspections, reviews or other regulatory activities, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

Even if any product we develop alone or with collaborators receives marketing approval, such product 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 potential therapeutic products we develop alone or with collaborators will depend upon their degree of market acceptance by physicians, patients, third-party payors and others in the medical community. Even if any potential therapeutic products we develop alone or with collaborators receive marketing approval, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, healthcare payors and others in the medical community. The degree of market acceptance of any product we develop alone or with collaborators, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and safety of such product as demonstrated in clinical trials;
- the prevalence and severity of any side effects;
- the clinical indications for which the product is approved by FDA or other regulatory authorities;
- product labeling or product insert requirements of the FDA or other regulatory authorities, including any limitations or warnings contained in a product's approved labeling;
- public attitudes regarding genome editing technologies;
- our and any collaborators' ability to educate the medical community about the safety and effectiveness of the product;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies, as well as their willingness to accept a therapeutic intervention that involves the editing of the patient's genome;
- the potential and perceived advantages compared to alternative treatments;
- convenience and ease of administration compared to alternative treatments;
- any restrictions on the use of such product together with other treatments or products;
- market introduction of competitive products;
- publicity concerning such product or competing products and treatments;
- the ability to offer such product for sale at a competitive price;
- the strength of marketing and distribution support; and
- sufficient third-party coverage and adequate reimbursement.

If any products we develop alone or with collaborators do not achieve an adequate level of acceptance, we may not generate significant product revenues, and we may not become profitable.

If we are unable to establish sales and marketing capabilities or enter into agreements with third parties to sell and market any products we develop alone or with collaborators, the commercialization of such products may not be successful if and when they are approved.

We do not have a sales or marketing infrastructure and, as a company, have no experience in the sale, marketing or distribution of biopharmaceutical or other commercial products. To achieve commercial success for any approved products 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, certain 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, restricted or closed distribution channels may make it difficult to distribute products to segments of the patient population, and the lack of complementary medicines to be offered by sales personnel may put us at a competitive disadvantage relative to companies with more extensive product lines.

Recruiting and training a sales force or reimbursement specialists are expensive and time consuming and could delay any product launch. If the commercial launch of a product 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, and our investment would be lost if we cannot retain or reposition our commercialization personnel. Factors that may inhibit our efforts to commercialize products on our own include:

- unforeseen costs and expenses associated with creating an independent commercialization organization;
- our inability to recruit, train, retain and effectively manage adequate numbers of effective sales, marketing, customer service and other support personnel, including for reimbursement or medical affairs;
- the inability of sales personnel to educate adequate numbers of physicians on the benefits of our future medicines; and
- the inability of reimbursement professionals to negotiate arrangements for formulary access, reimbursement and other acceptance by payors.

If we choose to enter into arrangements with third parties to perform sales, marketing, commercial support or distribution services, we may not be successful in entering into such arrangements or may be unable to do so on terms that are favorable to us. Entering into such third-party arrangements may subject us to a variety of risks, including:

- product revenues or profitability to us being lower than if we were to market and sell any products we or our collaborators may develop ourselves;
- our inability to exercise direct control over sales and marketing activities and personnel;
- failure of the third parties to devote necessary resources and attention to, or other inability to, sell and market any products we or our collaborators may develop;
- potential disputes with third parties concerning sales and marketing expenses, calculation of royalties and sales and marketing strategies; and
- unforeseen costs and expenses associated with sales and marketing.

If we do not establish effective commercialization capabilities, either on our own or in collaboration with third parties, we will not be successful in commercializing any of our product candidates that may receive approval.

If the market opportunities for any products we develop alone or with collaborators are smaller than our estimates, or if we are unable to successfully identify enough patients, our revenues may be adversely affected.

We focus some of our research and product development on treatments for rare genetic diseases. Our and our collaborators' projections of both the number of people who have these diseases, as well as the subset of people with these diseases who have the potential to benefit from treatment with product candidates we may develop, are based on estimates. These estimates may prove to be incorrect, and new studies may change the estimated incidence or prevalence of these diseases. The number of patients in the United States, Europe and elsewhere may turn out to be lower than expected, and patients may not be amenable to treatment with products that we may develop alone or with collaborators, or may become increasingly difficult to identify or gain access to, any of which would decrease our ability to realize revenue from any such products for such diseases.

The successful commercialization of potential products will depend in part on the extent to which governmental authorities and health insurers establish coverage, and the adequacy of reimbursement levels and pricing policies, and failure to obtain or maintain coverage and adequate reimbursement for any potential products that may receive approval, could limit marketability of those products and decrease our ability to generate revenue.

The availability of coverage and adequacy of reimbursement by government healthcare programs such as Medicare and Medicaid, private health insurers and other third-party payors is essential for most patients to be able to afford prescription medications such as the potential therapeutic products we develop alone or with collaborators. The ability to achieve acceptable levels of coverage and reimbursement for any potential products that may be approved by governmental authorities will have an effect on our and our collaborators' ability to successfully commercialize such products. Even if products we develop alone or with collaborators obtain coverage by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. If coverage and reimbursement in the United States, the EU or elsewhere is not available for any products we develop alone or with collaborators that may be approved, or any reimbursement that may become available is decreased or eliminated in the future, we and our collaborators may be unable to commercialize such products.

There is significant uncertainty related to the insurance coverage and reimbursement of newly approved drugs and biologics. In the United States, third-party payors, including private and governmental payors, such as the Medicare and Medicaid programs, play an important role in determining the extent to which new drugs and biologics will be covered. In August 2019, the CMS published its decision to cover autologous treatment for cancer with T-cells expressing at least one CAR when administered at healthcare facilities enrolled in the FDA risk evaluation and mitigation strategies and used for an FDA-approved indication or for other uses when the product has been FDA-approved and the use is supported in one or more CMS-approved compendia. The Medicare and Medicaid programs increasingly are used as models in the United States for how private payors and other governmental payors develop their coverage and reimbursement policies for drugs and biologics. Some third-party payors may require pre-approval of coverage for new or innovative devices or drug therapies before they will reimburse healthcare providers who use such therapies. We cannot predict at this time what third-party payors will decide with respect to the coverage and reimbursement for any product that we develop alone or with collaborators.

No uniform policy for coverage and reimbursement for products exists among third-party payors in the United States. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that will require us or our collaborators to provide scientific and clinical support for the use of any potential products that may be approved to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. Furthermore, rules and regulations regarding reimbursement change frequently, in some cases on short notice. Obtaining coverage and adequate reimbursement for products we develop alone or with collaborators may be particularly difficult because of the higher prices often associated with drugs administered under the supervision of a physician. In certain instances, payors may not separately reimburse for the product itself, but only for the treatments or procedures in which such product is used. A decision by a third-party payor not to cover or separately reimburse for products that we develop alone or with collaborators or procedures using such products, could reduce physician utilization of any such products that may receive approval.

Third-party payors are increasingly challenging prices charged for pharmaceutical products and services, and many third-party payors may refuse to provide coverage and reimbursement for particular drugs or biologics when an equivalent generic drug, biosimilar or a less expensive therapy is available. If approved, it is possible that a third-party payor may consider any products that we develop alone or with collaborators as substitutable and only offer to reimburse patients for the less expensive product. Pricing of existing third-party therapeutics may limit the amount we will be able to charge for any products that may receive approval even if we or our collaborators show improved efficacy or improved convenience of administration such products. These payors may deny or revoke the reimbursement status of a given product or establish prices for new or existing marketed products at levels that are too low to enable us to realize an appropriate return on our investment in the product. If reimbursement is not available or is available only at limited levels, we or our collaborators may not be able to successfully commercialize any of the products that we develop, even if approved, and we may not be able to obtain a satisfactory financial return on them. Moreover, increasing efforts by governmental and third-party payors in the United States and abroad to cap or reduce healthcare costs may cause such organizations to limit both coverage and the level of reimbursement for newly approved products and, as a result, they may not cover or provide adequate payment for any products we develop alone or with collaborators that may receive approval. We expect to experience pricing pressures in connection with the sale of any products that may receive approval due to the trend toward managed health care, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and biologics and surgical procedures and other treatments, has become intense. As a result, increasingly high barriers are being erected to the entry of new products.

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

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

If we are successful in achieving regulatory approval to commercialize any biologic product candidate we develop alone or with collaborators, it may face competition from biosimilar products. In the United States, our product candidates are regulated by the FDA as biologic products subject to approval under the BLA pathway. The Biologics Price Competition and Innovation Act of 2009 (the “BPCIA”) created an abbreviated pathway for the approval of biosimilar and interchangeable biologic products following the approval of an original BLA. The abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar

biologics, including the possible designation of a biosimilar as “interchangeable” based on its similarity to an existing brand product. Under the BPCIA, an application for a biosimilar product may not be submitted until four years following the date that the reference product was first licensed by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years after the reference product was first licensed by the FDA. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing the sponsor’s own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product.

We believe that any of our product candidates that are approved as biological products under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider such product candidates to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. If competitors are able to obtain marketing approval for biosimilars referencing any products that we develop alone or with collaborators that may be approved, such products may become subject to competition from such biosimilars, with the attendant competitive pressure and potential adverse consequences.

Jurisdictions in addition to the U.S. have established abbreviated pathways for regulatory approval of biological products that are biosimilar to earlier approved reference products. For example, the EU has had an established regulatory pathway for biosimilars since 2006.

Risks Related to Our Organization, Structure and Operations

We may experience difficulties in managing the needs of our business, which could disrupt our operations.

As of September 30, 2024, we had 108 full-time employees. Our future financial performance, ability to develop and commercialize product candidates alone or with collaborators and ability to compete effectively will depend in part on our ability to effectively manage the then applicable needs of our business. We may have difficulty identifying, hiring and integrating new personnel. Many of the biotechnology companies that we compete against for qualified personnel and consultants have greater financial and other resources (including the ability to offer greater cash and equity incentive compensation), different risk profiles and a longer history than we do. If we are unable to continue to attract and retain high-quality personnel and consultants, the rate and success at which we can identify and develop product candidates, enter into collaborative arrangements and otherwise operate our business will be limited.

Management may need to divert a disproportionate amount of its attention away from our day-to-day activities and devote a substantial amount of time to managing our personnel needs. Due to our limited financial resources and the limited experience of our management team in managing a company with anticipated growth, we may not be able to effectively manage the expected demands of our operations or recruit and train additional qualified personnel. Moreover, addressing our personnel needs may lead to significant costs and may divert our management and business development resources from other projects, such as the development of product candidates. If we are not able to effectively manage our operations, it may result in weaknesses in our infrastructure, increase our expenses more than expected, or give rise to operational mistakes, loss of business opportunities, loss of employees and reduced productivity. Our future financial performance, ability to successfully commercialize any of our product candidates and our ability to compete effectively will depend, in part, on our ability to effectively manage any future growth and then applicable needs.

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

In the future, we may enter into transactions to acquire or in-license rights to product candidates, products or technologies or that involve the acquisition of or investment in other businesses. If we do identify suitable candidates, we may not be able to enter into such transactions on favorable terms, or at all. Any such acquisitions, investments or in-licenses may not strengthen our competitive position, and these transactions may be viewed negatively by customers or investors. We may decide to incur debt in connection with an acquisition, investment or in-license, which may negatively impact our financial condition and restrict our operations, or issue our common stock or other equity securities to the stockholders of the acquired company, which would reduce the percentage ownership of our existing stockholders. In addition, we are exposed to risks related to our investments, and we may realize losses in the fair value of our investments or a complete loss of our investments, which would have a negative effect on our financial condition. We could incur losses resulting from undiscovered liabilities of the acquired business that are not covered by the indemnification we may obtain from the sellers of the acquired business. In addition, we may not be able to successfully integrate the acquired personnel, technologies and operations into our existing business in an effective, timely and non-disruptive manner. Such transactions may also divert management attention from day-to-day responsibilities, increase our expenses and reduce our cash available for operations and other uses. We cannot predict the number, timing or size of future acquisitions, investments or in-licenses or the effect that they might have on our operating results.

Our future success depends on our key executives, as well as attracting, retaining and motivating qualified personnel.

We are highly dependent on the research and development experience, technical skills, leadership and continued service of certain members of our management and scientific teams. Although we have formal employment agreements with our executive officers, these agreements do not prevent them from terminating their employment with us at any time. The loss of the services of any of these persons could impede the achievement of our research, development and commercialization objectives.

Recruiting and retaining qualified scientific, clinical, manufacturing and, if we retain commercialization responsibility for any product candidate we develop alone or with collaborators, sales and marketing personnel will also be critical to our success. We may not be able to attract new or successor personnel on acceptable terms or at all given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategies. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. The inability to recruit, integrate, motivate and retain additional skilled and qualified personnel, or the loss of services of certain executives, key employees, consultants or advisors, may impede the progress of our research, development and commercialization objectives and have a material adverse effect on our business.

We are subject to increased costs as a result of operating as a public company, and our management will be required to devote substantial time to maintaining compliance initiatives and corporate governance practices, including establishing and maintaining proper and effective internal control over financial reporting.

As a public company, we have incurred and will continue to incur significant legal, accounting and other expenses that we did not incur as a private company. We are subject to the Securities Exchange Act of 1934, as amended (the “Exchange Act”), including the reporting requirements thereunder, the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of Nasdaq and other applicable securities rules and regulations, including requirements related to the establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel will need to continue to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations have increased our legal and financial compliance costs, making some activities more difficult, time consuming or costly, and increasing demand on our systems and resources.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002 (“Section 404”) we are required to furnish a report by our management on our internal control over financial reporting. However, while we remain an emerging growth company and/or a smaller reporting company with less than \$100 million in annual revenue in our last fiscal year, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. If we fail to implement the requirements of Section 404 in the required timeframe, we may be subject to sanctions or investigations by regulatory authorities, including the SEC and Nasdaq. Furthermore, if we are unable to conclude that our internal control over financial reporting is effective, our investors may lose confidence in the accuracy and completeness of our financial reports, the market price of our common stock could decline, and we could be subject to sanctions or investigations by regulatory authorities. Failure to implement or maintain an effective internal control system could also restrict our future access to the capital markets.

Our business and operations may suffer in the event of information technology system failures, cyber-attacks or deficiencies in our security, which could materially affect our results.

Despite the implementation of security measures, our information technology systems, as well as those of third parties with which we have relationships, are vulnerable to attack, interruption, and damage from computer viruses and malware (e.g., ransomware), malicious code, cyberattacks, hacking, phishing attacks and other social engineering schemes, denial or degradation of service attacks, natural and manmade disasters, terrorism, war and telecommunication and electrical failures, malfeasance by external or internal parties (e.g., employee theft or misuse, attacks by sophisticated nation-state and nation-state-supported actors), and human error. The aforementioned third parties with which we have relationships include service providers and vendors who provide to us a broad array of software and other technologies as well as products, services and functions (e.g., human resources, finance, communications, data transmission, risk, compliance) that enable us to conduct, monitor and/or protect our business, operations, systems and data assets.

Attacks upon information technology systems are increasing in their frequency, levels of persistence, sophistication and intensity, and are being conducted by sophisticated and organized groups and individuals with a wide range of motives and expertise. Furthermore, because the technologies used to obtain unauthorized access to, or to sabotage or disrupt, 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 also 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 that are

designed to circumvent controls, to avoid detection, and to remove or obfuscate forensic evidence. We may also face increased cybersecurity risks due to our reliance on internet technology and the number of our and our service providers' employees who work remotely, which may create additional opportunities for cybercriminals to exploit vulnerabilities. The White House, SEC and other regulators have also increased their focus on companies' cybersecurity vulnerabilities and risks. There can be no assurance that our cybersecurity risk management program and processes, including our policies, controls or procedures, will be fully implemented, complied with or effective in protecting our systems and information.

We and certain of our service providers are from time to time, subject to cyberattacks and security incidents. While we do not believe that we have experienced any material impact to our business strategy, results of operations, or financial condition resulting from a system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our or our critical third parties' operations, it could result in delays and/or material disruptions of our research and development programs, our operations and ultimately, our financial results. For example, the loss of trial data from completed, ongoing or planned trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of or damage to data or applications, or inappropriate disclosure of personal, confidential or proprietary information, we could incur liability due to delays in the development of our product candidates and/or due to reputational harm, litigation, regulatory investigations and enforcement, fines and penalties, or increased costs of compliance and system remediation. Any losses, costs or liabilities may not be covered by, or may exceed the coverage limits of, any or all applicable insurance policies.

Federal, state and foreign legislators and regulators globally have enacted or proposed legal requirements regarding the collection, distribution, disclosure, use, processing, security and storage of personally identifiable information and other types of regulated data, including online information and data online. In the ordinary course of our business, we and third parties with which we have relationships will continue to collect and store sensitive data, including intellectual property, clinical trial data, proprietary business information, personal data and personally identifiable information of our clinical trial subjects and employees, in data centers and on networks. The secure processing, maintenance and transmission of this information is critical to our operations. Despite security measures that we and our critical third parties (e.g., collaborators) implement, our information technology systems, infrastructure and data may be vulnerable to attacks by hackers or internal bad actors, breaches due to human error, technical vulnerabilities, malfeasance or other disruptions. A number of proposed and enacted federal, state and international laws and regulations obligate companies to notify individuals and other parties of security breaches involving particular types of information, which could result from breaches experienced by us or by third parties, including collaborators, vendors, contractors or other organizations with which we have formed relationships that involve the handling or processing of such information.

Even though we may have contractual protections with third parties who process or handle sensitive information, any breach could compromise our or their networks and the information stored there could be accessed, publicly disclosed, lost or stolen. Any such access, disclosure, notifications, follow-up actions related to such a security breach or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information and significant costs, including regulatory penalties, fines and legal expenses, and such an event could disrupt our operations, cause us to incur remediation costs, damage our reputation and cause a loss of confidence in us and our or such third parties' ability to conduct clinical trials, which could adversely affect our reputation and delay our research and development programs.

Our insurance policies are expensive and protect us only from some business risks, which leaves us exposed to significant uninsured liabilities.

We do not carry insurance for all categories of risk that our business may encounter. If we obtain marketing approval for any product candidates that we or our collaborators may develop, we intend to acquire insurance coverage to include the sale of commercial products, but we may be unable to obtain such insurance on commercially reasonable terms or in adequate amounts. 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 clinical trials or regulatory approvals for any of our product candidates could be suspended. We also expect that operating as a public company will make it more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors, our board committees or as our executive officers.

Insurance coverage is becoming increasingly expensive, and in the future, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses. We do not know if we will be able to maintain existing insurance with adequate levels of coverage, and any liability insurance coverage we acquire in the future may not be sufficient to reimburse us for any expenses or losses we may suffer. A successful liability claim or series of claims brought against us could require us to pay

substantial amounts and cause our share price to decline and, if judgments exceed our insurance coverage, could adversely affect our results of operations and business, including preventing or limiting the development and commercialization of any product candidates that we or our collaborators may develop.

If we or any of our contract manufacturers or other suppliers fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur significant costs.

We and any of our contract manufacturers and suppliers 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 and radioactive 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 and product development 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 (under which we currently have an aggregate of approximately \$10 million in coverage) 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 for any product candidate we develop alone or with collaborators could be suspended, which could have a material adverse effect on our business and financial condition.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws, regulations and permitting requirements, and any third-party contract manufacturers and suppliers we engage will also be subject to such current and future regulations and requirements. These current or future laws, regulations and permitting requirements may impair our research, development or production efforts. Failure to comply with these laws, regulations and permitting requirements, either by us or by any third-party contract manufacturers and suppliers we engage, also may result in substantial fines, penalties or other sanctions or business disruption.

Our business operations, including our current and future relationships with third parties, may expose us to penalties for potential misconduct or improper activity, including non-compliance with regulatory standards and requirements.

Complex laws constrain our business and the financial arrangements and relationships through which we conduct our operations, including how we may research, market, sell and distribute product candidates alone or with collaborators. We are exposed to the risk of fraud or other misconduct by our employees, consultants and collaborators and, if we or our collaborators commence clinical trials and proceed to commercialization, our principal investigators and commercial partners, as well as healthcare professionals, third-party payors, patient organizations and customers. For example, misconduct by these parties could include intentional failures to comply with FDA regulations or the regulations applicable in the EU and other jurisdictions, provide accurate information to the FDA and other regulatory authorities, comply with healthcare fraud and abuse laws and regulations in the United States and abroad, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, false and/or misleading statements, corruption of government officials, self-dealing and other abusive practices. These laws and regulations restrict or prohibit a wide range of pricing, discounting, marketing, promotion, sales commission and customer incentive programs and other business arrangements. Such misconduct also could involve the improper use or misrepresentation of information obtained in the course of clinical trials, creating fraudulent data in preclinical studies or clinical trials, illegal misappropriation of study materials or other property, or improper interactions with the FDA or other regulatory authorities, which could result in regulatory sanctions and cause serious harm to our or our collaborators' reputations.

