Table of Contents

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, 2023

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: 001-40502

Lyell Immunopharma, Inc.
(Exact Name of Registrant as Specified in its Charter)

Delaware	**83-1300510**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
201 Haskins Way **South San Francisco, California**	**94080**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: **(650) 695-0677**

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, $0.0001 par value per share	LYEL	The Nasdaq Global Select Market

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

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

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

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

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

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

As of November 2, 2023, the registrant had 251,868,968 shares of common stock, $0.0001 par value per share, outstanding.

Lyell Immunopharma, Inc.

Table of Contents

		Page
Special Note Regarding Forward-Looking Statements		1
PART I—FINANCIAL INFORMATION		
Item 1.	Financial Statements (unaudited)	3
	Condensed Consolidated Balance Sheets	3
	Condensed Consolidated Statements of Operations and Comprehensive Loss	4
	Condensed Consolidated Statements of Stockholders' Equity	5
	Condensed Consolidated Statements of Cash Flows	7
	Notes to Unaudited Condensed Consolidated Financial Statements	8
Item 2.	Management's Discussion and Analysis of Financial Condition and Results of Operations	21
Item 3.	Quantitative and Qualitative Disclosures About Market Risk	31
Item 4.	Controls and Procedures	31
PART II—OTHER INFORMATION		
Item 1.	Legal Proceedings	33
Item 1A.	Risk Factors	33
Item 2.	Unregistered Sales of Equity Securities and Use of Proceeds	69
Item 3.	Defaults Upon Senior Securities	69
Item 4.	Mine Safety Disclosures	69
Item 5.	Other Information	69
Item 6.	Exhibits	71
Signature		72

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements. All statements other than statements of historical facts contained in this Quarterly Report on Form 10-Q, including statements regarding our future results of operations and financial position, business strategy, product candidates, planned nonclinical studies and clinical trials, results of nonclinical studies and clinical trials, research and development costs, planned regulatory submissions, regulatory approvals and the timing and likelihood of success, as well as plans and objectives of management for future operations, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that are in some cases beyond our control and may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “would,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “believe,” “estimate,” “predict,” “potential” or “continue,” or the negative of these terms or other similar expressions. Forward-looking statements contained in this Quarterly Report on Form 10-Q include, but are not limited to, statements about:

- the sufficiency of our existing cash to fund our future operating expenses and capital expenditure requirements;
- the accuracy and timing of our estimates regarding expenses, revenue opportunities, capital requirements and needs for additional financing;
- the scope, progress, results and costs of developing LYL797, LYL845, LYL119 or any other product candidates we may develop, and conducting nonclinical studies and clinical trials, including for LYL797, LYL845 and LYL119;
- the timing and costs involved in obtaining and maintaining regulatory approvals of LYL797, LYL845, LYL119 or any other product candidates we may develop, and the timing or likelihood of regulatory filings and approvals, including any expectations regarding seeking special designations for our product candidates for various diseases;
- our plans relating to the commercialization of LYL797, LYL845, LYL119 or any other product candidates we may develop, if approved, including the geographic areas of focus and our ability to grow a sales force;
- the size of the market opportunities for LYL797, LYL845, LYL119 or any other product candidates we may develop in each of the diseases we may target;
- our reliance on third parties to conduct nonclinical research activities for LYL797, LYL845, LYL119 or any other product candidates we may develop;
- the characteristics, safety, efficacy and therapeutic effects of LYL797, LYL845, LYL119 or any other product candidates we may develop;
- our estimates of the number of patients in the United States who suffer from the diseases we target and the number of subjects that will enroll in our clinical trials;
- the progress and focus of our current and planned clinical trials of our product candidates, and the reporting of data from those trials, including the timing thereof;
- the ability of our clinical trials to demonstrate the safety and efficacy of LYL797, LYL845, LYL119 or any other product candidates we may develop, and other clinical trial results;
- the success of competing therapies that are, or may become, available;
- developments relating to our competitors and our industry, including any existing or future competing product candidates or therapies;
- our plans relating to the further development and manufacturing of LYL797, LYL845, LYL119 or any other product candidates we may develop, including additional indications that we may pursue;
- existing regulations and regulatory developments in the United States and other jurisdictions;
- our potential and ability to successfully manufacture and supply LYL797, LYL845, LYL119 or any other product candidates we may develop for clinical trials and for commercial use, if approved;
- the rate and degree of market acceptance, as well as the pricing and reimbursement, of LYL797, LYL845, LYL119 or any other product candidates we may develop, if approved;