Ensuring that our internal operations and current and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. Additionally, we are subject to the risk that a person or government

could allege such fraud or other misconduct, even if none occurred. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, additional reporting requirements and oversight if subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, 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 similar penalties, such as 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 and time-consuming and may require significant personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired. We have adopted policies applicable to all of our employees, but it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent such activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from government investigations or other actions or lawsuits stemming from a failure to comply with applicable laws or regulations. Additionally, we are subject to the risk that a person 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 result in the imposition of any of the penalties discussed above and have a significant impact on our business and financial condition.

We are subject to complex tax rules relating to our business, and any audits, investigations or tax proceedings could have a material adverse effect on our business, results of operations and financial condition.

We are subject to income and non-income taxes in the United States. Income tax accounting often involves complex issues, and judgment is required in determining our provision for income taxes and other tax liabilities. We may operate in foreign jurisdictions in the future. We could become subject to income and non-income taxes in foreign jurisdictions as well. In addition, many jurisdictions have detailed transfer pricing rules, which require that all transactions with non-resident related parties be priced using arm's length pricing principles within the meaning of such rules. The application of withholding tax, goods and services tax, sales taxes and other non-income taxes is not always clear, and we may be subject to tax audits relating to such withholding or non-income taxes. We believe that our tax positions are reasonable, and our tax reserves are adequate to cover any potential liability. We are currently not subject to any tax audits. However, the Internal Revenue Service ("IRS") or other taxing authorities may disagree with our positions. If the IRS or any other tax authorities were successful in challenging our positions, we may be liable for additional tax and penalties and interest related thereto or other taxes, as applicable, in excess of any reserves established therefor, which may have a significant impact on our results and operations and future cash flow.

We may not be able to utilize all, or any, of our net operating loss carryforwards.

We have incurred substantial losses during our history, do not expect to become profitable in the near future, and may not achieve profitability. As of December 31, 2023, we had U.S. federal and state net operating loss ("NOL") carryforwards of \$195.0 million and \$166.8 million, respectively. Our federal NOL carryforwards carry forward indefinitely. Our state NOL carryforwards begin to expire in 2027. In addition, as of December 31, 2023, we have U.S. federal and state R&D tax credits of \$17.2 million and an amount less than \$0.1 million available to offset future U.S. federal and state income taxes, which begin to expire in 2029 and 2030, respectively. As of December 31, 2023, we had federal Orphan Drug credits of \$13.5 million, which begin to expire in 2038.

Changes in tax laws or regulations may adversely impact our ability to utilize all, or any, of our NOL carryforwards. For example, legislation enacted in 2017, informally titled the Tax Cuts and Jobs Act (the "TCJA"), significantly revised the Internal Revenue Code of 1986, as amended (the "Code"). Future guidance from the IRS and other tax authorities with respect to the TCJA may affect us, and certain aspects of the TCJA could be repealed or modified in future legislation. For example, the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") modified certain provisions of the TCJA. Under the CARES Act, NOLs arising in a tax year beginning after December 31, 2017, and before January 1, 2021, generally may now be carried back five years. Under the TCJA, as modified by the CARES Act, unused losses generated in taxable years ending after December 31, 2017 will not expire and may be carried forward indefinitely, but the deductibility of such NOLs in tax years beginning after December 31, 2020, is limited to 80% of taxable income. It is uncertain if and to what extent various states will conform to the TCJA or the CARES Act.

As of December 31, 2023, we have a valuation allowance for the full amount of our net deferred tax assets as the realization of the net deferred tax assets is not determined to be more likely than not. In addition, Sections 382 and 383 of the Code limit a corporation's ability to utilize its NOL carryforwards and certain other tax attributes (including research credits) to offset any future taxable income or tax if the corporation experiences a cumulative ownership change of more than 50% over any rolling three-year period. State NOL carryforwards (and certain other tax attributes) may be similarly limited. A Section 382 ownership change can therefore result in

significantly greater tax liabilities than a corporation would incur in the absence of such a change, and any increased liabilities could adversely affect the corporation's business, results of operations, financial condition and cash flow. We have not yet determined if any prior change in the ownership of our equity or any change in such ownership in connection with our IPO, would trigger a Section 382 ownership change. It is possible that such a Section 382 ownership change has already occurred in prior periods. Furthermore, additional ownership changes may occur in the future as a result of events over which we will have little or no control, including purchases and sales of our equity by our 5% stockholders, the emergence of new 5% stockholders, additional equity offerings or redemptions of our stock or certain changes in the ownership of any of our 5% stockholders. As a result, our pre-2018 NOL carryforwards (and research tax credits) may expire prior to being used, and our NOL carryforwards and tax credits generated in 2018 and thereafter will be subject to a percentage limitation, upon an ownership change. Similar provisions of state tax law may also apply to limit our use of accumulated state tax attributes. As a result, even if we attain profitability, we may be unable to use all or a material portion of our NOLs and other tax attributes, which could adversely affect our future cash flows.

Risks Related to Our Reliance on Third Parties

We have entered into significant arrangements with collaborators and expect to depend on collaborations with third parties for certain research, development and commercialization activities, and if any such collaborations are not successful, it may harm our business and prospects.

We have sought in the past, and anticipate that we will continue to seek in the future, third-party collaborators for the research, development and commercialization of certain product candidates and the research and development of certain technologies. For example, we are party to the Novartis Agreement. Under this agreement, we are focused on research and development of *in vivo* gene editing products that utilize or incorporate our ARCUS nucleases. Our potential collaborators for other product research and development arrangements likely include large and mid-size pharmaceutical and biotechnology companies, and our potential collaborators for other technology research and development arrangements likely include universities and other research institutions.

Working with collaborators poses several significant risks. We have limited control over the amount and timing of resources that our collaborators dedicate to the product candidates or technologies we may seek to develop with them. A variety of factors may impact resource allocation decisions of collaborators, such as study or trial results, changes in the collaborator's strategic focus, turnover in personnel responsible for the development activities, financial capacity or external factors such as a business combination or change in control that diverts resources or creates competing priorities. Collaboration agreements may not lead to development or commercialization of product candidates or the development of technologies in the most efficient manner or at all. Resource allocation and other developmental decisions made by our collaborators may result in the delay or termination of research programs, studies or trials, repetition of or initiation of new studies or trials or provision of insufficient funding or resources for the completion of studies or trials or the successful marketing and distribution of any product candidates that may receive approval. Collaborators could independently develop, or develop with third parties, product candidates or technologies that compete directly or indirectly with our product candidates or technologies if the collaborators believe that competitive products or technologies are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours. Collaborators may not properly obtain, maintain, enforce or defend our intellectual property or proprietary rights or may use our proprietary information in such a way that could jeopardize or invalidate our proprietary information or expose us to potential litigation. Disputes may arise between us and our collaborators that result in the delay or termination of the research, development or commercialization activities or that result in costly litigation or arbitration that diverts management attention and resources.

Our ability to generate revenues from these arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements. If our collaborations do not result in the successful development and commercialization of product candidates or technologies, or if one of our collaborators terminates its agreement with us, we may not receive any future funding or milestone or royalty payments under the collaboration. If we do not receive the funding we expect under these agreements, our development of product candidates or technologies could be delayed, and we may need additional resources to develop such product candidates or technologies. For example, we waived earned, but unpaid milestone payments in connection with the termination of the Servier Agreement. If any of our collaborators terminates its agreement with us, we may be unable to find a suitable replacement collaborator or attract new collaborators and may need to raise additional capital to pursue further development or commercialization of the applicable product candidates or technologies. These events could delay development programs, negatively impact the perception of our company in business and financial communities or cause us to have to cease development of the product candidate covered by the collaboration arrangement. Failure to develop or maintain relationships with any current collaborators could result in the loss of opportunity to work with that collaborator or reputational damage that could impact our relationships with other collaborators in the relatively small industry communities in which we operate. Moreover, all of the risks relating to product development, regulatory approval and commercialization described in this Quarterly Report on Form 10-Q apply to the activities of our collaborators. If our existing collaboration agreements or any collaborative or strategic relationships we may establish in the future are not effective and successful, it may damage our reputation and business prospects, delay or prevent the development and commercialization of product candidates and inhibit or preclude our ability to realize any revenues.

If we are not able to establish collaborations on commercially reasonable terms, we may have to alter our research, development and commercialization plans.

Our research and product development programs and the potential commercialization of any product candidates we develop alone or with collaborators will require substantial additional cash to fund expenses, and we expect to continue to seek collaborative arrangements with others in connection with the development and potential commercialization of current and future product candidates or the development of ancillary technologies. We face significant competition in establishing relationships with appropriate collaborators. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. Whether we reach a definitive agreement for a collaboration will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. Those factors may include, among other things and as applicable for the type of potential product or technology, an assessment of the opportunities and risks of our technology, the design or results of studies or trials, the likelihood of approval, if necessary, by the FDA or similar regulatory authorities outside the United States, the potential market for the subject product candidate, the costs and complexities of manufacturing and delivering such product candidate to patients, the potential of competing products and technologies and industry and market conditions generally.

Current or future collaborators may also consider alternative product candidates or technologies for similar indications that may be available to collaborate on and whether such a collaboration could be more attractive than the one with us. Additionally, we may be restricted under existing collaboration agreements from entering into future agreements on certain terms or for certain development activities with potential collaborators. For example, we have granted exclusive rights or options to Novartis for certain targets, and during the term of our collaboration agreements we will be restricted from granting rights to other parties to use our ARCUS technology to pursue potential products that address those targets. Similarly, our collaboration agreements have in the past and may in the future contain non-competition provisions that could limit our ability to enter into strategic collaborations with future collaborators.

Collaborations are complex and time-consuming to negotiate and document. We may not be able to negotiate collaborations on a timely basis, on acceptable terms, or at all. If we do enter into additional collaboration agreements, the negotiated terms may force us to relinquish rights that diminish our potential profitability from development and commercialization of the subject product candidates or others. If we are unable to enter into additional collaboration agreements, or to maintain existing collaborations, we may have to curtail the research and development of the product candidate or technology for which we are seeking to collaborate, reduce or delay research and development programs, delay potential commercialization timelines, reduce the scope of any sales or marketing activities or undertake research, development or commercialization activities at our own expense. If we elect to increase our expenditures to fund research, 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.

We rely on third parties to conduct, supervise and monitor our clinical trials and some aspects of our research and preclinical testing, and if those third parties do not successfully carry out their contractual duties, comply with regulatory requirements, or otherwise perform in a satisfactory manner, we may not be able to obtain regulatory approval or commercialize product candidates, or such approval or commercialization may be delayed, and our business may be substantially harmed.

We rely on medical institutions, universities, clinical investigators, contract laboratories and other third parties, such as CROs, to conduct preclinical studies and future clinical trials for our product candidates. Nevertheless, we will be responsible for ensuring that each of our studies and trials is conducted in accordance with the applicable protocol, legal and regulatory requirements and scientific standards, and our reliance on such third parties will not relieve us of our regulatory responsibilities.

Although we intend to design the trials for our product candidates either alone or with collaborators, third parties may conduct all of the trials. As a result, many important aspects of our research and development programs, including their conduct and timing, will be outside of our direct control. Our reliance on third parties to conduct future studies and trials will also result in less direct control over the management of data developed through studies and trials than would be the case if we were relying entirely upon our own staff. Communicating with outside parties can also be challenging, potentially leading to mistakes and difficulties in coordinating activities. Outside parties may have staffing difficulties, fail to comply with contractual obligations, experience regulatory compliance issues, undergo changes in priorities, become financially distressed or form relationships with other entities, some of which may be our competitors. We also face the risk of potential unauthorized disclosure or misappropriation of our intellectual property by CROs or other third parties, which may reduce our trade secret protection and allow our potential competitors to access and exploit our proprietary technology. For any violations of laws and regulations during the conduct of our preclinical studies and future clinical trials, we could be subject to warning letters or enforcement action that may include civil penalties up to and including criminal prosecution.

For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA requires us to comply with regulations, commonly referred to as GCPs, for conducting, monitoring, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. If we, our collaborators, our CROs or other third parties fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We also are required to register certain ongoing clinical trials and post the results of such completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within certain timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions.

If our CROs or other third parties do not successfully carry out their contractual duties or obligations, fail to meet expected deadlines, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for any other reasons, trials for product candidates may be extended, delayed or terminated, and we or our collaborators may not be able to obtain regulatory approval for, or successfully commercialize, any product candidate that we develop. If we are required to repeat, extend the duration of or increase the size of any trials we conduct, it could significantly delay commercialization and require significantly greater expenditures. As a result of any of these factors, our financial results and the commercial prospects for any product candidate that we or our collaborators may develop would be harmed, our costs could increase and our ability to generate revenues could be delayed.

We rely on third parties to supply raw materials or manufacture product supplies that are necessary for the conduct of preclinical studies, clinical trials and manufacturing of our product candidates, and failure by third parties to provide us with sufficient quantities of products, or to do so at acceptable quality levels or prices and on a timely basis, could harm our business.

We are dependent on third parties for the supply of various biological materials, such as cells, cytokines and antibodies, and the manufacture of product supplies, such as media, plasmids, mRNA and AAV viral vectors, which are necessary to produce our product candidates. The supply of these materials could be reduced or interrupted at any time. In such case, identifying and engaging an alternative supplier or manufacturer could result in delay, and we may not be able to find other acceptable suppliers or manufacturers on acceptable terms, or at all. Switching suppliers or manufacturers may involve substantial costs and is likely to result in a delay in our desired clinical and commercial timelines. If we change suppliers or manufacturers for commercial production, applicable regulatory agencies may require us to conduct additional studies or trials. If key suppliers or manufacturers are lost, or if the supply of the materials is diminished or discontinued, we or our collaborators may not be able to develop, manufacture and market product candidates in a timely and competitive manner, or at all. If any of our product candidates receives approval, we will likely need to seek alternative sources of supply of raw materials or manufactured product supplies and there can be no assurance that we will be able to establish such relationships to provide such supplies on commercially reasonable terms or at acceptable quality levels, if at all. If we are unable to identify and procure additional sources of supply that fit our required needs, we could face substantial delays or incur additional costs in procuring such materials. In addition, manufactured product supplies are subject to stringent manufacturing processes and rigorous testing. Delays in the completion and validation of facilities and manufacturing processes of these materials could adversely affect the ability to complete studies or trials and commercialize any product candidates that may receive approval. Furthermore, if our suppliers or manufacturers encounter challenges relating to employee turnover, the supply and manufacturing of our materials could be delayed or adversely affected as such parties seek to hire and train new employees. These factors could cause the delay of studies or trials, regulatory submissions, required approvals or commercialization of product candidates that we or our collaborators may develop, cause us to incur higher costs and prevent us from commercializing products successfully. Furthermore, if our suppliers or manufacturers fail to meet contractual requirements, and we are unable to secure one or more replacements capable of production at a substantially equivalent cost, our or our collaborators' studies or trials may be delayed and we could lose potential revenue.

We rely on third parties for the manufacturing process of product candidates, and failure by those parties to adequately perform their obligations could harm our business.

We rely on outside vendors for the manufacturing process, including process development, of product candidates that we or our collaborators may develop. The facilities used by our contract manufacturers to manufacture product candidates must be approved by the FDA or other foreign regulatory agencies pursuant to inspections that will be conducted after we submit an application to the FDA or other foreign regulatory agencies. To the extent that we or our collaborators engage third parties for manufacturing services, we will not control the manufacturing process of, and will be completely dependent on, our contract manufacturing providers for compliance with cGMP requirements for manufacture of the product candidates. We have not yet caused any product candidates to be manufactured or processed on a commercial scale and may not be able to do so. We anticipate making changes as we work to optimize the manufacturing process, and we cannot be sure that even minor changes in the process will result in products that are safe and effective. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or other regulatory authorities, they will not be able to secure and/or maintain regulatory approval

for their manufacturing facilities. In addition, we have no control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of 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 any of our or our collaborators' potential products.

Risks Related to Intellectual Property

Our ability to compete may decline if we do not adequately protect our proprietary rights, and if our proprietary rights do not provide a competitive advantage.

Our commercial success depends upon obtaining and maintaining proprietary rights to our intellectual property estate, including rights relating to ARCUS and to our product candidates, as well as successfully defending these rights against third-party challenges and successfully enforcing these rights to prevent third-party infringement. We will only be able to protect ARCUS and product candidates from unauthorized use by third parties to the extent that valid and enforceable patents cover them. Our ability to obtain and maintain patent protection for ARCUS and our product candidates is uncertain due to a number of factors, including that:

- we may not have been the first to invent the technology covered by our pending patent applications or issued patents;
- we may not be the first to file patent applications covering product candidates, including their compositions or methods of use, as patent applications in the United States and most other countries are confidential for a period of time after filing;
- our compositions and methods may not be patentable;
- our disclosures in patent applications may not be sufficient to meet the statutory requirements for patentability;
- any or all of our pending patent applications may not result in issued patents;
- others may independently develop identical, similar or alternative technologies, products or compositions or methods of use thereof;
- others may design around our patent claims to produce competitive technologies or products that fall outside of the scope of our patents;
- we may fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection;
- we may not seek or obtain patent protection in countries that may eventually provide us a significant business opportunity;
- any patents issued to us may not provide a basis for commercially viable products, may not provide any competitive advantages or may be successfully challenged by third parties;
- others may identify prior art or other bases upon which to challenge and ultimately invalidate our patents or otherwise render them unenforceable; and
- the growing scientific and patent literature relating to engineered endonucleases, including our own patents and publications, may make it increasingly difficult or impossible to patent new engineered nucleases in the future.

Even if we have or obtain patents covering ARCUS or any product candidates or compositions, we and our collaborators may still be barred from making, using and selling such product candidates or technologies because of the patent rights of others. Others may have filed, and in the future may file, patent applications covering compositions, products or methods that are similar or identical to ours, which could materially affect our ability to successfully develop any product candidates or to successfully commercialize any approved products alone or with collaborators. In addition, because patent applications can take many years to issue, there may be currently pending applications unknown to us that may later result in issued patents that we or our collaborators may infringe. These patent applications may have priority over patent applications filed by us.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents have been, and may in the future be, challenged in the courts or patent offices in the United States and abroad. 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 technology and products, or limit the duration of the patent protection of our technology and products. For example, in 2019, the Patent Trial and Appeal Board (the "PTAB"), of the USPTO initiated two patent interferences involving a family of patents that have been issued to us and a pending patent application filed by a third party. Though the PTAB ultimately found that the third-party patent application did not satisfy written description requirements and rejected the related claims, maintaining the claims in all nine of our patents, any future

interference proceedings could result in an adverse outcome, affecting our competitive position, including, without limitation, loss of some or all of our involved patent claims, limiting our ability to stop others from using or commercializing similar or identical technology and products, which could harm our business, financial condition and results of operations. Protecting our patent rights in connection with such proceeding may also be expensive and may involve the diversion of significant management time.

Furthermore, we cannot guarantee that any patents will be issued from any pending or future owned or licensed patent applications. Thus, even if our patent applications issue as patents, they may not issue in a form that will provide us with meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. In addition, third parties may be able to develop products that are similar to, or better than, ours in a way that is not covered by the claims of our patents, or may have blocking patents that could prevent us from marketing our products or practicing our own patented technology. Moreover, patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after it is filed. Various extensions may be available; however, the life of a patent, and the protection it affords, is limited. Without patent protection for current or future product candidates, we may be open to competition from generic versions of such potential products. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to those we or our collaborators may develop.

Obtaining and maintaining a patent portfolio entails significant expense, including periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and patent applications. These expenditures can be at numerous stages of prosecuting patent applications and over the lifetime of maintaining and enforcing issued patents. We may or may not choose to pursue or maintain protection for particular intellectual property in our portfolio. If we choose to forgo patent protection or to allow a patent application or patent to lapse purposefully or inadvertently, our competitive position could suffer. There are situations, however, in which failure to make certain payments or noncompliance with certain requirements in the patent process 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, our competitors might be able to enter the market, which would have a material adverse effect on our business.

Legal action that may be required to enforce our patent rights can be expensive and may involve the diversion of significant management time. There can be no assurance that we will have sufficient financial or other resources to file and pursue infringement claims, which typically last for years before they are concluded. In addition, these legal actions could be unsuccessful and result in the invalidation of our patents, a finding that they are unenforceable or a requirement that we enter into a licensing agreement with or pay monies to a third party for use of technology covered by our patents. We may or may not choose to pursue litigation or other actions against those that have infringed on our patents, or have used them without authorization, due to the associated expense and time commitment of monitoring these activities. If we fail to successfully protect or enforce our intellectual property rights, our competitive position could suffer, which could harm our results of operations.

Many biotechnology companies and academic institutions are currently pursuing a variety of different nuclease systems for genome editing technologies using zinc finger nucleases, TALENs, and CRISPR/Cas9 and the use of those nucleases in cancer immunotherapy, gene therapy and genome editing. Although those nucleases are physically and chemically different from our ARCUS nucleases, those companies and institutions may seek patents that broadly cover aspects of cancer immunotherapy, gene therapy and genome editing using nucleases generally. Such patents, if issued, valid and enforceable, could prevent us from marketing our product candidates, if approved, practicing our own patented technology, or might require us to take a license which might not be available on commercially reasonable terms or at all. While we expect that we will continue to be able to patent our ARCUS nucleases for the foreseeable future, as the scientific and patent literature relating to engineered endonucleases increases, including our own patents and publications, it may become more difficult or impossible to patent new engineered endonucleases in the future.

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

We are a party to a number of intellectual property license agreements that are important to our business and expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that future license agreements will impose, various diligence, milestone payment, royalty and other obligations on us. We may need to outsource and rely on third parties for many aspects of the development, sales and marketing of any products covered under our current and future license agreements. Delay or failure by these third parties could adversely affect the continuation of our license agreements with our licensors. If we fail to comply with any of our obligations under these agreements, or we are subject to a bankruptcy, our licensors may have the right to terminate the license, in which event we would not be able to market any products covered by the license.

In addition, disputes may arise regarding the payment of the royalties due to licensors in connection with our exploitation of the rights we license from them. Licensors may contest the basis of royalties we retained and claim that we are obligated to make payments under a broader basis. In addition to the costs of any litigation we may face as a result, any legal action against us could increase our payment obligations under the respective agreement and require us to pay interest and potentially damages to such licensors.

In some cases, patent prosecution of our licensed technology is controlled solely by the licensor. If such licensor fails to obtain and maintain patent or other protection for the proprietary intellectual property we license from such licensor, we could lose our rights to such intellectual property or the exclusivity of such rights, and our competitors could market competing products using such intellectual property. In that event, we may be required to expend significant time and resources to develop or license replacement technology. If we are unable to do so, we or our collaborators may be unable to develop or commercialize the affected product candidates, which could harm our business significantly. In other cases, we control the prosecution of patents resulting from licensed technology. In the event we breach any of our obligations related to such prosecution, we may incur significant liability to our licensing partners.

For example, our license agreement (the “Duke License”) with Duke University (“Duke”) imposes various payment, royalty and other obligations on us in order to maintain the license. If we fail to make royalty payments or milestone payments required under the Duke License, Duke may terminate the agreement. If we or our affiliates obtain a license from a third party to practice the Duke technology, we must use commercially reasonable efforts to secure a covenant not to sue Duke, or any of its faculty, students, employees or agents, for any research and development efforts conducted at Duke that resulted in the creation of any of its inventions or intellectual property rights arising therefrom. Additionally, because development of the Duke technology was funded in part by the U.S. government, it is subject to certain government rights and obligations, including the requirement that any products sold in the United States based upon such technology be substantially manufactured in the United States.

In addition, our cross-license agreement (the “Collectis License”) with Collectis S.A. (“Collectis”) imposes various obligations on us in order to maintain the license. In particular, if we participate in or provide assistance to a third party challenging the validity, enforceability and/or patentability of any claim of any patent licensed to us by Collectis under this agreement, Collectis may terminate the agreement. The Collectis License does not provide exclusive rights to use the licensed intellectual property and technology or rights in all relevant fields in which we may wish to develop or commercialize our technology and products in the future. As a result, we are not able to prevent competitors from developing and commercializing competitive products and technology that may use this technology. Additionally, we do not have the right to control the preparation, filing, prosecution, maintenance, enforcement and defense of patents and patent applications covering the technology that we license from Collectis. Therefore, we cannot be certain that these patents and patent applications will be prepared, filed, prosecuted, maintained and defended in a manner consistent with the best interests of our business. If Collectis or other licensors fail to prosecute, maintain, enforce and defend the patents subject to such licenses, or lose rights to those patents or patent applications, the rights we have licensed may be reduced or eliminated, and our right to develop and commercialize any of our products that are the subject of such licensed rights could be adversely affected.

If we fail to comply with our obligations under the Duke License or the Collectis License, or arrangements with any other licensors, our counterparties may have the right to terminate these agreements, in which event we might not be able to develop, manufacture or market any product candidate that is covered by these agreements, which could materially adversely affect the value of any such product candidate. Termination of these agreements or reduction or elimination of our rights under these agreements may result in our having to negotiate new or reinstated agreements with less favorable terms, or cause us to lose our rights under these agreements, including our rights to important intellectual property or technology.

Disputes may arise regarding intellectual property subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- the amounts of royalties, milestones or other payments due to our licensors;
- the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the license agreement;
- the sublicensing of patent and other rights under our collaborative development relationships;
- our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our collaborators; and
- the priority of invention of patented technology.

Such disputes may be costly to resolve and may divert management's attention away from day-to-day activities. If disputes over intellectual property that we have licensed from third parties prevent or impair our ability to maintain our licensing arrangements on acceptable terms, we or our collaborators may be unable to successfully develop and commercialize the affected product candidates.

Some of our in-licensed intellectual property has been discovered through government funded research and thus may be subject to federal regulations such as "march-in" rights, certain reporting requirements and a preference for U.S.-based companies, and compliance with such regulations may limit our exclusive rights and our ability to contract with foreign manufacturers.

Certain intellectual property rights that have been in-licensed pursuant to the Duke License have been generated through the use of U.S. government funding and are therefore subject to certain federal regulations. As a result, the U.S. government may have certain rights to intellectual property embodied in our current or future product candidates pursuant to the Bayh-Dole Act of 1980, or the Patent and Trademark Law Amendment. These U.S. government rights include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government has the right, under certain limited circumstances, to require the licensor to grant exclusive, partially exclusive or non-exclusive licenses to any of these inventions to a third party if it determines that (1) adequate steps have not been taken to commercialize the invention, (2) government action is necessary to meet public health or safety needs or (3) government action is necessary to meet requirements for public use under federal regulations (also referred to as "march-in rights"). The U.S. government also has the right to take title to these inventions if the licensor fails to disclose the invention to the government or fails to file an application to register the intellectual property within specified time limits. Intellectual property generated under a government funded program is also subject to certain reporting requirements, compliance with which may require us to expend substantial resources. In addition, the U.S. government requires that any products embodying any of these inventions or produced through the use of any of these inventions be manufactured substantially in the United States, and the Duke License requires that we comply with this requirement. This preference for U.S. industry may be waived by the federal agency that provided the funding if the owner or assignee of the intellectual property can show that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture the products substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. This preference for U.S. industry may limit our ability to contract with foreign product manufacturers for products covered by such intellectual property. To the extent any of our owned or licensed future intellectual property is also generated through the use of U.S. government funding, the provisions of the Bayh-Dole Act may similarly apply.

If we do not obtain patent term extension in the United States under the Hatch-Waxman Act and in foreign countries under similar legislation with respect to our product candidates, thereby potentially extending the term of marketing exclusivity for such product candidates, our business may be harmed.

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

Patents and patent applications involve highly complex legal and factual questions, which, if determined adversely to us, could negatively impact our patent position.

The patent positions of biopharmaceutical and biotechnology companies and other actors in our fields of business can be highly uncertain and typically involve complex scientific, legal and factual analyses. In particular, the interpretation and breadth of claims allowed in some patents covering biopharmaceutical compositions may be uncertain and difficult to determine, and are often affected materially by the facts and circumstances that pertain to the patented compositions and the related patent claims. The standards of the USPTO and its foreign counterparts are sometimes uncertain and could change in the future. Consequently, the issuance and scope of patents cannot be predicted with certainty. Patents, if issued, may be challenged, invalidated or circumvented. U.S. patents and patent applications may also be subject to interference or derivation proceedings, and U.S. patents may be subject to reexamination proceedings, post-grant review and/or *inter partes* review in the USPTO. International patents may also be subject to opposition or comparable proceedings in the corresponding international patent office, which could result in either loss of the patent or denial of the patent application or loss or reduction in the scope of one or more of the claims of the patent or patent application. In addition, such

interference, derivation, reexamination, post-grant review, *inter partes* review and opposition proceedings may be costly. Accordingly, rights under any issued patents may not provide us with sufficient protection against competitive products or processes.

Furthermore, even if not challenged, our patents and patent applications may not adequately protect our technology and any product candidates or products that we develop alone or with collaborators or prevent others from designing their products to avoid being covered by our claims. If the breadth or strength of protection provided by the patent applications we hold with respect to product candidates or potential products is threatened, it could dissuade companies from collaborating with us to develop, and could threaten our or their ability to successfully commercialize, such product candidates. Furthermore, for U.S. applications in which any claim is entitled to a priority date before March 16, 2013, an interference proceeding can be provoked by a third party or instituted by the USPTO in order to determine who was the first to invent any of the subject matter covered by such patent claims.

In addition, changes in, or different interpretations of, patent laws in the United States and other countries may permit others to use our discoveries or to develop and commercialize our technology and product candidates or products without providing any compensation to us, or may limit the scope of patent protection that we are able to obtain. The laws of some countries do not protect intellectual property rights to the same extent as U.S. laws, and those countries may lack adequate rules and procedures for defending our intellectual property rights.

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

Third parties may assert claims against us alleging infringement of their patents and proprietary rights, or we may need to become involved in lawsuits to defend or enforce our patents, either of which could result in substantial costs or loss of productivity, delay or prevent the development and commercialization of product candidates, prohibit our use of proprietary technology or sale of potential products or put our patents and other proprietary rights at risk.

Our commercial success depends in part upon our ability to develop, manufacture, market and sell product candidates without alleged or actual infringement, misappropriation or other violation of the patents and proprietary rights of third parties. Litigation relating to infringement or misappropriation of patent and other intellectual property rights in the pharmaceutical and biotechnology industries is common, including patent infringement lawsuits, interferences, oppositions and reexamination proceedings before the USPTO and corresponding international patent offices. The various markets in which we plan to operate are subject to frequent and extensive litigation regarding patents and other intellectual property rights. In addition, many companies in intellectual property-dependent industries, including the biotechnology and pharmaceutical industries, have employed intellectual property litigation as a means to gain an advantage over their competitors. Numerous United States, EU and other internationally issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we and our collaborators are developing product candidates, and as the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the intellectual property rights of third parties. For example, we are aware of certain patents held by third parties relating to the modification of T cells, including the production of CAR T cells. As a result of any patent infringement claims, or in order to avoid any potential infringement claims, we may choose to seek, or be required to seek, a license from the third party, which may require payment of substantial royalties or fees, or require us to grant a cross-license under our intellectual property rights, similar to the cross license we granted Cellectis as part of our patent litigation settlement. These licenses may not be available on reasonable terms or at all. Even if a license can be obtained on reasonable terms, the rights may be nonexclusive, which would give our competitors access to the same intellectual property rights. If we are unable to enter into a license on acceptable terms, we or our collaborators could be prevented from commercializing one or more product candidates, or forced to modify such product candidates, or to cease some aspect of our business operations, which could harm our business significantly. We or our collaborators might also be forced to redesign or modify our technology or product candidates so that we no longer infringe the third-party intellectual property rights, which may result in significant cost or delay to us, or which redesign or modification could be impossible or technically infeasible. Even if we were ultimately to prevail, any of these events could require us to divert substantial financial and management resources that we would otherwise be able to devote to our business.

Further, if a patent infringement suit is brought against us, our collaborators or our third-party service providers, our development, manufacturing or sales activities relating to the product or product candidate that is the subject of the suit may be delayed or terminated. In addition, defending such claims has in the past and may in the future cause us to incur substantial expenses and, if successful, could cause us to pay substantial damages if we are found to be infringing a third party's patent rights. These damages potentially include increased damages and attorneys' fees if we are found to have infringed such rights willfully. Some claimants may have substantially greater resources than we do and may be able to sustain the costs of complex intellectual property litigation to a greater degree and for longer periods of time than we could. In addition, patent holding companies that focus solely on extracting royalties and settlements by enforcing patent rights may target us. In addition, if the breadth or strength of protection provided by the patents and patent applications we own or in-license is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

We have been and may in the future be subject to third-party claims and similar adversarial proceedings or litigation in other jurisdictions regarding our infringement of the patent rights of third parties. Even if such claims are without merit, a court of competent jurisdiction could hold that these third-party patents are valid, enforceable and infringed, and the holders of any such patents may be able to block or our collaborators' ability to further develop or commercialize the applicable product candidate unless we obtain a license under the applicable patents, or until such patents expire or are finally determined to be invalid or unenforceable. Similarly, if any third-party patents were held by a court of competent jurisdiction to cover aspects of our technologies, compositions, formulations, or methods of treatment, prevention or use, the holders of any such patents may be able to prohibit our use of those technologies, compositions, formulations, methods of treatment, prevention or use or other technologies, effectively blocking our or our collaborators' ability to develop and commercialize the applicable product candidate until such patent expires or is finally determined to be invalid or unenforceable or unless we or our collaborators obtain a license.

Some of our competitors may be able to sustain the costs of complex intellectual property litigation more effectively than we can because they have substantially greater resources. In addition, intellectual property litigation, regardless of its outcome, may cause negative publicity, adversely impact prospective customers, cause product shipment delays or prohibit us from manufacturing, marketing or otherwise commercializing our products, services and technology. Any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise additional funds or otherwise have a material adverse effect on our business, results of operation, financial condition or cash flows.

If we or one of our licensors were to initiate legal proceedings against a third party to enforce a patent covering our technology or a product candidate, the defendant could counterclaim that our patent is invalid or unenforceable. In patent litigation in the United States and Europe, defendant counterclaims alleging invalidity or unenforceability are common. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, lack of novelty, obviousness or non-enablement. Third parties might allege unenforceability of our patents because during prosecution of the patent an individual connected with such prosecution withheld relevant information, or made a misleading statement. The outcome of proceedings involving assertions of invalidity and unenforceability during patent litigation is unpredictable. With respect to the validity of patents, for example, we cannot be certain that there is no invalidating prior art of which we and the patent examiner were unaware during prosecution, but that an adverse third party may identify and submit in support of such assertions of invalidity. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our technology or product candidates. Our patents and other intellectual property rights also will not protect our technology if competitors design around our protected technology without infringing our patents or other intellectual property rights. Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses and could distract our technical and management personnel from their normal responsibilities. In addition, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments, and if securities analysts or investors view these announcements in a negative light, the price of our common stock could be adversely affected. Such litigation or proceedings could substantially increase our operating losses and reduce our resources available for development activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings.

Developments in patent law could have a negative impact on our business.

From time to time, the Supreme Court, other federal courts, the United States Congress, or Congress, the USPTO and similar international authorities may change the standards of patentability, and any such changes could have a negative impact on our business. For example, the America Invents Act (the "AIA"), which was passed in September 2011, resulted in significant changes to the U.S. patent system. An important change introduced by the AIA is that, as of March 16, 2013, the United States transitioned from a "first-to-invent" to a "first-to-file" system for deciding which party should be granted a patent when two or more patent applications are filed by different parties claiming the same invention. Under a "first-to-file" system, assuming the other requirements for patentability are met, the first inventor to file a patent application generally will be entitled to a patent on the invention regardless of

whether another inventor had made the invention earlier. A third party that files a patent application in the USPTO after that date but before us could therefore be awarded a patent covering an invention of ours even if we made the invention before it was made by the third party. Circumstances could prevent us from promptly filing patent applications on our inventions.

The AIA limited where a patentee may file a patent infringement suit and provided opportunities for third parties to challenge any issued patent in the USPTO. Those provisions apply to all of our U.S. patents, regardless of when issued. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in U.S. federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action. These provisions could increase the uncertainties and costs surrounding the prosecution of our or our licensors' patent applications and the enforcement or defense of our or our licensors' issued patents.

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

If we were unable to protect the confidentiality of our trade secrets and enforce our intellectual property assignment agreements, our business and competitive position would be harmed.

In addition to patent protection, because we operate in the highly technical field of development of product candidates and products using genome editing, we rely significantly on trade secret protection in order to protect our proprietary technology and processes. Trade secrets are difficult to protect. Our policy is to enter into confidentiality and intellectual property assignment agreements with our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors. These agreements generally require that the other party keep confidential and not disclose to third parties all confidential information developed by the party or made known to the party by us during the course of the party's relationship with us. These agreements also generally provide that inventions conceived by the party in the course of rendering services to us will be our exclusive property. However, we may be unsuccessful in executing such an agreement with each party who in fact conceives or develops intellectual property that we regard as our own. Our assignment agreements may not be self-executing or may be breached, and we may be forced to bring claims against third parties, or defend claims they may bring against us, to determine the ownership of what we regard as our intellectual property. In addition, these agreements may be held unenforceable and may not effectively assign intellectual property rights to us. If our trade secrets and other unpatented or unregistered proprietary information are disclosed, we are likely to lose such trade secret protection.

In addition, certain provisions in our intellectual property agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could affect the scope of our rights to the relevant intellectual property or technology, or affect financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

In addition, agreements with third parties typically restrict the ability of such third parties to publish data potentially relating to our trade secrets. Our academic collaborators typically have rights to publish data, provided that we are notified in advance and may delay publication for a specified period of time in order to secure our intellectual property rights arising from the arrangement. In other cases, publication rights are controlled exclusively by us, although in some cases we may share these rights with other parties. We also conduct joint research and product development activities that may require us to share trade secrets under the terms of our research and development collaborations or similar agreements. In addition to contractual measures, we try to protect the confidential nature of our proprietary information using physical and technological security measures. Such measures may not provide adequate protection for our proprietary information. For example, our security measures may not prevent an employee or consultant with authorized access from misappropriating our trade secrets and providing them to a competitor, and the recourse we have available against such misconduct may not provide an adequate remedy to protect our interests fully. 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. In addition, courts outside the United States may be less willing to protect trade secrets. Furthermore, our proprietary information may be independently developed by others in a manner that could prevent legal recourse by us. Competitors could purchase any products we may develop and commercialize and attempt to reverse engineer and replicate some or all of the competitive advantages we derive from our

development efforts, willfully infringe our intellectual property rights or design around our protected technology. In addition, our key employees, consultants, suppliers or other individuals with access to our proprietary technology and know-how may incorporate that technology and know-how into projects and inventions developed independently or with third parties. As a result, disputes may arise regarding the ownership of the proprietary rights to such technology or know-how, and any such dispute may not be resolved in our favor. If any of our confidential or proprietary information, including our trade secrets, were to be disclosed or misappropriated, or if any such information was independently developed by a competitor, our competitive position could be harmed and such disclosure or misappropriation could have a material adverse effect on our business.

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

Filing, prosecuting and defending patents on product candidates in all countries and jurisdictions throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States could be less extensive than those in the United States, assuming that rights are obtained in the United States. In-licensing patents covering product candidates in all countries throughout the world may similarly be prohibitively expensive, if such opportunities are available at all. 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.

We generally apply for patents in those countries where we intend to make, have made, use, offer for sale or sell products and where we assess the risk of infringement to justify the cost of seeking patent protection. However, we do not seek protection in all countries where we sell products and we may not accurately predict all the countries where patent protection would ultimately be desirable. If we fail to timely file a patent application in any such country or major market, we may be precluded from doing so at a later date. Competitors may use our technologies in jurisdictions where we do not pursue and obtain patent protection to develop their own products and may export otherwise infringing products to territories where we have patent protection, but where our ability to enforce our patent rights is not as strong as in the United States. These products may compete with any products that we or our collaborators may develop, and our patents or other intellectual property rights may not be effective or sufficient to prevent such competition.

The laws of some other countries do not protect intellectual property rights to the same extent as the laws of the United States. For example, European patent law restricts the patentability of methods of treatment of the human body more than U.S. law does. Patent protection must ultimately be sought on a country-by-country basis, which is an expensive and time-consuming process with uncertain outcomes. Accordingly, we may choose not to seek patent protection in certain countries, and we will not have the benefit of patent protection in such countries. In addition, the legal systems of some countries, particularly developing countries, do not favor the enforcement of patents and other intellectual property protection, especially those relating to biopharmaceuticals or biotechnologies. As a result, many companies have encountered significant difficulties in protecting and defending intellectual property rights in certain jurisdictions outside the United States. Such issues may make it difficult for us to stop the infringement of our patents, if obtained, or the misappropriation of our other intellectual property rights. For example, many other countries, including countries in the EU, have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, many countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. In those countries, we and our licensors may have limited remedies if patents are infringed or if we or our licensors are compelled to grant a license to a third party, which could materially diminish the value of those patents and could limit our potential revenue opportunities. Accordingly, our and our licensors' efforts to enforce intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we own or license.

The European Union's Unified Patent Court may in particular present uncertainties for our ability to protect and enforce our patent rights against competitors in Europe. In 2012, the European Patent Package ("EU Patent Package") regulations were passed with the goal of providing a single pan-European Unitary Patent and a new European Unified Patent Court, ("UPC"), for litigation involving European patents. Implementation of the EU Patent Package occurred in June 2023. Under the UPC, all European patents, including those issued prior to ratification of the European Patent Package, will by default automatically fall under the jurisdiction of the UPC. The UPC provides our competitors with a new forum to centrally revoke our European patents, and allows for the possibility of a competitor to obtain pan-European injunctions. It will be several years before we will understand the scope of patent rights that will be recognized and the strength of patent remedies that are provided by the UPC. Under the EU Patent Package, we have the right to opt our patents out of the UPC over the first seven years of the court's existence, but doing so may preclude us from realizing the benefits of the new unified court.