- our continued reliance on third parties to assist us in conducting additional clinical trials of LYL797, LYL845, LYL119 or any other product candidates we may develop, and our potential reliance on third parties for the manufacture of our current or future product candidates;
- the scope of protection we are able to establish and maintain for intellectual property rights, including covering our product candidates and technology platforms;
- our ability to retain the continued service of our key personnel and to identify, hire and then retain additional qualified personnel;
- our expectations regarding the impact of inflation, macroeconomic conditions and geopolitical conflicts on our business and operations, including on our manufacturing suppliers, collaborators, contract research organizations (CROs) and employees;
- our anticipated use of our existing cash, cash equivalents and marketable securities; and
- our expectations related to the costs, timing and estimated financial impact of our planned reduction in workforce in the fourth quarter of 2023, including the estimated charges associated with the reduction in workforce.

We have based these forward-looking statements largely on our current expectations and projections about our business, the industry in which we operate and financial trends that we believe may affect our business, financial condition, results of operations and prospects, and these forward-looking statements are not guarantees of future performance or development. These forward-looking statements speak only as of the date of this Quarterly Report on Form 10-Q and are subject to a number of risks, uncertainties and assumptions described under “Risk Factors” in Part II, Item 1A, and elsewhere in this Quarterly Report on Form 10-Q. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur, and actual results could differ materially from those projected in these forward-looking statements. Except as required by applicable law, we undertake no obligation to update or supplement any forward-looking statements publicly, or to update or supplement the reasons that actual results could differ materially from those projected in these forward-looking statements, even if new information becomes available in the future.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this Quarterly Report on Form 10-Q, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain, and you are cautioned not to unduly rely upon these statements.

PART I. FINANCIAL INFORMATION

ITEM 1. Financial Statements.

Lyell Immunopharma, Inc.
Condensed Consolidated Balance Sheets
(in thousands, except per share amounts)
(unaudited)

	September 30, 2023	December 31, 2022
ASSETS		
Current assets:		
Cash and cash equivalents	$ 286,214	$ 123,554
Marketable securities	289,217	516,598
Prepaid expenses and other current assets	11,423	11,143
Total current assets	586,854	651,295
Restricted cash	283	280
Marketable securities, non-current	22,729	70,117
Other investments	32,001	44,924
Property and equipment, net	108,096	123,023
Operating lease right-of-use assets	40,603	43,242
Other non-current assets	4,423	4,680
Total assets	$ 794,989	$ 937,561
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 4,365	$ 3,917
Accrued liabilities and other current liabilities	29,652	28,755
Success payment liabilities	1,047	4,356
Total current liabilities	35,064	37,028
Operating lease liabilities, non-current	58,576	63,168
Other non-current liabilities	3,776	4,113
Total liabilities	97,416	104,309
Commitments and contingencies (Note 11)		
Stockholders' equity:		
Preferred stock, $0.0001 par value; 10,000 shares authorized at September 30, 2023 and December 31, 2022; no shares issued and outstanding at September 30, 2023 and December 31, 2022	—	—
Common stock, $0.0001 par value; 500,000 shares authorized at September 30, 2023 and December 31, 2022; 251,869 and 249,567 shares issued and outstanding at September 30, 2023 and December 31, 2022, respectively	25	25
Additional paid-in capital	1,647,911	1,608,306
Accumulated other comprehensive loss	(1,181)	(7,599)
Accumulated deficit	(949,182)	(767,480)
Total stockholders' equity	697,573	833,252
Total liabilities and stockholders' equity	$ 794,989	$ 937,561

The accompanying notes are an integral part of these unaudited Condensed Consolidated Financial Statements.

Lyell Immunopharma, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(in thousands, except per share amounts)
(unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Revenue[1]	$ 25	$ 3	$ 117	$ 36,297
Operating expenses:				
Research and development	43,849	41,607	135,950	121,156
General and administrative	15,507	26,084	53,816	90,959
Other operating income, net	(292)	(1,251)	(2,149)	(3,544)
Total operating expenses	59,064	66,440	187,617	208,571
Loss from operations	(59,039)	(66,437)	(187,500)	(172,274)
Interest income, net	6,608	2,251	16,369	3,600
Other income (expense), net	1,578	(1,068)	2,352	(1,047)
Impairment of other investments	—	(5,000)	(12,923)	(5,000)
Total other income (loss), net	8,186	(3,817)	5,798	(2,447)
Net loss	(50,853)	(70,254)	(181,702)	(174,721)
Other comprehensive loss:				
Net unrealized gain (loss) on marketable securities	1,198	(1,645)	6,418	(8,373)
Comprehensive loss	$ (49,655)	$ (71,899)	$ (175,284)	$ (183,094)
Net loss per common share, basic and diluted	$ (0.20)	$ (0.28)	$ (0.73)	$ (0.71)
Weighted-average shares used to compute net loss per common share, basic and diluted	251,318	248,320	250,377	246,285

(1) Including related-party revenue of zero for both the three months ended September 30, 2023 and 2022, and zero and $36,299 for the nine months ended September 30, 2023 and 2022, respectively.