Furthermore, proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, subject our patents to the risk of being invalidated or interpreted narrowly, subject our patent applications to the risk of not issuing or 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 to us, if any, may not be commercially meaningful, while the damages and other

remedies we may be ordered to pay such third parties may be significant. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

We may not be successful in obtaining or maintaining necessary rights to product components and processes for our development pipeline through acquisitions and in-licenses.

We have rights, through licenses from third parties and under patents that we own, to the intellectual property to develop the product candidates we are currently developing alone or with collaborators. Because our programs may involve additional product candidates that may require the use of proprietary rights held by third parties, the growth of our business may depend in part on our ability to acquire, in-license or use these proprietary rights. In addition, product candidates may require specific formulations to work effectively and efficiently, and these rights may be held by others. We may be unable to acquire or in-license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of more established companies, or companies that have greater resources than we do, may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive to develop or commercialize product candidates. These established companies may have a competitive advantage over us due to their size and greater cash resources and clinical development and commercialization capabilities. We may not be able to successfully complete such negotiations and ultimately acquire the rights to the intellectual property surrounding product candidates that we may seek to acquire.

For example, we sometimes collaborate with academic institutions to accelerate our preclinical research or development under written agreements with these institutions. Typically, these institutions provide us with an option to negotiate a license to any of the institution's rights in technology resulting from the strategic alliance. Regardless of such right of first negotiation, we may be unable to negotiate a license within the specified time frame or under terms that are acceptable to us, and the institution may license such intellectual property rights to third parties, potentially blocking our ability to pursue our development and commercialization plans.

In addition, companies that perceive us to be a competitor may be unwilling to assign or license to us intellectual property rights that we require in order to successfully develop and commercialize potential products. We also may be unable to obtain such a license or assignment on terms that would allow us to make an appropriate return on our investment. In either event, our business and prospects for growth could suffer.

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

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

Risks Related to Owning Our Common Stock

We could be subject to securities class action litigation.

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant to us as a biopharmaceutical company, as our stock price can significantly fluctuate as a result of public announcements regarding the progress of our development efforts for our discovery platform and our product candidates. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

We do not currently intend to pay dividends on our common stock.

We do not intend to pay any dividends to holders of our common stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. In addition, our future debt instruments may materially restrict our ability to pay dividends on our common stock. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future, and the success of an investment in our common stock will depend upon any future appreciation in its value. Consequently, you may need to sell all or part of your common stock after price appreciation, which may never occur, as the only way to realize any future gains on your investment.

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

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

- a classified board of directors with three-year staggered terms, which may delay the ability of stockholders to change the membership of a majority of our board of directors;
- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from filling vacancies on our board of directors;
- the ability of our board of directors to authorize the issuance of shares of preferred stock and to determine the terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- the ability of our board of directors to alter our amended and restated bylaws without obtaining stockholder approval;
- the required approval of the holders of at least two-thirds of the shares entitled to vote at an election of directors to adopt, amend or repeal our amended and restated bylaws or repeal the provisions of our amended and restated certificate of incorporation regarding the election and removal of directors;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- the requirement that a special meeting of stockholders may be called only by the chairman of the board of directors, our chief executive officer (or our president, in the absence of a chief executive officer) or a majority of our board of directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of us.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the General Corporation Law of the State of Delaware, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner.

Our amended and restated certificate of incorporation and our amended and restated bylaws include exclusive forum provisions for substantially all 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 provides that, unless we consent in writing to the selection of an alternative

forum to the fullest extent permitted by law, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim for breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (3) any action asserting a claim arising pursuant to any provision of the General Corporation Law of the State of Delaware, our amended and restated certificate of incorporation or our amended and restated bylaws, or (4) any action asserting a claim governed by the internal affairs doctrine. Under our amended and restated certificate of incorporation, this exclusive forum provision will not apply to claims which are vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery of the State of Delaware, or for which the Court of Chancery of the State of Delaware does not have subject matter jurisdiction. For instance, the provision would not apply to actions arising under federal securities laws, including suits brought to enforce any liability or duty created by the Exchange Act or the rules and regulations thereunder. Further, our amended and restated bylaws provide that, unless we consent in writing to the selection of an alternative forum, to the fullest extent permitted by law, the federal district courts of the United States will be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act and that any person or entity purchasing or otherwise acquiring or holding any interest in shares of our capital stock are deemed to have notice of and consented to this provision. These exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. For example, stockholders who do bring a claim in the Court of Chancery could face additional litigation costs in pursuing any such claim, particularly if they do not reside in or near the State of Delaware. The Court of Chancery may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments or results may be more favorable to us than to our stockholders.

We are an “emerging growth company” and the reduced disclosure requirements applicable to emerging growth companies may make our common stock less attractive to investors.

We are an “emerging growth company,” as defined in the JOBS Act. We will remain an emerging growth company until the earlier of (1) December 31, 2024, (2) the last day of the fiscal year in which we have total annual gross revenue of \$1.235 billion or more, (3) the date on which we have issued more than \$1.0 billion in nonconvertible debt during the previous three years, or (4) the date on which we are deemed to be a large accelerated filer under the rules of the SEC which means the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the prior June 30th. For so long as we remain an emerging growth company, we are permitted and intend to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include:

- being permitted to present only two years of “Management’s Discussion and Analysis of Financial Condition and Results of Operations” disclosure in this Quarterly Report on Form 10-Q;
- not being required to comply with the auditor attestation requirements of Section 404;
- not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor’s report providing additional information about the audit and the financial statements;
- reduced disclosure obligations in our SEC filings regarding executive compensation; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of these accounting standards until they would otherwise apply to private companies. We have elected to take advantage of this extended transition period.

We may choose to take advantage of some, but not all, of the available exemptions for emerging growth companies. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be reduced or more volatile.

Additionally, we are a “smaller reporting company” as defined in Regulation S-K. Even after we no longer qualify as an emerging growth company, we may still qualify as a “smaller reporting company,” which would allow us to continue to take advantage of many of the same exemptions from disclosure requirements, including presenting only the two most recent fiscal years of audited financial statements and certain reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. We may continue to be a smaller reporting company if either (i) the market value of our stock held by non-affiliates is less than \$250

million or (ii) our annual revenue is less than \$100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates is less than \$700 million. To the extent we take advantage of such reduced disclosure obligations, it may also make comparison of our financial statements with other public companies difficult or impossible.

General Risk Factors

We or third parties with whom we have relationships may be adversely affected by natural or manmade disasters, public health emergencies and other natural catastrophic events, and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.

Natural or manmade disasters could severely disrupt our operations and have a material adverse effect on our business, results of operations, financial condition and prospects. If a natural disaster, public health emergency, power outage or other event occurred that prevented us from using all or a significant portion of our facilities, that damaged our infrastructure or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time, and our research and development activities could be setback or delayed. The disaster recovery and business continuity plans we have in place may prove inadequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which could have a material adverse effect on our business, and such an event could disrupt our operations, cause us to incur remediation costs, damage our reputation and cause a loss of confidence in us and our or third parties' ability to conduct clinical trials, which could adversely affect our reputation and delay our research and development programs.

Unstable market and economic conditions may have serious adverse consequences on our business, financial condition and stock price.

Global credit and financial markets have experienced extreme volatility and disruptions in the recent past, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates, exchange rate impacts and uncertainty about economic stability, and similar deterioration in the credit and financial markets and confidence in economic conditions may occur in the future. Our general business strategy may be adversely affected by any such economic downturn, volatile business environment or unpredictable and unstable market conditions. If the current equity and credit markets deteriorate, or do not improve, it may make any necessary debt or equity financing more difficult, more costly and more dilutive. If we are unable to obtain sufficient funding on a timely basis or on favorable terms, we may be required to significantly delay, alter, reduce or eliminate one or more of our research or product development programs and/or commercialization efforts, or to grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves. We may also be otherwise unable to execute our business plan or growth strategy, or capitalize on business opportunities as desired.

In addition, there is a risk that one or more of our current service providers, manufacturers or others with whom we have strategic relationships may not survive any difficult economic times, which could directly affect our ability to attain our operating goals.

As of September 30, 2024, we had cash and cash equivalents of \$98.8 million. While we are not aware of any downgrades, material losses or other significant deterioration in the fair value of our cash equivalents since September 30, 2024, deterioration of the global credit and financial markets could negatively impact our current portfolio of cash equivalents or our ability to meet our financing objectives. In addition, we may have bank deposits at financial institutions in excess of FDIC insured limits, and we currently maintain and are required to maintain such deposits at the Banc of California pursuant to the 2024 Loan and Security Agreement. Market conditions can impact the viability of these institutions and, in the event of failure of the financial institution where we maintain our cash and cash equivalents, if the treatment of our cash sweep accounts were called into question in a bank receivership or if there is continued turmoil in the banking industry generally, we may not be able to access uninsured funds in a timely manner or at all, which would adversely impact our business, financial condition and results of operations. Furthermore, our stock price may decline due in part to the volatility of the stock market and any general economic downturn.

The market price of our common stock may be volatile and fluctuate substantially, which could result in substantial losses for purchasers of our common stock.

The market price of our common stock is likely to be highly volatile and may fluctuate substantially due to many factors, including:

- inconsistent trading volume levels of our common stock;
- announcements or expectations regarding debt or equity financing efforts;
- sales of common stock by us, our insiders or our other stockholders;

- actual or anticipated fluctuations in our financial condition and operating results;
- failure to meet or exceed financial estimates and projections of the investment community or that we provide to the public;
- results from or delays in our studies or trials, or those of our collaborators, competitors or companies perceived to be similar to us;
- delay, failure or discontinuation of any of our product development and research programs, or those of our collaborators, competitors or companies perceived to be similar to us;
- announcements about new research programs or product candidates from us or our collaborators, our competitors or companies perceived to be similar to us;
- announcements by us, our collaborators, our competitors or companies perceived to be similar to us relating to significant acquisitions, strategic partnerships or alliances, joint ventures, collaborations or capital commitments;
- actual or anticipated changes in our growth rate relative to our competitors or companies perceived to be similar to us;
- fluctuations in the valuation of our collaborators, our competitors or companies perceived to be comparable to us;
- a lack of, limited or withdrawal of coverage by security analysts, or positive or negative recommendations by them;
- actual or expected changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- publication of research reports about us, genome editing or the biopharmaceutical industries;
- developments or changing views regarding the use of genomic products, including those that involve genome editing;
- our ability to effectively manage our growth;
- the recruitment or departure of key personnel;
- the results of any efforts by us to identify, develop, acquire or in-license additional product candidates, products or technologies;
- unanticipated serious safety concerns related to the use of any of our product candidates, or those of our competitors or companies perceived to be similar to us;
- the termination of a collaboration agreement, licensing agreement or other strategic arrangement or the inability to establish additional strategic arrangements on favorable terms, or at all;
- regulatory actions with respect to any of our product candidates, or those of our competitors or companies perceived to be similar to us;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- regulatory or legal developments in the United States and other countries;
- changes in physician, hospital, or healthcare provider practices that may make our or our collaborators' products less useful;
- changes in the structure of healthcare payment systems;
- significant lawsuits, such as products liability, patent or stockholder litigation;
- short sales of our common stock; and
- general economic, industry and market conditions.

These and other market and industry factors may cause the market price and demand for our common stock to fluctuate substantially, regardless of our actual operating performance. These factors may have a material adverse effect on the market price and liquidity of our common stock, which may limit or prevent you from readily selling your shares of common stock and may affect our ability to obtain financing or enter into desired strategic relationships.

Our failure to meet the continued listing requirements of The Nasdaq Capital Market could result in a delisting of our common stock.

As previously disclosed, on April 24, 2023, we received a letter from Nasdaq (the "Nasdaq Notice") indicating that we were not in compliance with Nasdaq Listing Rule 5450(a)(1) because the closing bid price per share for our common stock was below \$1.00 for the previous 30 consecutive business days (the "Minimum Bid Price Requirement"). The Nasdaq Notice provided an initial period of 180 calendar days in which to regain compliance with the Minimum Bid Price Requirement by achieving a minimum bid price per share of our common stock of at least \$1.00 for at least ten consecutive business days.

On October 24, 2023, we received approval from the Listing Qualifications Department of Nasdaq to transfer the listing of our common stock from The Nasdaq Global Select Market to The Nasdaq Capital Market (the “Approval”). Our common stock was transferred to The Nasdaq Capital Market effective as of the open of business on October 26, 2023, and continues to trade under the symbol “DTIL.” The Nasdaq Capital Market operates in substantially the same manner as The Nasdaq Global Select Market, and listed companies must meet certain financial requirements and comply with Nasdaq’s corporate governance requirements. As a result of the Approval and transfer to The Nasdaq Capital Market, we were granted an additional 180-day grace period, or until April 22, 2024, to regain compliance with the Minimum Bid Price Requirement.

On January 18, 2024, our stockholders approved a proposal to amend our amended and restated certificate of incorporation to effect a reverse stock split of our common stock at a ratio of not less than 1-for-10 and not more than 1-for-30, with such ratio and the implementation and timing of such reverse stock split to be determined by our board of directors in its sole discretion. On February 6, 2024, our board of directors approved a 1-for-30 reverse stock split of our issued and outstanding common stock, and on February 13, 2024, we filed with the Secretary of State of the State of Delaware a certificate of amendment to our amended and restated certificate of incorporation in order to effect the reverse stock split. As a result of the reverse stock split, every 30 shares of our common stock issued or outstanding were automatically reclassified into one new share of common stock, and the number of our issued and outstanding shares of common stock was reduced to 4,191,053 and 4,164,038, respectively. Trading of our common stock on The Nasdaq Capital Market commenced on a split-adjusted basis on February 14, 2024. The primary goal of the reverse stock split was to increase the per share market price of our common stock to meet the Minimum Bid Price Requirement. All references to numbers of shares of common stock and per-share information in this Quarterly Report on Form 10-Q have been adjusted retroactively, as appropriate, to reflect the reverse stock split.

On March 1, 2024, we were notified by Nasdaq Listing Qualifications that the closing bid price of our common stock had been \$1.00 per share or greater for 10 consecutive business days, from February 14, 2024 to February 29, 2024. Accordingly, we have regained compliance with the Minimum Bid Price Requirement. Although we regained compliance with the Minimum Bid Price Requirement, there can be no guarantee that we can continue to remain compliant or that we will be able to maintain compliance with the other Nasdaq listing standards.

Delisting our common stock may make it more difficult for us to raise capital on favorable terms in the future and would likely have a negative effect on the price of our common stock and would impair our stockholders’ ability to sell or purchase our common stock. In the event of a delisting, we can provide no assurance that any action taken by us to restore compliance with listing requirements would allow our common stock to become listed again, stabilize the market price or improve the liquidity of our common stock, prevent our common stock from dropping below the Minimum Bid Price Requirement or prevent future non-compliance with Nasdaq’s listing requirements. If for any reason our common stock does not maintain eligibility for listing on Nasdaq, we may list our common stock elsewhere, such as one of the over-the-counter markets, which are generally considered less liquid and more volatile than a national securities exchange, and could mean that certain institutional investors could no longer hold or purchase our stock, and as a result, a purchaser of our common stock may find it more difficult to dispose of, or to obtain accurate quotations as to the price of their shares. This could materially and adversely affect the liquidity of our common stock.

If securities or industry analysts issue an adverse or misleading opinion regarding our common stock, our stock price and trading volume could decline.

The trading market for our common stock relies in part on the research and reports that industry or securities analysts publish about us or our business. We do not control these analysts. If any of the analysts who cover us issue an adverse or misleading opinion regarding us, our business model, our intellectual property or our stock performance, or if our preclinical studies and operating results fail to meet the expectations of analysts, our stock price would likely decline. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

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

None.

Item 3. Defaults Upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.*Rule 10b5-1 Trading Plans*

On September 10, 2024, Dario Scimeca, our General Counsel, entered into a trading plan intended to satisfy the affirmative defense conditions under Rule 10b5-1(c). Mr. Scimeca's trading plan provides for the sale of, in the aggregate, up to 2,821 shares of our common stock from December 10, 2024 through November 12, 2025, unless the plan is earlier terminated. This represents the maximum number of shares that may be sold pursuant to Mr. Scimeca's Rule 10b5-1 plan. The actual number of shares sold will be dependent on the satisfaction of certain conditions set forth in the written plan.

Item 6. Exhibits.

Exhibit Number	Description	Form	File No.	Exhibit	Filing Date	Filed/Furnished Herewith
3.1	Amended and Restated Certificate of Incorporation of Precision BioSciences, Inc.	8-K	001-38841	3.1	4/1/2019	
3.2	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of Precision BioSciences, Inc.	8-K	001-38841	3.1	2/13/2024	
3.3	Amended and Restated Bylaws of Precision BioSciences, Inc.	8-K	001-38841	3.2	12/22/2023	
10.1	Consulting Agreement between Precision BioSciences, Inc. and Dr. Alan List, dated September 13, 2024.					*
10.7	Amended and Restated Loan and Security Agreement, entered into as of July 31, 2024, by and between Banc of California and Precision BioSciences, Inc.	10-Q	001-38841	10.7	8/1/2024	
31.1	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					*
31.2	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					*
32.1	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					**
32.2	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					**
101.INS	Inline XBRL Instance Document					*
101.SCH	Inline XBRL Taxonomy Extension Schema With Embedded Linkbase Documents					*
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)					*

* Filed herewith.

** Furnished herewith.

Certain information marked as [***] has been excluded from this exhibit because it is both not material and is the type that the registrant treats as private or confidential

CONSULTING AGREEMENT

This CONSULTING AGREEMENT (“**Agreement**”) is made by and between Precision BioSciences, Inc., a Delaware corporation having a place of business at 302 East Pettigrew Street, Dibrell Building, Suite A-100, Durham, NC 27701 (“**Company**”), and Dr. Alan List, an individual having an address at [***] as of September 13, 2024 (the “**Effective Date**”).

The Company desires to retain the services of the Independent Contractor, and the Independent Contractor desires to perform certain services for the Company. In consideration of the mutual covenants and promises contained herein and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by the parties hereto, the parties agree as follows:

1. ENGAGEMENT OF SERVICES.

The Company hereby engages the Independent Contractor, and the Independent Contractor accepts the engagement to provide the Company with such consulting, advisory and related services as may reasonably be requested by the Company from time to time (“**Services**”), including:

- Service on the Imugene Ltd. and TG Therapeutics, Inc. Joint Steering Committees;
- Preparation and participation on Company calls and interactions with existing and potential investors;
- Advice on business development transactions and participation in meetings with potential business development partners;
- Review of medical documents for the Company’s PBGENE-HBV and other preclinical and clinical programs, including draft protocols, investigator brochures, pharmacy manuals, committee charters, regulatory materials and other documents;
- Interaction with key opinion leaders, advisory board members and the Company’s Science and Technology Committee as needed;
- Serve on the Company’s Scientific Advisory Board and provide scientific advice to the senior management team;
- Support for clinical development and operations for Company programs, including interactions with clinical research organizations; and
- Other activities reasonably requested by the Company.

All Services will be performed by Independent Contractor in a diligent and professional manner and may be performed remotely.

2. COMPENSATION.

In consideration of the Services to be performed by the Independent Contractor under this Agreement, the Company will pay the Independent Contractor the flat rate of \$325 per hour for time spent on mutually accepted Services. The Independent Contractor shall submit written reports of the time spent performing Services rendered. The Company shall pay the Independent Contractor the amounts due on a monthly basis pursuant to submitted reports, within 30 days of receipt thereof. In no event shall the value transferred under this Agreement from the Company to Independent Contractor exceed \$115,000 with the prior written consent of the Company.

Independent Contractor will also be entitled to continued vesting of any outstanding unvested restricted stock units (but not stock options) held by the Independent Contractor as of the Effective Date, subject in all events to earlier termination in connection with a corporate transaction or event in accordance with the terms of such restricted stock units.

3. EXPENSES.

The Independent Contractor will be reimbursed for ordinary and necessary expenses incurred by the Independent Contractor in the performance of Services hereunder that have been expressly approved in advance by the Company (“**Expenses**”), provided that the Independent Contractor has furnished such documentation for authorized expenses as the Company may reasonably request. The Independent Contractor shall submit written documentation and receipts where available, itemizing the dates on which expenses are incurred. The Company shall pay the Independent Contractor the amounts due pursuant to submitted reports, within 30 days receipt thereof.

4. OWNERSHIP OF INVENTIONS / WORK PRODUCT.

The Independent Contractor agrees that any inventions, discoveries, improvements, processes, technology, know-how, software, designs, documentation, results, data, compilations of data and samples (whether or not patentable and whether or not reduced to practice) arising or made directly or indirectly by or on behalf of the Independent Contractor (solely or jointly with others) in the course of performance of Services under this Agreement or that are based on, derived from, or related to information received from the Company, and any and all patents and other intellectual property rights therein or issuing thereon (collectively, “**Inventions**”), shall be the property of the Company. The Independent Contractor further agrees that all works of authorship which are made by or on behalf of the Independent Contractor (solely or jointly with others) in the course of performance of Services under this Agreement and which are protectable by copyright are “works made for hire,” as that term is defined in the 1976 Copyright Act as amended (title 17 of the *United States Code*) (“**Works of Authorship**”); and together with Inventions, “**Work Product**”). The Independent Contractor agrees to assign and hereby unconditionally and irrevocably assigns to the Company all right, title and interest in and to the Inventions and, to the extent such right, title and interest does not vest in the Company as “works made for hire”, all right, title and interest in and to the Works of Authorship. In order to permit the Company to claim rights to which it may be entitled under this Section 4 or applicable laws, and to ensure that there is no conflict with any business or activities of the Company, all inventions, discoveries, improvements, processes, technology, know-how, software, designs, documentation, results, data, compilations of data and samples (whether or not patentable and whether or not reduced to practice) and all works of authorship which the Independent Contractor may conceive or make (solely or jointly with others) during the term of this Agreement and during the six months following the termination of this Agreement and related to the Services performed under this Agreement shall be promptly disclosed to the Company in confidence.

A. Whenever requested by the Company, the Independent Contractor shall execute patent applications and copyright registrations and such other documents considered necessary by the Company or its counsel to apply for and obtain letters patent and copyright registrations in the United States, foreign countries, or both, as the Company may deem advisable, or to otherwise protect the Work Product for the benefit of the Company coming within the Company’s rights as provided for in Section 4.A. The Independent Contractor shall also make such assignments and execute such other instruments as may be necessary to convey to the Company the ownership and exclusive right in and to the Work Product and all related intellectual property rights. The Company shall bear all of the documented expenses incurred by the Independent Contractor in connection with the obtaining of such rights. The Independent Contractor further agrees to cooperate to the extent and in the manner requested by the Company in the prosecution or defense of any such patent or copyright or other intellectual property claims or any litigation or other proceeding involving any Work Product in any country of the world, but all time and documented expenses thereof shall be paid by the Company. The foregoing covenant and the rights of the Company under this Section 4 include, without limitation, any improvements of

properties, rights, systems, inventions, works of authorship and the like presently held by the Company or any affiliate thereof.

B. If Independent Contractor has any rights in or to any Work Product that cannot be assigned to Company under applicable law, then Independent Contractor agrees to grant and hereby unconditionally and irrevocably grants to Company an exclusive, irrevocable, perpetual, worldwide, fully paid and royalty-free license, with rights to sublicense through multiple levels of sublicenses, to make, have made, sell, offer for sale, use, import, reproduce, create derivative works of, distribute, publicly perform and publicly display and otherwise exploit by all means now known or later developed, such rights without any duty to report or provide any accounting for such exploitation, and agrees, at Company's request and expense, to consent to and join in any action to enforce such rights. If Independent Contractor has any rights in or to Work Product that cannot be assigned or licensed to Company under applicable law, then Independent Contractor agrees to waive and hereby unconditionally and irrevocably waives the enforcement of such rights, and all claims and causes of action of any kind against Company and its affiliates, licensees, successors and assigns with respect to such rights.

C. In the event that any deliverable under this Agreement incorporates or requires for its use intellectual property rights of the Independent Contractor, the Independent Contractor agrees to grant and hereby grants to Company a worldwide, perpetual, irrevocable, fully paid, royalty-free, non-exclusive license, with rights to sublicense through multiple levels of sublicenses, under such intellectual property rights to use and otherwise exploit all such deliverables for any purpose.

5. REPRESENTATIONS AND WARRANTIES.

The Independent Contractor represents and warrants that the Independent Contractor has the right and unrestricted ability to enter this Agreement and to perform all of its obligations contained herein. Without limiting the foregoing, the Independent Contractor represents and warrants that it has the right to assign the entire right, title and interest in and to the Work Product to the Company pursuant to Section 4.

6. NO DEBARMENT.

The Independent Contractor represents and warrants that neither Independent Contractor nor any of its employees nor any other person engaged by it to perform the Services:

A. Is presently debarred, disqualified or convicted for a crime for which a person or entity can be debarred under the Generic Drug Enforcement Act of 1992 (21USC335a) or under any similar law or regulation of any country (collectively, the "Acts");

B. Is presently indicted or otherwise criminally or civilly charged by any government entity with commission of the kinds of conduct for which a person or entity can be debarred or disqualified under the Acts;

C. Will employ or otherwise engage any individual who has been (i) debarred or disqualified or (ii) convicted of a crime for which a person or entity can be debarred or disqualified under the Acts, in any capacity in connection with the Services.

The Independent Contractor shall immediately notify the Company if it becomes aware of any circumstances that may cause the foregoing representation and warranty to become untrue, including if the Independent Contractor or any such other person comes under investigation by any governmental agency for debarment or disqualification or is debarred or disqualified.

7. INDEPENDENT CONTRACTOR RELATIONSHIP.

The Independent Contractor's relationship with the Company is that of an independent contractor, and nothing in this Agreement is intended to, or should be construed to, create a partnership, agency, joint venture or employment relationship. The Independent Contractor shall not be entitled to any of the benefits that the Company may make available to its employees, including, but not limited to, group health (medical, dental, vision), life and disability insurance (including IDI), hospital indemnity, profit sharing, or retirement benefits. The Independent Contractor is not authorized to make any representation, contract, or commitment on behalf of the Company unless specifically requested or authorized in writing to do so by an executive officer of the

Company. The Independent Contractor is solely responsible for, and will file, on a timely basis, all tax returns and payments required to be filed with, or made to, any federal, state, or local tax authority with respect to the performance of services and receipt of fees under this Agreement. The Independent Contractor is solely responsible for, and must maintain adequate records of, expenses incurred in the course of performing services under this Agreement. The Company will not withhold for the payment of any social security, federal, state, or any other employee payroll taxes payable with respect to the Independent Contractor. The Company will, as applicable, regularly report amounts paid to the Independent Contractor by filing Form 1099-MISC with the Internal Revenue Service as required by law. In the event that any agency of the United States or other taxing authority should determine that amounts paid as stated in this Agreement were subject to withholding of taxes, Independent Contractor agrees to indemnify and hold the Company harmless for any amount of taxes, interest or penalties that may be found to be due and owing.

8. COBRA PREMIUM ASSISTANCE

A. If the Independent Contractor timely and properly elects health continuation coverage under the Consolidated Omnibus Budget Reconciliation Act of 1985 ("**COBRA**"), the Company shall cover the full COBRA premium. The COBRA premium assistance applies to periods of health coverage on or after October 1, 2024 through December 31, 2024. Independent Contractor shall bear full responsibility for applying for COBRA coverage and nothing herein shall constitute a guarantee of COBRA continuation coverage or benefits or a guarantee of health insurance coverage.

B. The COBRA premium shall be paid by the Company to the COBRA provider on or before the tenth (10th) day of the month immediately following the month in which the Independent Contractor timely elects COBRA coverage. The Independent Contractor shall be eligible to receive such reimbursement until December 31, 2024. Notwithstanding the foregoing, if the Company's making payments would violate the nondiscrimination rules applicable to non-grandfathered plans under the Affordable Care Act (the "ACA") or result in the imposition of penalties under the ACA and the related regulations and guidance promulgated thereunder, the parties agree to reform this Section 8 in a manner as is necessary to comply with the ACA. Independent Contractor shall provide the Company with notice of subsequent employment and comparable coverage within thirty (30) days of commencement of such comparable coverage.

9. CONFIDENTIAL INFORMATION.

Subject to the Permitted Disclosures set forth in Section 9D, Independent Contractor agrees to hold all Confidential Information in strict confidence, not to disclose Confidential Information to any third parties, and shall use the Confidential Information solely for performing the Independent Contractor's obligations under this Agreement. "Confidential Information" as used in this Agreement shall mean all information disclosed by the Company to the Independent Contractor that is not generally known in the Company's trade or industry and shall include, without limitation, (a) concepts and ideas relating to the research, development, use, and distribution of technologies and products made or developed by the Company; (b) trade secrets, drawings, inventions, know-how, methods, materials, grants, grant proposals, collaborative work, partners, employees, and software programs; (c) information regarding plans for research, development, new service offerings or products, marketing and selling, business plans, business forecasts, budgets and unpublished financial statements, licenses and distribution arrangements, prices and costs, suppliers and customers; (d) existence of any business discussions, negotiations or agreements; (e) any information regarding the skills and compensation of employees, contractors or other agents of the Company or its subsidiaries or affiliates; and (f) all Work Product. Confidential Information also includes proprietary or confidential information of any third party that may disclose such information to the Company or the Independent Contractor in the course of the Company's business. The Independent Contractor's obligations set forth in this Section shall not apply with respect to any portion of the Confidential Information that the Independent Contractor can document:

A. (i) was in the public domain at the time it was communicated to the Independent Contractor by the Company; (ii) entered the public domain through no fault of the Independent Contractor, subsequent to the time it was communicated to the Independent Contractor by the Company; (iii) was in the Independent Contractor's

possession free of any obligation of confidence at the time it was communicated to the Independent Contractor by the Company; or (iv) was rightfully communicated to the Independent Contractor by a third party free of any obligation of confidence subsequent to the time it was communicated to the Independent Contractor by the Company. In addition, the Independent Contractor may disclose the Company's Confidential Information in response to a valid order by a court or other governmental body, or as otherwise required by law, provided that except in the case of the Permitted Disclosures set forth in Section 9D, the Independent Contractor provides reasonable notice to the Company such that the Company can pursue its rights in seeking protection of such information. All Confidential Information furnished to the Independent Contractor by the Company is the sole and exclusive property of the Company or its suppliers or customers. Upon request by the Company at any time, the Independent Contractor agrees to promptly deliver to the Company the originals and any copies of such Confidential Information.

B. The Independent Contractor represents that its performance of the terms of the Agreement does not and will not conflict with the terms of any agreement to keep in confidence proprietary information and trade secrets acquired in confidence or in trust prior to his/her advisory relationship with the Company or to refrain from competing, directly or indirectly, with the business of any other person or entity. The Independent Contractor will not disclose to the Company, or induce the Company to use, any confidential or proprietary information or material belonging to any third party.

C. The Independent Contractor recognizes that Company may have confidential information from third parties which is subject to a duty on Company's part to maintain such information in confidence and, in some cases to use it only for certain purposes. Independent Contractor agrees that they owe Company and such third party, both during the term of this Agreement and thereafter, a duty to hold all such confidential information in strict confidence and not to disclose it to any person, firm, or entity or use such information for the benefit of anyone other than Company or such third party.

D. Permitted Disclosures. Nothing in this Agreement is intended, nor shall be construed, to prohibit Independent Contractor from any communications to, or participation in any investigation or proceeding conducted by any government agency, including but not limited to the Securities and Exchange Commission (SEC), Financial Industry Regulatory Authority (FINRA) or other self-regulatory or governmental agency with jurisdiction over the Company's business, or otherwise interfere with, restrain, or prevent Independent Contractor from engaging in any legally protected activity, including legally protected whistleblowing activity. Moreover, Independent Contractor cannot be held criminally or civilly liable under any federal or state trade secret law if he discloses a trade secret (i) in confidence to federal, state, or local government officials, directly or indirectly, or to his attorneys, for the sole purpose of reporting or investigating a suspected violation of the law or (ii) in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. Additionally, if Independent Contractor files a lawsuit for retaliation by an employer for reporting a suspected violation of the law, Independent Contractor may disclose a trade secret to his attorney and use the trade secret information in that court proceeding provided that he (iii) files any document containing such trade secret under seal, and (iv) does not disclose any such trade secret, except pursuant to court order.

10. NO CONFLICT OF INTEREST.

The Independent Contractor represents that he has the right and authority to enter into this Agreement and by doing such will not be in breach of any existing agreements. The Independent Contractor will not accept work, enter into a contract, or accept an obligation from any third party that is inconsistent with the Independent Contractor's obligations under this Agreement.

11. TERM AND TERMINATION.

A. TERM: The term of this Agreement shall commence as of the Effective Date and end on August 31, 2025, unless this Agreement is earlier terminated as provided below. The Independent Contractor's obligation of confidentiality with respect to any particular item of Confidential Information obtained under this Agreement shall continue subject to the Permitted Disclosures in Section 9D, notwithstanding the termination or expiration of this Agreement, until the Confidential Information falls into one of the categories listed in clauses (ii) and (iv) of Section 9.A.

B. TERMINATION BY COMPANY: The Company may terminate this Agreement at any time, with or without cause, and without prejudice to any right or remedy it may have due to any failure of the Independent Contractor to perform its obligations under this Agreement, including failure to perform Services in a diligent and professional manner, upon thirty (30) days written notice of termination to the Independent Contractor. In the event that the Company terminates the Independent Contractor's services hereunder, the Company shall (i) promptly pay the Independent Contractor all monies due through the date of notice of termination and (ii) pay the Independent Contractor for non-cancellable Expenses incurred hereunder prior to the date of notice of termination.

C. TERMINATION BY INDEPENDENT CONTRACTOR: The Independent Contractor may terminate this Agreement at any time, with or without cause, upon thirty (30) days written notice of termination to the Company.

D. EFFECT OF TERMINATION; SURVIVAL: Upon notice of termination pursuant to Section 11.B or 11.C, unless otherwise requested in writing by the Company with respect to the thirty (30) day termination notice period, the Independent Contractor shall stop all work under this Agreement and incur no further expenses hereunder. If the Independent Contractor performs additional Services or incurs additional Expenses at the Company's written request in such thirty (30) day period, the Company shall pay the Independent Contractor for such Services and reimburse the Independent Contractor for such Expenses in accordance with Sections 2 and 3. The rights and obligations contained in Sections 4 ("Ownership of Inventions / Work Product"), 5 ("Representations and Warranties"), 9 ("Confidential Information"), 10 ("No Conflict of Interest"), 15 ("Governing Law") and 18 ("Injunctive Relief for Breach") shall survive any termination or expiration of this Agreement.

12. INDEMNIFICATION
[Intentionally left blank]

13. SUCCESSORS AND ASSIGNS.

The Independent Contractor may not subcontract or otherwise delegate its obligations under this Agreement or assign this Agreement without the Company's prior written consent, and any attempt without such consent shall be null and void. This Agreement will be for the benefit of the Company's successors and assigns, and subject to the foregoing sentence, will be binding on the Independent Contractor's assignees.

14. NOTICES.

Any notice required or permitted by this Agreement shall be in writing and shall be delivered as follows with notice deemed given as indicated: (i) by personal delivery when delivered personally; by overnight courier upon written verification of receipt; (iii) by telecopy or facsimile transmission upon acknowledgment of receipt of electronic transmission; or (iv) by certified or registered mail, return receipt requested, upon verification of receipt. Notice shall be sent to the addresses set forth below or such other address as either party may specify in writing.

15. GOVERNING LAW.

This Agreement shall be governed by and constructed in accordance with the laws of the State of North Carolina, excluding that body of law known as choice of law, and shall be binding upon the parties hereto in the United States and worldwide. The state courts located in Wake County, North Carolina, or the federal district court for the Eastern District of North Carolina located in Raleigh, North Carolina, shall have exclusive jurisdiction to adjudicate any dispute arising out of this Agreement. The parties consent to personal jurisdiction of such courts and service of process being affected by registered mail sent to the address set forth at the beginning of this Agreement.

16. SEVERABILITY.

Should any provisions of this Agreement be held by a court of law to be illegal, invalid or unenforceable, the legality, validity and enforceability of the remaining provisions of this Agreement shall not be affected or impaired thereby.

17. WAIVER.

The waiver by the Company of a breach of any provision of this Agreement by the Independent Contractor shall not operate or be construed as a waiver of any other or subsequent breach by the Independent Contractor.

18. INJUNCTIVE RELIEF FOR BREACH.

The Independent Contractor's obligations under this Agreement are of a unique character that gives them particular value; breach or any threatened breach of any of such obligations will result in irreparable and continuing damage to the Company for which there will be no adequate remedy at law; and, in the event of such breach, the Company will be entitled to injunctive relief and/or a decree for specific performance, and such other and further relief as may be proper (including monetary damages if appropriate).

19. ENTIRE AGREEMENT. This Agreement constitutes the entire agreement between the parties relating to this subject matter and supersedes all prior or contemporaneous oral or written agreements concerning such subject matter. The terms of this Agreement will govern all services undertaken by the Independent Contractor for the Company. This Agreement may only be changed by mutual agreement of authorized representatives of the parties in writing. This Agreement and any related amendments may be executed and delivered by facsimile or PDF and in one or more counterparts, each of which shall be deemed an original and all of which together shall constitute one document.

[signature page follows on the next page]

[Signature Page to Consulting Agreement]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

Precision BioSciences, Inc.

/s/ Juli Blanche
By: Juli Blanche

Title: CPO

Independent Contractor

/s/ Alan List
By: Alan List

Title: Independent Contractor

**EIGHTH AMENDMENT
TO
LOAN AND SECURITY AGREEMENT**

This Eighth Amendment to Loan and Security Agreement (this “*Amendment*”) is entered into as of June 21, 2024, by and between BANC OF CALIFORNIA, a California state-chartered bank (formerly known as Pacific Western Bank) (“*Bank*”) and PRECISION BIOSCIENCES, INC. (“*Precision*” or “*Borrower*”).

RECITALS

Borrower and Bank are parties to that certain Loan and Security Agreement dated as of May 15, 2019 (as has been and may be further amended, restated, supplemented, or otherwise modified from time to time, the “*Agreement*”). The parties desire to amend the Agreement in accordance with the terms of this Amendment.

NOW, THEREFORE, the parties agree as follows:

- 1) Amendments:
 - a) Precision hereby confirms that the necessary filings were made with the Delaware Secretary of State to dissolve PRECISION PLANTSCIENCES, INC., and that such dissolution was effective as of September 6, 2022. Bank and each Borrower hereby agree that the Agreement and any other Loan Documents are hereby amended wherever necessary to remove PRECISION PLANTSCIENCES, INC. as a Borrower thereunder.
 - b) Pacific Western Bank has changed its name to Banc of California. Bank and Borrower hereby agree that the Agreement and each other Loan Document are hereby amended wherever necessary to reflect this change.
 - c) Exhibit A to the Agreement is amended by amending and restating in their entirety, the following defined terms and their respective definitions, to read as follows:

“Credit Card Maturity Date” means July 31, 2024.

“Revolving Maturity Date” means July 31, 2024.
 - 2) No course of dealing on the part of Bank or its officers, nor any failure or delay in the exercise of any right by Bank, shall operate as a waiver thereof, and any single or partial exercise of any such right shall not preclude any later exercise of any such right. Bank's failure at any time to require strict performance by Borrower of any provision shall not affect any right of Bank thereafter to demand strict compliance and performance. Any suspension or waiver of a right must be in writing signed by an officer of Bank.
 - 3) Unless otherwise defined, all initially capitalized terms in this Amendment shall be as defined in the Agreement. The Agreement, as amended hereby, shall be and remain in full force and effect in accordance with its respective terms and hereby is ratified and confirmed in all respects. Except as expressly set forth herein, the execution, delivery, and performance of this Amendment shall not operate as a waiver of, or as an amendment of, any right, power, or remedy of Bank under the Agreement, as in effect prior to the date hereof. Borrower ratifies and reaffirms the continuing effectiveness of all agreements entered into in connection with the Agreement.
 - 4) Borrower represents and warrants that the representations and warranties contained in the Agreement are
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true and correct as of the date of this Amendment, and that no Event of Default has occurred and is continuing.

- 5) This Amendment may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, shall be deemed to be an original, and all of which, when taken together, shall constitute but one and the same Amendment. Executed copies of this Amendment or the signature pages of this Amendment sent by facsimile or transmitted electronically in Portable Document Format (“PDF”) or any similar format, or transmitted electronically by digital image, DocuSign, or other means of electronic transmission, shall be treated as originals, fully binding and with full legal force and effect, and the parties waive any rights they may have to object to such treatment. The words “execution,” “signed,” “signature,” “delivery,” and words of like import in or relating to this Amendment and/or any document to be signed in connection with this Amendment and the transactions contemplated hereby shall be deemed to include Electronic Signatures (as defined below), deliveries 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, physical delivery thereof or the use of a paper-based recordkeeping system, as the case may be. As used herein, “Electronic Signatures” means any electronic symbol or process attached to, or associated with, any contract or other record and adopted by a person with the intent to sign, authenticate or accept such contract or record.
- 6) The terms of Article 11 of the Agreement are incorporated by reference herein, *mutatis mutandis*.
- 7) As a condition to the effectiveness of this Amendment, Bank shall have received, in form and substance satisfactory to Bank, the following:
 - a) this Amendment, duly executed by Borrower and Bank;
 - b) payment of all Bank Expenses, including Bank’s expenses for the documentation of this Amendment and any related documents, and any UCC, good standing or intellectual property search or filing fees, which may be debited from any of Borrower’s deposit accounts maintained with Bank; and
 - c) such other documents and completion of such other matters, as Bank may reasonably deem necessary or appropriate.

[Signatures appear on the following page.]

IN WITNESS WHEREOF, the undersigned have executed this Amendment as of the first date above written.

PRECISION BIOSCIENCES, INC.