The accompanying notes are an integral part of these unaudited Condensed Consolidated Financial Statements.

Lyell Immunopharma, Inc.
Condensed Consolidated Statements of Stockholders' Equity
(in thousands)
(unaudited)

	Three Months Ended September 30, 2023					
	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance as of June 30, 2023	251,027	$ 25	$ 1,637,538	$ (2,379)	$ (898,329)	$ 736,855
Issuance of common stock upon exercise of stock options	646	—	72	—	—	72
Issuance of common stock in connection with restricted stock units, net of tax	196	—	(215)	—	—	(215)
Stock-based compensation	—	—	10,516	—	—	10,516
Other comprehensive income	—	—	—	1,198	—	1,198
Net loss	—	—	—	—	(50,853)	(50,853)
Balance as of September 30, 2023	251,869	$ 25	$ 1,647,911	$ (1,181)	$ (949,182)	$ 697,573

	Nine Months Ended September 30, 2023					
	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance as of December 31, 2022	249,567	$ 25	$ 1,608,306	$ (7,599)	$ (767,480)	$ 833,252
Issuance of common stock upon exercise of stock options	1,479	—	155	—	—	155
Issuance of common stock under employee stock purchase plan	543	—	1,163	—	—	1,163
Issuance of common stock in connection with restricted stock units, net of tax	280	—	(334)	—	—	(334)
Stock-based compensation	—	—	38,621	—	—	38,621
Other comprehensive income	—	—	—	6,418	—	6,418
Net loss	—	—	—	—	(181,702)	(181,702)
Balance as of September 30, 2023	251,869	$ 25	$ 1,647,911	$ (1,181)	$ (949,182)	$ 697,573

The accompanying notes are an integral part of these unaudited Condensed Consolidated Financial Statements.

Lyell Immunopharma, Inc.
Condensed Consolidated Statements of Stockholders' Equity
(in thousands)
(unaudited)

	Three Months Ended September 30, 2022					
	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance as of June 30, 2022	247,110	$ 25	$ 1,565,197	$ (8,351)	$ (688,829)	$ 868,042
Issuance of common stock upon exercise of stock options	1,375	—	5,127	—	—	5,127
Issuance of common stock in connection with restricted stock units, net of tax	105	—	(367)	—	—	(367)
Stock-based compensation	650	—	19,123	—	—	19,123
Other comprehensive loss	—	—	—	(1,645)	—	(1,645)
Net loss	—	—	—	—	(70,254)	(70,254)
Balance as of September 30, 2022	249,240	$ 25	$ 1,589,080	$ (9,996)	$ (759,083)	$ 820,026

	Nine Months Ended September 30, 2022					
	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance as of December 31, 2021	242,738	$ 24	$ 1,515,748	$ (1,623)	$ (584,362)	$ 929,787
Issuance of common stock upon exercise of stock options	3,513	1	9,251	—	—	9,252
Issuance of common stock under employee stock purchase plan	284	—	887	—	—	887
Issuance of common stock in connection with restricted stock units, net of tax	105	—	(367)	—	—	(367)
Stock-based compensation	2,600	—	63,561	—	—	63,561
Other comprehensive loss	—	—	—	(8,373)	—	(8,373)
Net loss	—	—	—	—	(174,721)	(174,721)
Balance as of September 30, 2022	249,240	$ 25	$ 1,589,080	$ (9,996)	$ (759,083)	$ 820,026

The accompanying notes are an integral part of these unaudited Condensed Consolidated Financial Statements.