BANC OF CALIFORNIA

By: /s/ Alex Kelly
Name: Alex Kelly
Title: Chief Financial Officer

By: /s/ Ryan Kelley
Name: Ryan Kelley
Title: Vice President Client Manager

PRECISION BIOSCIENCES, INC.
AMENDED AND RESTATED
LOAN AND SECURITY AGREEMENT

This AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT (the “Agreement”) is entered into as of July 31, 2024, by and between BANC OF CALIFORNIA, a California state-chartered bank (“Bank”) and PRECISION BIOSCIENCES, INC. (“Borrower”).

RECITALS

A. Borrower and Bank have entered into that certain Loan and Security Agreement dated as of May 15, 2019 (as amended from time to time prior to the date hereof, the “Prior Loan Agreement”).

B. Borrower has requested, and Bank has agreed, to amend and restate the Prior Loan Agreement in its entirety.

Bank and Borrower hereby agree that the Prior Loan Agreement is amended and restated in its entirety as follows:

AGREEMENT

The parties agree as follows:

1. DEFINITIONS AND CONSTRUCTION.

1.1 Definitions. As used in this Agreement, all capitalized terms shall have the definitions set forth on Exhibit A. Any term used in the Code and not defined herein shall have the meaning given to the term in the Code.

1.2 Accounting Terms. Any accounting term not specifically defined on Exhibit A shall be construed in accordance with GAAP and all calculations shall be made in accordance with GAAP (except for non-compliance with FAS 123R in monthly reporting). The term “financial statements” shall include the accompanying notes and schedules.

2. LOAN AND TERMS OF PAYMENT.

2.1 Credit Extensions.

(a) Promise to Pay. Borrower promises to pay to Bank, in lawful money of the United States of America, the aggregate unpaid principal amount of all Credit Extensions made by Bank to Borrower, together with interest on the unpaid principal amount of such Credit Extensions at rates in accordance with the terms hereof.

(b) Term Loan.

(i) Subject to and upon the terms and conditions of this Agreement, Bank agrees to make one (1) loan to Borrower in an aggregate principal amount not to exceed Twenty-Two Million Five Hundred Thousand Dollars (\$22,500,000) (the “Term Loan”). The proceeds of the Term Loan shall be used (A) first, to refinance all outstanding Obligations owed by Borrower pursuant to the Prior Loan Agreement, and (B) second, if any

proceeds remain after refinancing the aforementioned Obligations, for general working capital purposes and for capital expenditures.

(ii) Interest shall accrue from the date of the Term Loan at the rate specified in Section 2.3(a), and prior to the Term Loan Maturity Date shall be payable monthly beginning on the first day of the month next following such Term Loan, and continuing on the same day of each month thereafter through the Term Loan Maturity Date. On the Term Loan Maturity Date, all amounts outstanding in connection with the Term Loan and any other amounts owing under this Agreement shall be immediately due and payable. The Term Loan, once repaid, may not be reborrowed. Borrower may prepay the Term Loan without penalty or premium (except as set forth in Section 2.5 below).

(iii) Borrower hereby requests that Bank make the Term Loan on the Closing Date or as soon as practicable thereafter. To further document this request, Borrower shall notify Bank (which notice shall be irrevocable) by email (or, if permitted by Bank, through the use of an E-System) to be received no later than 3:30 p.m. Eastern time on the day on which the Term Loan is to be made. Such notice shall be given by a Loan Advance/Paydown Request Form in substantially the form of Exhibit C. The notice shall be signed by an Authorized Officer. Bank shall be entitled to rely on any notice given by a person whom Bank reasonably believes to be an Authorized Officer, and Borrower shall indemnify and hold Bank harmless for any damages, loss, costs and expenses suffered by Bank as a result of such reliance.

2.2 Reserved.

2.3 Interest Rates, Payments, and Calculations.

(a) Interest Rates.

(i) **Term Loan.** Except as set forth in Section 2.3(b), the Term Loan shall bear interest, on the outstanding daily balance thereof, at a variable annual rate equal to the greater of: (A) 1.50% below the Prime Rate then in effect; or (B) 4.50%.

(b) **Late Fee; Default Rate.** If any payment is not made within 15 days after the date such payment is due, Borrower shall pay Bank a late fee equal to the lesser of (i) 5% of the amount of such unpaid amount or (ii) the maximum amount permitted to be charged under applicable law. After the occurrence and during the continuance of an Event of Default, all Obligations shall bear interest, upon notice of such increase given by Bank, at a rate equal to three (3) percentage points above the interest rate applicable immediately prior to the occurrence of the Event of Default (such rate, the "Default Rate"); provided, that, from and after the occurrence of any Event of Default described in Section 8.5, such increase shall be automatic and without the requirement of any notice from Bank. In all such events, and notwithstanding the date on which application of the Default Rate is communicated to Borrower, the Default Rate may be accrued (at the election of Bank) from the initial date of any Event of Default until all existing Events of Default are waived in writing in accordance with the terms of this Agreement.

(c) **Payments.** Borrower authorizes Bank, at its option, to charge all interest, all Bank Expenses, all Periodic Payments, and any other amounts due and owing in accordance with the terms of this Agreement against any of Borrower's deposit accounts. Any

interest not paid when due shall be compounded by becoming a part of the Obligations, and such interest shall thereafter accrue interest at the rate then applicable hereunder. All payments shall be free and clear of any taxes, withholdings, duties, impositions or other charges, to the end that Bank will receive the entire amount of any Obligations payable hereunder, regardless of source of payment.

(d) Computation. In the event the Prime Rate is changed from time to time hereafter, the applicable rate of interest hereunder shall be increased or decreased, effective as of the day the Prime Rate is changed, by an amount equal to such change in the Prime Rate. All interest chargeable under the Loan Documents shall be computed on the basis of a 360-day year for the actual number of days elapsed.

2.4 Crediting Payments. Prior to the occurrence of an Event of Default, Bank shall credit a wire transfer of funds, check or other item of payment to such deposit account or Obligation as Borrower specifies. After the occurrence and during the continuance of an Event of Default, Bank shall have the right, in its sole discretion, to immediately apply any wire transfer of funds, check, or other item of payment Bank may receive to conditionally reduce Obligations, but such applications of funds shall not be considered a payment on account unless such payment is of immediately available federal funds or unless and until such check or other item of payment is honored when presented for payment. Notwithstanding anything to the contrary contained herein, any wire transfer or payment received by Bank after 3:30 p.m. Eastern time shall be deemed to have been received by Bank as of the opening of business on the immediately following Business Day. Whenever any payment to Bank under the Loan Documents would otherwise be due (except by reason of acceleration) on a date that is not a Business Day, such payment shall instead be due on the next Business Day, and additional fees or interest, as the case may be, shall accrue and be payable for the period of such extension.

2.5 Fees. Borrower shall pay to Bank the following:

(a) Facility Fee. On or before the Closing Date, a fee equal to \$2,500, which shall be nonrefundable;

(b) Early Termination Fee. If this Agreement is terminated before the Term Loan Maturity Date due to a refinancing of the Obligations hereunder with a lender other than Bank, on the date of such termination, a fee (the "Early Termination Fee") in an amount equal to \$100,000;

(c) Final Payment Fee. On the soonest to occur of (i) the Term Loan Maturity Date, (ii) the date that Borrower repays the Term Loan and elects to terminate the Term Loan, and (iii) the date that the Term Loan becomes due or Bank elects to terminate this Agreement in connection with the occurrence of an Event of Default, a fee equal to \$225,000, which shall be deemed fully-earned as of the Closing Date; and

(d) Bank Expenses. On the Closing Date, all Bank Expenses incurred through the Closing Date, and, after the Closing Date, all Bank Expenses, as and when they become due.

2.6 Term. This Agreement shall become effective on the Closing Date and, subject to Section 12.7, shall continue in full force and effect for so long as any Obligations remain outstanding or Bank has any obligation to make Credit Extensions under this Agreement. Notwithstanding the foregoing, Bank shall have the right to terminate its obligation to make Credit Extensions under this Agreement immediately and without notice upon the occurrence and during the continuance of an Event of Default.

3. CONDITIONS OF LOANS.

3.1 Conditions Precedent to Closing. The agreement of Bank to enter into this Agreement on the Closing Date is subject to the condition precedent that Bank shall have received, in form and substance satisfactory to Bank, each of the following items and completed each of the following requirements:

(a) this Agreement;

(b) an officer's certificate of Borrower with respect to incumbency and resolutions authorizing the execution and delivery of this Agreement;

(c) evidence that Borrower has opened and funded at least Twenty-Two Million Five Hundred Thousand Dollars (\$22,500,000) into the Cash Security Account;

(d) (i) a Loan Advance Request Form, delivered in the form and manner required by Section 2.1(b)(iii) of this Agreement, requesting that Bank make the Term Loan on or about the Closing Date, and (ii) if the aggregate amount of all outstanding Obligations owed by Borrower pursuant to the Prior Loan Agreement exceeds the maximum amount of the Term Loan, payment in Cash by Borrower to Bank of any such excess amount;

(e) payment of the fees and Bank Expenses then due specified in Section 2.5, which may be debited from any of Borrower's accounts with Bank;

(f) an amendment to financing statement (Form UCC-3);

(g) reserved;

(h) current financial statements, including audited statements for Borrower's most recently ended fiscal year, together with an unqualified opinion; company prepared consolidated and consolidating balance sheets, income statements, and statements of cash flows for the most-recently ended quarter in accordance with Section 6.2; and such other updated financial information as Bank may reasonably request;

(i) a current Compliance Certificate in accordance with Section 6.2;

(j) evidence that the insurance policies required by Section 6.5 hereof are in full force and effect, together with appropriate evidence showing an additional insured clause or endorsement in favor of Bank;

(k) a Borrower Information Certificate; and

(l) such other documents or certificates, and completion of such other matters, as Bank may reasonably request.

3.2 Conditions Precedent to all Credit Extensions. The obligation of Bank to make each Credit Extension, including the initial Credit Extension, is contingent upon the Borrower's compliance with Section 3.1 above, and is further subject to the following conditions:

(a) timely receipt by Bank of the Loan Advance/Paydown Request Form as provided in Section 2.1;

(b) Borrower shall be in compliance with Section 6.6 hereof;

(c) in Bank's good faith sole discretion, there has not been a Material Adverse Effect; and

(d) the representations and warranties contained in Section 5 shall be true and correct in all material respects on and as of the date of such Loan Advance/Paydown Request Form and on the effective date of each Credit Extension as though made at and as of each such date, and no Event of Default shall have occurred and be continuing, or would exist after giving effect to such Credit Extension (provided, however, that those representations and warranties expressly referring to another date shall be true and correct in all material respects as of such date, and provided further that any representation or warranty that contains a materiality qualification therein shall be true and correct in all respects). The making of each Credit Extension shall be deemed to be a representation and warranty by Borrower on the date of such Credit Extension as to the accuracy of the facts referred to in this Section 3.2.

3.3 Covenant to Deliver. Borrower agrees to deliver to Bank each item required to be delivered to Bank under this Agreement as a condition precedent to any Credit Extension. Borrower expressly agrees that a Credit Extension made prior to the receipt by Bank of any such item shall not constitute a waiver by Bank of Borrower's obligation to deliver such item, and the making of any Credit Extension in the absence of a required item shall be in Bank's sole discretion.

4. CREATION OF SECURITY INTEREST.

4.1 Grant of Security Interest; Cash Security Account.

(a) Borrower grants and pledges to Bank a continuing security interest in the Cash Security Account to secure prompt repayment of any and all Obligations and to secure prompt performance by Borrower of each of its covenants and duties under the Loan Documents. Except for Permitted Liens or as disclosed in the Schedule, such security interest constitutes a valid, first-priority security interest in the presently existing Collateral, and will constitute a valid, first-priority security interest in later-acquired Collateral. Borrower shall enter into such agreements as Bank requests in order to perfect or ensure the priority of Bank's security interest in the Cash Security Account. Borrower also hereby agrees not to sell, transfer, assign, mortgage, pledge, lease, grant a security interest in, or encumber the Cash Security Account. Notwithstanding any termination of this Agreement or of any filings undertaken related to Bank's rights under the

Code, Bank's Lien on the Cash Security Account will remain in effect for so long as any Obligations are outstanding.

(b) Borrower authorizes Bank immediately, and as may be necessary from time to time, to transfer, from Borrower's other accounts at Bank to the Cash Security Account, the balances required to be held in the Cash Security Account pursuant to Section 6.7 of this Agreement. Borrower authorizes Bank to hold in pledge the balances required to be held in the Cash Security Account pursuant to Section 6.7 of this Agreement, and to decline to honor any drafts thereon or any request by Borrower or any other Person to pay or otherwise transfer any part of such balances, for so long as any Obligations are outstanding.

4.2 Perfection of Security Interest. Borrower authorizes Bank to file at any time financing statements, continuation statements, and amendments thereto that (i) specifically describes the Collateral, and (ii) contain any other information required by the Code for the sufficiency of filing office acceptance of any financing statement, continuation statement, or amendment, including whether Borrower is an organization, the type of organization and any organizational identification number issued to Borrower, if applicable. Borrower shall have possession of the Collateral, except where expressly otherwise provided in this Agreement or where Bank chooses to perfect its security interest by possession in addition to the filing of a financing statement. Borrower from time to time may deposit with Bank specific cash collateral to secure specific Obligations; Borrower authorizes Bank to hold such specific balances in pledge and to decline to honor any drafts thereon or any request by Borrower or any other Person to pay or otherwise transfer any part of such balances for so long as the specific Obligations are outstanding. Borrower shall take such other actions as Bank reasonably requests to perfect its security interests granted under this Agreement.

5. REPRESENTATIONS AND WARRANTIES.

Borrower represents and warrants as follows:

5.1 Due Organization and Qualification. Borrower and each Subsidiary is duly existing under the laws of the state in which it is organized and qualified and licensed to do business in any state in which the conduct of its business or its ownership of property requires that it be so qualified, except where the failure to do so would not reasonably be expected to cause a Material Adverse Effect.

5.2 Due Authorization; No Conflict. The execution, delivery, and performance of the Loan Documents are within Borrower's powers, have been duly authorized, and are not in conflict with nor constitute a breach of any provision contained in Borrower's Certificate of Incorporation or Bylaws, nor will they constitute an event of default under any material agreement by which Borrower is bound. Borrower is not in default under any agreement by which it is bound, except to the extent such default would not reasonably be expected to cause a Material Adverse Effect.

5.3 Collateral. Borrower has rights in or the power to transfer the Collateral, and its title to the Collateral is free and clear of Liens, adverse claims, and restrictions on transfer

or pledge except for Permitted Liens. Except as set forth in the Schedule, none of the Borrower's Cash is maintained or invested with a Person other than Bank or Bank's affiliates.

5.4 Intellectual Property. Borrower is the sole owner of the Intellectual Property created or purchased by Borrower, except for licenses granted by Borrower to its customers in the ordinary course of business. The Intellectual Property created or purchased by Borrower constitutes all Intellectual Property necessary for the conduct of Borrower's business as now conducted and as presently proposed to be conducted. To the best of Borrower's knowledge, each of the Copyrights, Trademarks and Patents created or purchased by Borrower is valid and enforceable, and no part of the Intellectual Property created or purchased by Borrower has been judged invalid or unenforceable, in whole or in part, and no claim has been made to Borrower that any part of the Intellectual Property created or purchased by Borrower violates the rights of any third party except to the extent such claim would not reasonably be expected to cause a Material Adverse Effect.

5.5 Name; Location of Chief Executive Office. Except as disclosed in the Schedule, Borrower has not done business under any name other than that specified on the signature page hereof, and its exact legal name is as set forth in the first paragraph of this Agreement. The chief executive office of Borrower is located at the address indicated in Section 10 hereof.

5.6 Litigation. Except as set forth in the Schedule, there are no actions or proceedings pending by or against Borrower or any Subsidiary before any court or administrative agency in which a likely adverse decision would reasonably be expected to have a Material Adverse Effect.

5.7 No Material Adverse Change in Financial Statements. All consolidated and consolidating financial statements related to Borrower and any Subsidiary that are delivered by Borrower to Bank or otherwise submitted to Bank fairly present in all material respects Borrower's consolidated and consolidating financial condition as of the date thereof and Borrower's consolidated and consolidating results of operations for the period then ended. There has not been a material adverse change in the consolidated or in the consolidating financial condition of Borrower since the date of the most recent of such financial statements submitted to Bank.

5.8 Solvency, Payment of Debts. Borrower is able to pay its debts (including trade debts) as they mature; the fair saleable value of Borrower's assets (including goodwill minus disposition costs) exceeds the fair value of its liabilities; and Borrower is not left with unreasonably small capital after the transactions contemplated by this Agreement.

5.9 Compliance with Laws and Regulations. Borrower and each Subsidiary have met the minimum funding requirements of ERISA with respect to any employee benefit plans subject to ERISA. No event has occurred resulting from Borrower's failure to comply with ERISA that is reasonably likely to result in Borrower's incurring any liability that could have a Material Adverse Effect. Borrower is not an "investment company" or a company "controlled" by an "investment company" within the meaning of the Investment Company Act of 1940. Borrower is not engaged principally, or as one of its important activities, in the business of extending credit for

the purpose of purchasing or carrying margin stock (within the meaning of Regulations T and U of the Board of Governors of the Federal Reserve System). Borrower has not violated any statutes, laws, ordinances or rules applicable to it, the violation of which would reasonably be expected to have a Material Adverse Effect. Borrower and each Subsidiary have filed or caused to be filed all tax returns required to be filed, and have paid, or have made adequate provision for the payment of, all taxes reflected therein except those being contested in good faith with adequate reserves under GAAP or where the failure to file such returns or pay such taxes would not reasonably be expected to have a Material Adverse Effect.

5.10 Reserved.

5.11 Government Consents. Borrower and each Subsidiary have obtained all consents, approvals and authorizations of, made all declarations or filings with, and given all notices to, all governmental authorities that are necessary for the continued operation of Borrower's business as currently conducted, except where the failure to do so would not reasonably be expected to cause a Material Adverse Effect.

5.12 Reserved.

5.13 Full Disclosure. No representation, warranty or other statement made by Borrower in any report, certificate, or written statement furnished or submitted to Bank taken together with all such reports, certificates, and written statements furnished or submitted to Bank contains any untrue statement of a material fact or omits to state a material fact necessary in order to make the statements contained in such reports, certificates, or statements not misleading in light of the circumstances in which they were made, it being recognized by Bank that the projections and forecasts provided by Borrower in good faith and based upon reasonable assumptions are not to be viewed as facts and that actual results during the period or periods covered by any such projections and forecasts may differ from the projected or forecasted results.

6. AFFIRMATIVE COVENANTS.

Borrower covenants that, until payment in full of all outstanding Obligations, and for so long as Bank may have any commitment to make a Credit Extension hereunder, Borrower shall do all of the following:

6.1 Good Standing and Government Compliance. Borrower shall maintain its and each of its Subsidiaries' corporate existence and good standing in the respective states of formation, shall maintain qualification and good standing in each other jurisdiction in which the failure to so qualify would reasonably be expected to have a Material Adverse Effect, and shall furnish to Bank the organizational identification number issued to Borrower by the authorities of the state in which Borrower is organized, if applicable. Borrower shall meet, and shall cause each Subsidiary to meet, the minimum funding requirements of ERISA with respect to any employee benefit plans subject to ERISA. Borrower shall comply, and shall cause each Subsidiary to comply, with all statutes, laws, ordinances and government rules and regulations to which it is subject, and shall maintain, and shall cause each of its Subsidiaries to maintain, in force all licenses, approvals and agreements, the loss of which or failure to comply with which would reasonably be expected to have a Material Adverse Effect.

6.2 Financial Statements, Reports, Certificates, Collateral Audits.

(a) Borrower shall deliver to Bank: (i) within 5 Business Days after filing with the Securities and Exchange Commission, but in any event no later than 45 days after the last day of each first, second, and third fiscal quarter of Borrower, a company-prepared balance sheet, income statement, and statement of cash flows covering Borrower's operations during such quarter; provided that Borrower's delivery of such quarterly financial statements with its reports on Form 10-Q as required by clause (iv) below will satisfy this clause (i); (ii) within 5 Business Days after filing with the Securities and Exchange Commission, but in any event no later than 90 days after the last day of each fiscal year, annual financial statements of Borrower prepared in accordance with GAAP, consistently applied, together with an unqualified opinion on such financial statements from an independent certified public accounting firm reasonably acceptable to Bank; provided that Borrower's delivery of such annual financial statements and opinion with its reports on Form 10-K as required by clause (iv) below will satisfy this clause (ii); (iii) an annual budget approved by Borrower's Board of Directors as soon as available, but no later than the earlier of (A) 90 days after the end of each fiscal year of Borrower, or (B) 15 days following approval by Borrower's Board of Directors; (iv) if applicable, copies of all statements, reports and notices sent or made available generally by Borrower to its security holders or to any holders of Subordinated Debt and all reports on Forms 10-K and 10-Q filed with the Securities and Exchange Commission; (v) promptly upon receipt of notice thereof, a report of any legal actions pending or threatened against Borrower or any Subsidiary that could reasonably be expected to result in damages or costs to Borrower or any Subsidiary of \$500,000 or more; (vi) promptly upon receipt, each management letter prepared by Borrower's independent certified public accounting firm regarding Borrower's management control systems; and (vii) such budgets, sales projections, operating plans or other financial information as Bank may reasonably request from time to time.

(b) Within 45 days after the last day of each fiscal quarter of Borrower, Borrower shall deliver to Bank, a Compliance Certificate certified as of the last day of the applicable month and signed by a Responsible Officer in substantially the form of Exhibit D hereto.

(c) As soon as possible and in any event within 3 Business Days after becoming aware of the occurrence or existence of an Event of Default hereunder, Borrower shall deliver to Bank a written statement of a Responsible Officer setting forth details of the Event of Default, and the action which Borrower has taken or proposes to take with respect thereto.

(d) Bank (through any of its officers, employees, or agents) shall have the right, upon reasonable prior notice, from time to time during Borrower's usual business hours but no more than once a year (unless an Event of Default has occurred and is continuing), to inspect Borrower's Books and to make copies thereof and to check, test, inspect, audit and appraise the Collateral at Borrower's expense in order to verify Borrower's financial condition or the amount, condition of, or any other matter relating to, the Collateral.

(e) Borrower shall deliver to Bank, promptly following the end of each calendar quarter, quarterly strategic business updates in a form satisfactory to Bank.

Borrower may deliver to Bank on an electronic basis any certificates, reports, requests, or information required pursuant to this Section 6.2, and Bank shall be entitled to rely on the

information contained in the electronic files, provided that Bank in good faith believes that the files were delivered by, or on behalf of, a Responsible Officer. Borrower shall include a submission date on any certificates, statements, and reports to be delivered electronically.

Any submission by Borrower of a Compliance Certificate or other financial statement pursuant to this Section 6.2 or otherwise submitted to Bank shall be deemed to be a representation by Borrower that (i) as of the date of such Compliance Certificate, financial statement, or request, the information and calculations set forth therein are true, accurate and correct, (ii) as of the end of the compliance period set forth in such submission, Borrower is in complete compliance with all required covenants except as noted in such Compliance Certificate or financial statement, as applicable; (iii) as of the date of such submission, no Events of Default have occurred or are continuing; and (iv) all representations and warranties other than any representations or warranties that are made as of a specific date in Section 5 remain true and correct in all material respects as of the date of such submission except as noted in such Compliance Certificate, financial statement, or request, as applicable.

6.3 Reserved.

6.4 Taxes. Borrower shall make, and cause each Subsidiary to make, due and timely payment or deposit of all material federal, state, and local taxes, assessments, or contributions required of it by law, including, but not limited to, those laws concerning income taxes, F.I.C.A., F.U.T.A. and state disability, and will execute and deliver to Bank, on demand, proof satisfactory to Bank indicating that Borrower or a Subsidiary has made such payments or deposits and any appropriate certificates attesting to the payment or deposit thereof; provided that Borrower or a Subsidiary need not make any payment if the amount or validity of such payment is contested in good faith by appropriate proceedings and is reserved against (to the extent required by GAAP) by Borrower or such Subsidiary.

6.5 Insurance. Borrower, at its expense, shall (i) keep the Collateral insured against loss or damage, and (ii) maintain liability and other insurance, in each case as ordinarily insured against by other owners in businesses similar to Borrower's. All such policies of insurance shall be in such form, with such companies, and in such amounts as reasonably satisfactory to Bank. All liability insurance policies shall show, or have endorsements showing, Bank as an additional insured. Any such insurance policies shall specify that the insurer must give at least 20 days' notice to Bank before canceling its policy for any reason. Within 30 days of the Closing Date, Borrower shall cause to be furnished to Bank a copy of its policies including any endorsements covering Bank or showing Bank as an additional insured. Upon Bank's request, Borrower shall deliver to Bank certified copies of the policies of insurance and evidence of all premium payments.

6.6 Primary Depository. Subject to the provisions of Section 6.7, Borrower shall maintain, and shall cause all of its Subsidiaries to maintain, account balances in Borrower's and any of its Subsidiaries' operating accounts and depository accounts at or through Bank representing at least 50% of the Dollar equivalent value of all deposit account balances of Borrower and all such Subsidiaries at all financial institutions. For avoidance of doubt, amounts deposited in the Cash Security Account shall be included in the tabulation of Borrower's operating

accounts and depository accounts at Bank for the purposes of determining whether Borrower is in compliance with the 50% threshold required by this Section.

6.7 Cash Security Account. For so long as any portion of the Term Loan remains outstanding, Borrower shall at all times maintain the Cash Security Account, with a balance of cash in the Cash Security Account at all times equal to at least the aggregate principal amount of the Term Loan then outstanding. Regardless of whether such interest causes the balance of the Cash Security Account to exceed the minimum balance amount required by this Section, interest earned on money deposited in the Cash Security Account shall accrue and remain in the Cash Security Account unless the Bank, in its sole discretion, opts to permit Borrower to transfer all or any portion of such interest to another account.

6.8 Protection of Intellectual Property Rights.

(a) Borrower shall use commercially reasonable efforts to (i) protect, defend and maintain the validity and enforceability of its trade secrets, Trademarks, Patents, and Copyrights, (ii) use commercially reasonable efforts to detect infringements of its Trademarks, Patents, and Copyrights and promptly advise Bank in writing of material infringements detected and (iii) not allow any material Trademarks, Patents, or Copyrights to be abandoned, forfeited or dedicated to the public without the written consent of Bank, which shall not be unreasonably withheld.

(b) Bank shall have the right, but not the obligation, to take, at Borrower's sole expense, any actions that Borrower is required under this Section 6.8 to take but which Borrower fails to take, after 15 days' notice to Borrower. Borrower shall reimburse and indemnify Bank for all reasonable costs and reasonable expenses incurred in the reasonable exercise of its rights under this Section 6.8.

6.9 Reserved.

6.10 Creation/Acquisition of Subsidiaries. In the event Borrower or any Subsidiary of Borrower creates or acquires any Subsidiary, Borrower or such Subsidiary shall promptly notify Bank of such creation or acquisition.

6.11 Further Assurances. At any time and from time to time Borrower shall execute and deliver such further instruments and take such further action as may reasonably be requested by Bank to effect the purposes of this Agreement.

7. NEGATIVE COVENANTS.

Borrower covenants and agrees that, so long as any credit hereunder shall be available and until the outstanding Obligations are paid in full or for so long as Bank may have any commitment to make any Credit Extensions, Borrower will not do any of the following without Bank's prior written consent, which shall not be unreasonably withheld:

7.1 Dispositions. Transfer or move cash balances on deposit with Bank to accounts opened at another financial institution, other than (i) Permitted Transfers, and (ii)

Transfers that are made in the ordinary course of Borrower's business and could not reasonably be expected to result in a Material Adverse Effect.

7.2 Change in Name, Location, Executive Office, or Executive Management; Change in Business; Change in Fiscal Year; Change in Control. Change its name or the state of Borrower's formation or relocate its chief executive office without 30 days prior written notification to Bank; replace or suffer the departure of its chief executive officer or chief financial officer without delivering written notification to Bank within 10 days; fail to appoint an interim replacement or fill a vacancy in the position of chief executive officer or chief financial officer for more than 30 consecutive days; take action to liquidate, wind up, or otherwise cease to conduct business in the ordinary course; engage in any business, or permit any of its Subsidiaries to engage in any business, other than or reasonably related or incidental to the businesses currently engaged in by Borrower; change its fiscal year end; convert to another form of incorporated or unincorporated business or entity; have a Change in Control; Divide.

7.3 Mergers or Acquisitions. Merge or consolidate, or permit any of its Subsidiaries to merge or consolidate, with or into any other business organization (other than mergers or consolidations of a Subsidiary into another Subsidiary or into Borrower), in each case except where (a) each of the following conditions is applicable: (i) no Event of Default has occurred, is continuing or would exist after giving effect to such transactions, (ii) such transactions do not result in a Change in Control, and (iii) Borrower is the surviving entity (or solely in the case where a Person who is not a Subsidiary is acquired by a Subsidiary or by Borrower and merges with a Subsidiary, the surviving entity is, or becomes, a Subsidiary); or (b) the Obligations are repaid in full and this Agreement is terminated concurrently with the closing of any merger or consolidation of Borrower in which Borrower is not the surviving entity.

7.4 Indebtedness. Create, incur, assume, guarantee or be or remain liable with respect to any Indebtedness that is secured by a Lien, or permit any Subsidiary so to do, other than Permitted Secured Indebtedness.

7.5 Encumbrances. Create, incur, assume or allow any Lien with respect to the Collateral, or permit any of its Subsidiaries so to do, except for Permitted Liens.

7.6 Reserved.

7.7 Reserved.

7.8 Reserved.

7.9 Reserved.

7.10 Reserved.

7.11 Reserved.

7.12 No Investment Company; Margin Regulation. Become or be controlled by an "investment company," within the meaning of the Investment Company Act of 1940, or become principally engaged in, or undertake as one of its important activities, the business of

extending credit for the purpose of purchasing or carrying margin stock, or use the proceeds of any Credit Extension for such purpose.

8. EVENTS OF DEFAULT.

Any one or more of the following events shall constitute an Event of Default by Borrower under this Agreement:

8.1 Payment Default. If Borrower fails to pay any of the Obligations when due;

8.2 Covenant Default.

(a) If Borrower fails to perform any obligation under Sections 6.2 (financial reporting), 6.4 (taxes), 6.5 (insurance), 6.6 (primary depository), or 6.7 (cash security account), or violates any of the covenants contained in Article 7 of this Agreement; or

(b) If Borrower fails or neglects to perform or observe any other material term, provision, condition, or covenant contained in this Agreement, in any of the Loan Documents, or in any other present or future agreement between Borrower and Bank and as to any default under such other term, provision, condition or covenant that can be cured, has failed to cure such default within 15 days after Borrower receives notice thereof or any officer of Borrower becomes aware thereof; provided, however, that if the default cannot by its nature be cured within the 15 day period or cannot after diligent attempts by Borrower be cured within such 15 day period, and such default is likely to be cured within a reasonable time, then Borrower shall have an additional reasonable period (which shall not in any case exceed 30 days) to attempt to cure such default, and within such reasonable time period the failure to have cured such default shall not be deemed an Event of Default but no Credit Extensions will be made;

8.3 Material Adverse Change. If there occurs any circumstance or any circumstances which would reasonably be expected to have a Material Adverse Effect;

8.4 Attachment. If any material portion of Borrower's assets is attached, seized, subjected to a writ or distress warrant, or is levied upon, or comes into the possession of any trustee, receiver or person acting in a similar capacity and such attachment, seizure, writ or distress warrant or levy has not been removed, discharged or rescinded within 10 days, or if Borrower is enjoined, restrained, or in any way prevented by court order from continuing to conduct all or any material part of its business affairs, or if a judgment or other claim becomes a lien or encumbrance upon any material portion of Borrower's assets, or if a notice of lien, levy, or assessment is filed of record with respect to any material portion of Borrower's assets by the United States Government, or any department, agency, or instrumentality thereof, or by any state, county, municipal, or governmental agency, and the same is not paid within ten days after Borrower receives notice thereof, provided that none of the foregoing shall constitute an Event of Default where such action or event is stayed or an adequate bond has been posted pending a good faith contest by Borrower (provided that no Credit Extensions will be made during such cure period);

8.5 Insolvency. If Borrower becomes insolvent, or if an Insolvency Proceeding is commenced by Borrower, or if an Insolvency Proceeding is commenced against Borrower and

is not dismissed or stayed within 45 days (provided that no Credit Extensions will be made prior to the dismissal of such Insolvency Proceeding);

8.6 Other Agreements. If (a) there is a default or other failure to perform in any agreement to which Borrower is a party with a third party or parties (i) resulting in a right by such third party or parties, whether or not exercised, to accelerate the maturity of any Indebtedness in an amount in excess of \$1,000,000, (ii) in connection with any lease of real property material to the conduct of Borrower's business, if such default or failure to perform gives another party the right to terminate the lease, or (iii) that would reasonably be expected to have a Material Adverse Effect, or (b) any default or event of default (however designated) shall occur with respect to any Subordinated Debt which is not cured within any applicable cure period;

8.7 Judgments. If a final, uninsured judgment or judgments for the payment of money in an amount, individually or in the aggregate, of at least \$1,000,000 shall be rendered against Borrower and shall remain unsatisfied and unstayed for a period of 10 days (provided that no Credit Extensions will be made prior to the satisfaction or stay of the judgment); or

8.8 Misrepresentations. If any material misrepresentation or material misstatement exists now or hereafter in any warranty or representation set forth herein or in any report, certificate or other writing delivered to Bank by any Responsible Officer pursuant to this Agreement or to induce Bank to enter into this Agreement or any other Loan Document.

9. BANK'S RIGHTS AND REMEDIES.

9.1 Rights and Remedies. Upon the occurrence and during the continuance of an Event of Default, Bank may, at its election, without notice of its election and without demand, do any one or more of the following, all of which are authorized by Borrower:

(a) Declare all Obligations, whether evidenced by this Agreement, by any of the other Loan Documents, or otherwise, immediately due and payable (provided that upon the occurrence of an Event of Default described in Section 8.5 (insolvency), all Obligations shall become immediately due and payable without any action by Bank);

(b) Demand that Borrower (i) deposit cash with Bank in an amount equal to the amount of any Letters of Credit remaining undrawn, as collateral security for the repayment of any future drawings under such Letters of Credit, and (ii) pay in advance all Letter of Credit fees scheduled to be paid or payable over the remaining term of the Letters of Credit, and Borrower shall promptly deposit and pay such amounts;

(c) Cease advancing money or extending credit to or for the benefit of Borrower under this Agreement or under any other agreement between Borrower and Bank;

(d) Reserved;

(e) Debit the Cash Security Account and set off and apply to the Obligations any and all amounts resulting from such debit;

(f) Make such payments and do such acts as Bank considers necessary

or reasonable to protect its security interest in the Collateral;

(g) place a “hold” on any account maintained with Bank, decline to honor presentments (including but not limited to checks, wires, and ACH drafts) against any account at Bank, and/or deliver a notice of exclusive control, any entitlement order, or other directions or instructions pursuant to any control agreement or similar agreements providing control of any Collateral;

(h) Set off and apply to the Obligations any and all (i) balances and deposits of Borrower held by Bank, and (ii) indebtedness at any time owing to or for the credit or the account of Borrower held by Bank;

(i) Reserved;

(j) Reserved;

(k) Reserved;

(l) Apply for the appointment of a receiver, trustee, liquidator or conservator of the Collateral, without notice and without regard to the adequacy of the security for the Obligations and without regard to the solvency of Borrower, any guarantor or any other Person liable for any of the Obligations; and

(m) Any deficiency that exists after disposition of the Collateral as provided above will be paid immediately by Borrower.

Bank may comply with any applicable state or federal law requirements in connection with a disposition of the Collateral and compliance will not be considered adversely to affect the commercial reasonableness of any sale of the Collateral.

9.2 Power of Attorney. Effective only upon the occurrence and during the continuance of an Event of Default, Borrower hereby irrevocably appoints Bank (and any of Bank’s designated officers, or employees) as Borrower’s true and lawful attorney to: (a) endorse Borrower’s name on any checks or other forms of payment or security that may come into Bank’s possession; (b) dispose of any Collateral; (c) make, settle, and adjust all claims under and decisions with respect to Borrower’s policies of insurance; and (d) file, in its sole discretion, one or more financing or continuation statements and amendments thereto, relative to any of the Collateral; provided Bank may exercise such power of attorney to sign the name of Borrower on any of the documents described in clause (d) above, regardless of whether an Event of Default has occurred. The appointment of Bank as Borrower’s attorney in fact, and each and every one of Bank’s rights and powers, being coupled with an interest, is irrevocable until all of the Obligations have been fully repaid and performed and Bank’s obligation to provide advances hereunder is terminated.

9.3 Reserved.

9.4 Bank Expenses. If Borrower fails to pay any amounts or furnish any required proof of payment due to third persons or entities, as required under the terms of this Agreement, then Bank may do any or all of the following after reasonable notice to Borrower: (a)

If to Bank: Banc of California
555 S. Mangum Street, Suite 1000
Durham, North Carolina 27701
Attn: Loan Operations Manager
E-Mail: loannotices@bancofcal.com

with a copy to: Banc of California
555 S. Mangum Street, Suite 1000
Durham, North Carolina 27701
Attn: Ryan Kelley
E-Mail: ryan.kelley@bancofcal.com

The parties hereto may change the address at which they are to receive notices hereunder, by notice in writing in the foregoing manner given to the other.

11. CHOICE OF LAW AND VENUE; JURY TRIAL WAIVER.

This Agreement shall be governed by, and construed in accordance with, the internal laws of the State of North Carolina, without regard to principles of conflicts of law. Jurisdiction shall lie in the State of North Carolina. All disputes, controversies, claims, actions and similar proceedings arising with respect to Borrower's account or any related agreement or transaction shall be brought in the General Court of Justice of North Carolina sitting in Durham County, North Carolina or the United States District Court for the Middle District of North Carolina, except as provided below with respect to arbitration of such matters. BANK AND BORROWER EACH ACKNOWLEDGE THAT THE RIGHT TO TRIAL BY JURY IS A CONSTITUTIONAL ONE, BUT THAT IT MAY BE WAIVED. EACH OF THEM, AFTER CONSULTING OR HAVING HAD THE OPPORTUNITY TO CONSULT, WITH COUNSEL OF THEIR CHOICE, KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVES ANY RIGHT ANY OF THEM MAY HAVE TO A TRIAL BY JURY IN ANY LITIGATION BASED UPON OR ARISING OUT OF THIS AGREEMENT OR ANY RELATED INSTRUMENT OR LOAN DOCUMENT OR ANY OF THE TRANSACTIONS CONTEMPLATED BY THIS AGREEMENT OR ANY COURSE OF CONDUCT, DEALING, STATEMENTS (WHETHER ORAL OR WRITTEN), OR ACTION OF ANY OF THEM. THESE PROVISIONS SHALL NOT BE DEEMED TO HAVE BEEN MODIFIED IN ANY RESPECT OR RELINQUISHED BY BANK OR BORROWER, EXCEPT BY A WRITTEN INSTRUMENT EXECUTED BY EACH OF THEM. If the jury waiver set forth in this Section 11 is not enforceable, then any dispute, controversy, claim, action or similar proceeding arising out of or relating to this Agreement, the Loan Documents or any of the transactions contemplated therein shall be settled by final and binding arbitration held in Durham County, North Carolina in accordance with the then current Commercial Arbitration Rules of the American Arbitration Association by one arbitrator appointed in accordance with those rules. The arbitrator shall apply North Carolina law to the resolution of any dispute, without reference to rules of conflicts of law or rules of statutory arbitration. Judgment upon any award resulting from arbitration may be entered into and enforced by any state or federal court having jurisdiction thereof. Notwithstanding the foregoing, the parties may apply to any court of competent jurisdiction for preliminary or interim equitable relief, or to compel arbitration in accordance with this Section. The costs and expenses of the arbitration, including without limitation, the arbitrator's fees and expert witness fees, and reasonable attorneys' fees, incurred by the parties to

the arbitration may be awarded to the prevailing party, in the discretion of the arbitrator, or may be apportioned between the parties in any manner deemed appropriate by the arbitrator. Unless and until the arbitrator decides that one party is to pay for all (or a share) of such costs and expenses, both parties shall share equally in the payment of the arbitrator's fees as and when billed by the arbitrator.

12. GENERAL PROVISIONS.

12.1 Successors and Assigns. This Agreement shall bind and inure to the benefit of the respective successors and permitted assigns of each of the parties and shall bind all persons who become bound as a debtor to this Agreement; provided, however, that neither this Agreement nor any rights hereunder may be assigned by Borrower without Bank's prior written consent, which consent may be granted or withheld in Bank's sole discretion. Bank shall have the right without the consent of or notice to Borrower to sell, assign, transfer, negotiate, or grant participation in all or any part of, or any interest in, Bank's obligations, rights and benefits hereunder. Notwithstanding the preceding sentence, an assignment or transfer by Bank of its obligations, rights, and benefits hereunder shall require the consent of Borrower (not to be unreasonably withheld, delayed, or conditioned) if (a) no Event of Default has occurred at any time during the term of this Agreement, and (b) such assignment or transfer is not in connection with a merger or acquisition of the stock or assets of Bank generally or to an Affiliate of Bank.

12.2 Indemnification. Borrower shall defend, indemnify and hold harmless Bank and its officers, directors, employees, affiliates, advisors and agents against: (a) all obligations, demands, claims, and liabilities claimed or asserted by any other party in connection with the transactions contemplated by this Agreement; and (b) all losses or Bank Expenses in any way suffered, incurred, or paid by Bank, its officers, employees and agents as a result of or in any way arising out of, following, or consequential to transactions between Bank and Borrower whether under this Agreement, or otherwise (including without limitation reasonable attorneys' fees and expenses), except for losses caused by Bank's gross negligence or willful misconduct as determined by a court of competent jurisdiction by final and non-appealable order.