Lyell Immunopharma, Inc.
Condensed Consolidated Statements of Cash Flows
(in thousands)
(unaudited)

	Nine Months Ended September 30,	
	2023	**2022**
CASH FLOWS FROM OPERATING ACTIVITIES		
Net loss	$ (181,702)	$ (174,721)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	38,621	63,561
Depreciation and amortization expense	15,193	12,979
Impairment of other investments	12,923	5,000
Net amortization and accretion on marketable securities	(6,212)	278
Change in fair value of success payment liabilities	(3,309)	2,177
Non-cash lease income	(1,344)	(1,104)
Loss on property and equipment disposals, net	1,072	97
Change in fair value of equity warrant	—	1,067
Changes in operating assets and liabilities:		
Prepaid expenses, other current assets and other assets	(23)	(672)
Accounts payable	1,039	1,193
Accrued liabilities and other current liabilities	1,020	(5,836)
Deferred revenue	—	(36,299)
Operating lease liabilities, non-current	—	3,331
Other non-current liabilities	(337)	(339)
Net cash used in operating activities	(123,059)	(129,288)
CASH FLOWS FROM INVESTING ACTIVITIES		
Purchases of property and equipment	(2,661)	(19,694)
Purchases of marketable securities	(220,095)	(346,647)
Sales and maturities of marketable securities	507,494	308,153
Net cash provided by (used in) investing activities	284,738	(58,188)
CASH FLOWS FROM FINANCING ACTIVITIES		
Proceeds from exercise of stock options	155	9,252
Proceeds from employee stock purchase plan	1,163	887
Taxes paid related to net share settlement of equity awards	(334)	(367)
Net cash provided by financing activities	984	9,772
Net increase (decrease) in cash, cash equivalents and restricted cash	162,663	(177,704)
Cash, cash equivalents and restricted cash at beginning of period	123,834	294,294
Cash, cash equivalents and restricted cash at end of period	$ 286,497	$ 116,590
Represented by:		
Cash and cash equivalents	$ 286,214	$ 116,311
Restricted cash	283	279
Total	$ 286,497	$ 116,590
SUPPLEMENTAL CASH FLOW INFORMATION		
Cash paid for amounts included in the measurement of lease liabilities	$ 8,030	$ 8,136
Cash received for amounts related to tenant improvement allowances	$ —	$ 3,238
Non-cash investing and financing activities:		
Purchases of property and equipment included in accounts payable and accrued liabilities	$ 2	$ 3,563

The accompanying notes are an integral part of these unaudited Condensed Consolidated Financial Statements.

Lyell Immunopharma, Inc.
Notes to Unaudited Condensed Consolidated Financial Statements

1. Organization

Lyell Immunopharma, Inc. (the "Company") was incorporated in Delaware in June 2018. The Company is a clinical-stage cell therapy company advancing a pipeline of product candidates for patients with solid tumors utilizing its proprietary ex vivo genetic and epigenetic T-cell reprogramming technologies. The Company's primary activities since incorporation have been to develop T-cell therapies, perform research and development, acquire technology, enter into strategic collaboration and license arrangements, enable and execute manufacturing activities in support of its product candidate development efforts, organize and staff the Company, conduct business planning, establish its intellectual property portfolio, submit regulatory submissions, execute clinical trials, raise capital and provide general and administrative support for these activities.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying unaudited Condensed Consolidated Financial Statements have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP"). The unaudited Condensed Consolidated Financial Statements include the accounts of the Company and its wholly-owned subsidiary. All significant intercompany transactions and balances have been eliminated in consolidation.

The Condensed Consolidated Balance Sheet as of December 31, 2022 included herein was derived from the audited consolidated financial statements as of that date. Certain information and footnote disclosures typically included in the Company's audited consolidated financial statements have been condensed or omitted. The accompanying unaudited Condensed Consolidated Financial Statements have been prepared on the same basis as the annual consolidated financial statements and reflect, in the opinion of management, all adjustments of a normal and recurring nature that are necessary for the fair presentation of the Company's financial position, results of operations and cash flows for the periods presented, but are not necessarily indicative of results to be expected for any future annual or interim period.

These unaudited Condensed Consolidated Financial Statements should be read in conjunction with the Company's audited financial statements and notes included in the Company's Annual Report on Form 10-K for the year ended December 31, 2022.

Liquidity and Management's Plan

The Company discovers and develops product candidates that involve experimental technologies. The product candidates may require several years and substantial expenditures to complete and ultimately may be unsuccessful. The Company plans to finance operations with available cash resources or from the issuance of equity or debt securities. The Company believes that its available cash, cash equivalents and marketable securities as of September 30, 2023 will be adequate to fund its operations at least through the next 12 months from the date these unaudited Condensed Consolidated Financial Statements are issued.

Use of Estimates

The preparation of the Company's Condensed Consolidated Financial Statements in conformity with GAAP requires management to make judgments, estimates and assumptions that affect reported amounts and related disclosures. Specific accounts that require management estimates include, but are not limited to, stock-based compensation, valuation of success payments, valuation of other investments, revenue recognition and accrued expenses. Management bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results could differ materially from those estimates.

In June 2022, the Company recorded an adjustment to revenue related to a change in estimate in connection with the Collaboration and License Agreement, entered into in 2019 and amended in June 2020 and December 2021 ("GSK Agreement") with GlaxoSmithKline Intellectual Property (No. 5) Limited and Glaxo Group Limited (together, "GSK"). The Company and GSK mutually agreed to conclude research activities on an undisclosed target for hematological cancers in June 2022. As a result, the Company decreased the related estimated project costs, which resulted in an increase in the measure of proportional cumulative performance.

This adjustment increased revenue by $35.3 million, decreased net loss by $35.3 million and resulted in a $0.14 reduction in the Company's basic and diluted net loss per common share for the nine months ended September 30, 2022.

Concentrations of Credit Risk and Off-balance Sheet Risk

The Company maintains its cash, cash equivalents and restricted cash with high quality, accredited financial institutions. Restricted cash is cash held in a bank account and is used as collateral associated with the Company's corporate credit card program. Cash, cash equivalents and restricted cash amounts, at times, may exceed federally insured limits. The Company also makes short-term investments in money market funds, U.S. Treasury securities, U.S. government agency securities and corporate debt securities, which can be subject to certain credit risk. However, the Company mitigates the risks by investing in high-grade instruments, limiting exposure to any one issuer or type of investment and monitoring the ongoing creditworthiness of the financial institutions and issuers. The Company has not experienced any credit losses in such accounts and does not believe it is exposed to significant risk on these funds. The Company has no off-balance sheet concentrations of credit risk, such as foreign currency exchange contracts, option contracts or other hedging arrangements.

Significant Accounting Policies

There have been no material changes to the significant accounting policies from the Annual Report on Form 10-K for the year ended December 31, 2022.

Recently Adopted Accounting Pronouncements

None.

3. License, Collaboration and Success Payment Agreements

Fred Hutch

License Agreement - In 2018, the Company entered into a license agreement with Fred Hutchinson Cancer Center ("Fred Hutch") that grants the Company a worldwide, sublicensable license under certain patent rights (exclusive) and certain technology (non-exclusive) to research, develop and commercialize products and processes for all fields of use utilizing chimeric antigen receptors ("CARs") and/or T-cell receptors ("TCRs"), subject to certain exceptions.

The Company is required to pay Fred Hutch annual license maintenance payments of $50,000 on the second anniversary of the effective date, and each anniversary of the effective date thereafter until the first commercial sale of a licensed product.

Collaboration - In 2018, the Company entered into a research and collaboration agreement with Fred Hutch ("Fred Hutch Collaboration Agreement") focused on research and development of cancer immunotherapy products. The Company funded aggregate research performed by Fred Hutch of $12.0 million under the Fred Hutch Collaboration Agreement, with the research conducted in accordance with a research plan and budget approved by the parties. The Fred Hutch Collaboration Agreement has a six-year term. The Company incurred $0.3 million and $0.4 million in expense in connection with the Fred Hutch Collaboration Agreement for the three months ended September 30, 2023 and 2022, respectively, and $0.7 million and $1.4 million for the nine months ended September 30, 2023 and 2022, respectively.

Success Payments - In 2018, the Company granted Fred Hutch rights to certain success payments, pursuant to the terms of the Fred Hutch Collaboration Agreement. The potential payments for the Fred Hutch success payments are based on multiples of increased value ranging from 10x to 50x based on a comparison of the per share fair market value of the Company's common stock relative to the original $1.83 per share issuance price of the Company's Series A convertible preferred stock, which converted into an equal number of shares of the Company's common stock in connection with the Company's initial public offering ("IPO"). The aggregate success payments to Fred Hutch are not to exceed $200.0 million, which would only occur upon a 50x increase in value. Each threshold is associated with a success payment, ascending from $10.0 million at $18.29 per share to $200.0 million at $91.44 per share, payable if such threshold is reached during the measurement period. Any previous success payments made are credited against the success payment owed as of any valuation date, such that Fred Hutch does not receive multiple success payments in connection with the same threshold. The term of the success payment agreement ends on the earlier to occur of (i) the nine-year anniversary of the date of the agreement and (ii) a change in control transaction.

The following table summarizes the aggregate potential success payments, which are payable to Fred Hutch in cash or cash equivalents, or at the Company's discretion, publicly-tradeable shares of the Company's common stock:

Multiple of initial equity value at issuance	**10x**	**20x**	**30x**	**40x**	**50x**
Per share common stock price required for payment	$ 18.29	$ 36.58	$ 54.86	$ 73.15	$