12.3 Time of Essence. Time is of the essence for the performance of all obligations set forth in this Agreement.

12.4 Severability of Provisions. Each provision of this Agreement shall be severable from every other provision of this Agreement for the purpose of determining the legal enforceability of any specific provision.

12.5 Amendments in Writing, Integration. All amendments to or terminations of this Agreement or the other Loan Documents must be in writing. All prior agreements, understandings, representations, warranties, and negotiations between the parties hereto with respect to the subject matter of this Agreement and the other Loan Documents, if any, are merged into this Agreement and the Loan Documents.

12.6 Counterparts; Electronic Transmission; Electronic Signatures. This Agreement may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, shall be deemed to be an original, and

all of which, when taken together, shall constitute but one and the same Agreement. Executed copies of this Agreement or the signature pages of this Agreement sent by facsimile or transmitted electronically in Portable Document Format (“PDF”) or any similar format, or transmitted electronically by digital image, DocuSign, or other means of electronic transmission, shall be treated as originals, fully binding and with full legal force and effect, and the parties waive any rights they may have to object to such treatment. The words “execution,” “signed,” “signature,” “delivery,” and words of like import in or relating to this Agreement and/or any document to be signed in connection with this Agreement and the transactions contemplated hereby shall be deemed to include Electronic Signatures (as defined below), deliveries 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, physical delivery thereof or the use of a paper-based recordkeeping system, as the case may be. As used herein, “Electronic Signatures” means any electronic symbol or process attached to, or associated with, any contract or other record and adopted by a person with the intent to sign, authenticate or accept such contract or record.

12.7 Survival. All covenants, representations and warranties made in this Agreement shall continue in full force and effect so long as any Obligations remain outstanding or Bank has any obligation to make any Credit Extension to Borrower. The obligations of Borrower to indemnify Bank with respect to the expenses, damages, losses, costs and liabilities described in Section 12.2 shall survive until all applicable statute of limitations periods with respect to actions that may be brought against Bank have run.

12.8 Confidentiality and Publicity.

(a) Borrower shall not, and shall not permit any of its Affiliates to: (i) publish or disclose any materials containing Bank’s name, including in any press release or otherwise in connection with any advertising or marketing, without first obtaining Bank’s prior written consent, or (ii) use Bank’s name (or the name of any of its Affiliates) in connection with its operations or business. Notwithstanding the foregoing, Bank acknowledges that Borrower may disclose and make available to the public materials containing Bank’s name or other information to the extent required by the Securities and Exchange Commission or in connection with Borrower’s submission of reports or information to the Securities and Exchange Commission.

(b) In handling any confidential information, Bank shall exercise commercially reasonable efforts to maintain in confidence, in accordance with its customary procedures for handling confidential information, all written non-public information furnished to Bank on a confidential basis clearly identified at the time of delivery as such (“Confidential Information”) other than any such Confidential Information that becomes generally available to the public or becomes available to Bank from a source other than Borrower and that is not known to Bank to be subject to confidentiality obligations; provided, that Bank and its Affiliates shall have the right to disclose Confidential Information to: (i) such Person’s Affiliates; (ii) such Person or such Person’s Affiliates’ lenders, funding sources, or financing sources; (iii) such Person’s or such Person’s Affiliates’ directors, officers, trustees, partners, members, managers, employees, agents, advisors, representatives, attorneys, equity owners, professional consultants, portfolio management services and rating agencies; (iv) any successor or assign of Bank; (v) any Person to whom Bank offers to sell, assign or transfer any Credit Extension or any part thereof or any interest or participation therein; (vi) any Person that provides statistical analysis and/or information services to Bank or its

Affiliates; and (vii) any Person (A) to the extent required by it by law, (B) as may be required in connection with the examination, audit, or similar investigation of Bank, (C) in response to any subpoena or other legal process or informal investigative demand, (D) in connection with any litigation, or (E) in connection with the actual or potential exercise or enforcement of any right or remedy under any Loan Document. The obligations of Bank and its Affiliates under this Section 12.8 shall supersede and replace any other confidentiality obligations agreed to by Bank or its Affiliates.

12.9 E-Systems. Bank is hereby authorized by Borrower to establish procedures (and to amend such procedures from time to time) to facilitate administration and servicing of the Credit Extensions and other matters incidental thereto. Without limiting the generality of the foregoing, Bank is hereby authorized to establish procedures to make available or deliver, or to accept, notices, documents and similar items, by posting to or submitting and/or completion, on E-Systems. Borrower acknowledges and agrees that the use of transmissions via an E-System or electronic mail is not necessarily secure and that there are risks associated with such use, including risks of interception, disclosure and abuse, and Borrower assumes and accepts such risks by hereby authorizing the transmission via E-Systems or electronic mail. All uses of an E-System shall be governed by and subject to, in addition to this Section, the separate terms and conditions posted or referenced in such E-System (or such terms and conditions as may be updated from time to time, including on such E-System) and related contractual obligations executed by Borrower in connection with the use of such E-System. ALL E-SYSTEMS AND ELECTRONIC TRANSMISSIONS SHALL BE PROVIDED "AS-IS" AND "AS AVAILABLE". NO REPRESENTATION OR WARRANTY OF ANY KIND IS MADE BY BANK OR ANY OF ITS AFFILIATES IN CONNECTION WITH ANY E-SYSTEMS.

12.10 No Novation. Nothing contained herein shall in any way impair the Prior Loan Agreement and the other Loan Documents now held for the Obligations, nor affect or impair any rights, powers, or remedies under the Prior Loan Agreement or any Loan Document, except as amended hereby, it being the intent of the parties hereto that this Agreement shall not constitute a novation of the Prior Loan Agreement or an accord and satisfaction of the Obligations, but rather an amendment and restatement of the Prior Loan Agreement. Except as expressly provided for and as amended and restated in this Agreement, the Loan Documents are hereby ratified and reaffirmed and shall remain in full force and effect. For purposes of clarification, the amendment and restatement of the Prior Loan Agreement affects only the Prior Loan Agreement and not any of the other documents or agreements entered into in connection with the Prior Loan Agreement, unless and only to the extent those documents or agreements are separately amended in connection herewith. Except as expressly provided for and as amended and restated in this Agreement, Borrower hereby ratifies and reaffirms the validity and enforceability of all of the liens and security interests granted pursuant to the Loan Documents, as collateral security for the Obligations, and acknowledges that all of such liens and security interests, and all Collateral pledged as security for the Obligations, continues to be and remains in full force and effect as Collateral for the Obligations from and after the Closing Date.

[Signatures appear on the following page.]

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of the first date above written.

PRECISION BIOSCIENCES, INC.

By: /s/ Alex Kelly__

Name: Alex Kelly

Title: Chief Financial Officer

BANC OF CALIFORNIA

By: /s/ Ryan Kelly__

Name: Ryan Kelley

Title: Vice President

EXHIBIT A

DEFINITIONS

“Accounts” means all presently existing and hereafter arising accounts, contract rights, payment intangibles and all other forms of obligations owing to Borrower arising out of the sale or lease of goods (including, without limitation, the licensing of software and other technology) or the rendering of services by Borrower and any and all credit insurance, guaranties, and other security therefor, as well as all merchandise returned to or reclaimed by Borrower and Borrower’s Books relating to any of the foregoing.

“Affiliate” means, with respect to any Person, any Person that owns or controls directly or indirectly such Person, any Person that controls or is controlled by or is under common control with such Person, and each of such Person’s senior executive officers, directors, and general partners.

“Authorized Officer” means someone designated as such in the corporate resolution provided by Borrower to Bank in which this Agreement and the transactions contemplated hereunder are authorized by Borrower’s board of directors. If Borrower provides subsequent corporate resolutions to Bank after the Closing Date, the individual(s) designated as “Authorized Officer(s)” in the most recently provided resolution shall be the only “Authorized Officers” for purposes of this Agreement.

“Bank Expenses” means all reasonable costs or expenses (including reasonable attorneys’ fees and expenses, whether generated by in-house or by outside counsel) incurred in connection with the preparation, negotiation, administration, and enforcement of the Loan Documents; reasonable Collateral audit fees; and Bank’s reasonable attorneys’ fees and expenses (whether generated in-house or by outside counsel) incurred in amending, enforcing or defending the Loan Documents (including fees and expenses of appeal), incurred before, during and after an Insolvency Proceeding, whether or not suit is brought.

“Borrower’s Books” means all of Borrower’s books and records including: ledgers; records concerning Borrower’s assets or liabilities, the Collateral, business operations or financial condition; and all computer programs, or tape files, and the equipment, containing such information.

“Business Day” means any day that is not a Saturday, Sunday, or other day on which banks in the State of North Carolina are authorized or required to close.

“Cash” means unrestricted cash and cash equivalents.

“Cash Security Account” means Demand Deposit Account number [***], together with all proceeds and substitutions thereof, all interest paid thereon, and all other cash and non-cash proceeds of the foregoing.

“Change in Control” shall mean (a) a transaction (other than a bona fide equity financing or series of financings on terms and from investors reasonably acceptable to Bank) in which any “person” or “group” (within the meaning of Section 13(d) and 14(d) (2) of the Securities Exchange Act of 1934) becomes the “beneficial owner” (as defined in Rule 13d-3 under the Securities Exchange Act of 1934), directly or indirectly, of a sufficient number of shares of all classes of stock then outstanding of Borrower ordinarily entitled to vote in the election of directors, empowering such “person” or “group” to elect a majority of the Board of Directors of Borrower, who did not have such power before such transaction; or (b) Borrower shall cease to own and control 100% of the equity interests in each of its Subsidiaries.

“Closing Date” means the date of this Agreement.

“Code” means the North Carolina Uniform Commercial Code as amended or supplemented from time to time.

“Collateral” means the property described on Exhibit B attached hereto.

“Compliance Certificate” means a compliance certificate, in substantially the form of Exhibit D attached hereto, executed by a Responsible Officer of the Borrower.

“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, dividend, letter of credit or other obligation of another, including, without limitation, 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 designated 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 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.

“Copyrights” means any and all copyright rights, copyright applications, copyright registrations and like protections in each work or authorship and derivative work thereof, whether published or unpublished and whether or not the same also constitutes a trade secret, now or hereafter existing, created, acquired or held.

“Credit Extension” means the Term Loan, or any other extension of credit, by Bank to or for the benefit of Borrower hereunder.

“Divide” means, with respect to any Person that is an entity, the dividing of such Person into two or more separate Persons, with the dividing Person either continuing or terminating its existence as part of such division, including as contemplated under Section 18-217 of the Delaware Limited Liability Company Act for limited liability companies formed under Delaware law, or any analogous action taken pursuant to any other statute with respect to any corporation, limited liability company, partnership, or other entity.

“Early Termination Fee” is defined in Section 2.5(b) hereof.

“Equipment” means all present and future machinery, equipment, tenant improvements, furniture, fixtures, vehicles, tools, parts and attachments in which Borrower has any interest.

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

“E-System” means any electronic system approved by Bank, including any Internet or extranet-based site, whether such electronic system is owned, operated or hosted by Bank, any of its Affiliates or any other Person, providing for access to data protected by passcodes or other security system, or otherwise used to facilitate communication between Borrower and Bank with respect to the Loan Documents.

“Event of Default” has the meaning assigned in Article 8.

“GAAP” means generally accepted accounting principles, consistently applied, as in effect from time to time in the United States.

“Indebtedness” means (a) all indebtedness for borrowed money or the deferred purchase price of property or services, including without limitation 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, and (d) all Contingent Obligations, including but not limited to any sublimit contained herein.

“Insolvency Proceeding” means any proceeding commenced by or against any Person or entity under any provision of the United States Bankruptcy Code, as amended, or under any other bankruptcy or insolvency law, including assignments for the benefit of creditors, formal or informal moratoria, compositions, extension generally with its creditors, or proceedings seeking reorganization, arrangement, or other relief.

“Intellectual Property” means all of Borrower’s right, title, and interest in and to the following:

- (a) Copyrights, Trademarks and Patents;
- (b) Any and all trade secrets, and any and all intellectual property rights in computer software and computer software products now or hereafter existing, created, acquired or held;
- (c) Any and all design rights which may be available to Borrower now or hereafter existing, created, acquired or held;
- (d) Any and all claims for damages by way of past, present and future infringement of any of the rights included above, with the right, but not the obligation, to sue for and collect such damages for said use or infringement of the intellectual property rights identified above;
- (e) All licenses or other rights to use any of the Copyrights, Patents or Trademarks, and all license fees and royalties arising from such use to the extent permitted by such license or rights;
- (f) All amendments, renewals and extensions of any of the Copyrights, Trademarks or Patents; and
- (g) All proceeds and products of the foregoing, including without limitation all payments under insurance or any indemnity or warranty payable in respect of any of the foregoing.

“Inventory” means all present and future inventory in which Borrower has any interest.

“Investment” means any beneficial ownership of (including stock, partnership or limited liability company interest or other securities) any Person, or any loan, advance or capital contribution to any Person.

“IRC” means the Internal Revenue Code of 1986, as amended, and the regulations thereunder.

“Lien” means any mortgage, lien, deed of trust, charge, pledge, security interest or other encumbrance.

“Loan Documents” means, collectively, this Agreement, any note or notes executed by Borrower, and any other document, instrument or agreement entered into in connection with this Agreement, all as amended or extended from time to time.

“Material Adverse Effect” means a material adverse effect on (i) the operations, business or financial condition of Borrower and its Subsidiaries taken as a whole, (ii) the ability of Borrower to repay the Obligations or otherwise perform its obligations under the Loan Documents, or (iii) Borrower’s interest in, or the value, perfection or priority of Bank’s security interest in the Collateral.

“Obligations” means all debt, principal, interest, Bank Expenses and other amounts owed to Bank by Borrower pursuant to this Agreement or any other agreement, whether absolute or contingent, due or to become due, now existing or hereafter arising, including any interest that accrues after the commencement of an Insolvency Proceeding and including any debt, liability, or obligation owing from Borrower to others that Bank may have obtained by assignment or otherwise.

“Patents” means all patents, patent applications and like protections including without limitation improvements, divisions, continuations, renewals, reissues, extensions and continuations-in-part of the same.

“Periodic Payments” means all installments or similar recurring payments that Borrower may now or hereafter become obligated to pay to Bank pursuant to the terms and provisions of any instrument, or agreement now or hereafter in existence between Borrower and Bank.

“Permitted Liens” means the following:

- (a) Any Liens existing on the Closing Date and disclosed in the Schedule (excluding Liens to be satisfied with the proceeds of the Credit Extensions) or arising under this Agreement, the other Loan Documents, or any other agreement in favor of Bank;
- (b) Liens for taxes, fees, assessments or other governmental charges or levies, either not delinquent or being contested in good faith by appropriate proceedings and for which Borrower maintains adequate reserves;
- (c) Liens not to exceed \$2,500,000 in the aggregate at any time (i) upon or in any Equipment (other than Equipment financed by a Credit Extension) acquired or held by Borrower or any of its Subsidiaries to secure the purchase price of such Equipment or indebtedness incurred solely for the purpose of financing the acquisition or lease of such Equipment, or (ii) existing on such Equipment at the time of its acquisition, in each case provided that the Lien is confined solely to the property so acquired and improvements thereon, and the proceeds of such Equipment;
- (d) Liens arising directly from Permitted Secured Indebtedness;
- (e) Liens incurred in connection with the extension, renewal or refinancing of the indebtedness secured by Liens of the type described in clauses (a) through (c) 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 does not increase; and
- (f) Liens arising from judgments, decrees or attachments in circumstances not constituting an Event of Default under Sections 8.4 (attachment) or 8.7 (judgments).

“Permitted Secured Indebtedness” means:

- (a) Indebtedness of Borrower in favor of Bank arising under this Agreement or any other Loan Document;
- (b) Indebtedness existing on the Closing Date and disclosed in the Schedule;
- (c) Indebtedness not to exceed \$2,500,000 in the aggregate at any time secured by a lien described in clause (c) of the defined term “Permitted Liens,” provided such Indebtedness does not exceed at the time it is incurred the lesser of the cost or fair market value of the property financed with such Indebtedness; and
- (d) Extensions, refinancings and renewals of any items of Permitted Secured Indebtedness, provided that the principal amount is not increased or the terms modified to impose more burdensome terms upon Borrower or its

Subsidiary, as the case may be.

“Permitted Transfer” means the conveyance, sale, lease, transfer or disposition by Borrower or any Subsidiary of:

- (a) Inventory in the ordinary course of business;
- (b) licenses and similar arrangements for the use of the property of Borrower or its Subsidiaries in the ordinary course of business;
- (c) worn-out, surplus or obsolete Equipment not financed with the proceeds of Credit Extensions;
- (d) grants of security interests and other Liens that constitute Permitted Liens;
- (e) subject to Borrower’s compliance with the terms of this Agreement, including but not limited to Sections 6.6 and 6.7 hereof, Cash from Borrower’s accounts at Bank to accounts outside of Bank; and
- (f) other assets of Borrower or its Subsidiaries that do not in the aggregate exceed \$250,000 during any fiscal year.

“Person” means any individual, sole proprietorship, partnership, limited liability company, joint venture, trust, unincorporated organization, association, corporation, institution, public benefit corporation, firm, joint stock company, estate, entity or governmental agency.

“Prime Rate” means the variable rate of interest, per annum, most recently announced by Bank, as its “prime rate,” whether or not such announced rate is the lowest rate available from Bank.

“Prior Loan Agreement” is defined in the recitals to this Agreement.

“Responsible Officer” means each of the Chief Executive Officer, the Chief Operating Officer, the Chief Financial Officer, Vice President of Finance and the Controller of Borrower, as well as any other officer or employee identified as an Authorized Officer in the corporate resolution delivered by Borrower to Bank in connection with this Agreement.

“Schedule” means the schedule of exceptions attached hereto and approved by Bank, if any.

“SOS Reports” means the official reports from the Secretaries of State of the state where Borrower’s chief executive office is located, the state of Borrower’s formation and other applicable federal, state or local government offices identifying all current security interests filed in the Collateral and Liens of record as of the date of such report.

“Subordinated Debt” means any debt incurred by Borrower that is subordinated in writing to the debt owing by Borrower to Bank on terms reasonably acceptable to Bank (and identified as being such by Borrower and Bank).

“Subsidiary” means any corporation, partnership or limited liability company or joint venture in which (i) any general partnership interest or (ii) more than 50% of the stock, limited liability company interest or joint venture of which by the terms thereof ordinary voting power to elect the Board of Directors, managers or trustees of the entity, at the time as of which any determination is being made, is owned by Borrower, either directly or through an Affiliate.

“Term Loan Maturity Date” means June 30, 2027.

“Trademarks” means any trademark and servicemark rights, whether registered or not, applications to register and registrations of the same and like protections, and the entire goodwill of the business of Borrower connected with and symbolized by such trademarks.

“Transfer” means convey, sell, lease, license, transfer, or otherwise dispose of.

6.

DEBTOR: PRECISION BIOSCIENCES, INC.

SECURED PARTY: BANC OF CALIFORNIA

EXHIBIT B

COLLATERAL DESCRIPTION ATTACHMENT TO LOAN AND SECURITY AGREEMENT

(a) All personal property of Borrower (herein referred to as “Borrower” or “Debtor”) held in that certain Cash Security Account (as such term is defined in that certain Amended and Restated Loan and Security, dated as of July 31, 2024, between Borrower and Bank (herein referred to as “Bank” or “Secured Party”), as the same may from time to time be amended, modified, supplemented, or restated) whether presently existing or hereafter earned, deposited, or otherwise acquired, and

(b) all of Debtor’s books and records with respect to any of the foregoing, as well as any and all cash proceeds and/or noncash proceeds of any of the foregoing.

All terms above have the meanings given to them in the North Carolina Uniform Commercial Code, as amended or supplemented from time to time, including revised Article 9 of the Uniform Commercial Code-Secured Transactions.

EXHIBIT C

LOAN ADVANCE/PAYDOWN REQUEST FORM
[Please refer to New Borrower Kit]

EXHIBIT D

COMPLIANCE CERTIFICATE
[Please refer to New Borrower Kit]

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

I, Michael Amoroso, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2024 of Precision BioSciences, 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.

Date: November 4, 2024

By: _____ /s/ Michael Amoroso

Michael Amoroso
President, Chief Executive Officer and Director
(principal executive officer)

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

I, John Alexander Kelly, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2024 of Precision BioSciences, 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.

Date: November 4, 2024

By: _____
John Alexander Kelly
Chief Financial Officer
(principal financial officer)

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of Precision BioSciences, Inc. (the "Company") on Form 10-Q for the quarterly period ended September 30, 2024 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 4, 2024

By: _____ /s/ Michael Amoroso
Michael Amoroso
President, Chief Executive Officer and Director
(principal executive officer)

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of Precision BioSciences, Inc. (the “Company”) on Form 10-Q for the quarterly period ended September 30, 2024 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 4, 2024

By: _____
/s/ John Alexander Kelly
John Alexander Kelly
Chief Financial Officer
(principal financial officer)
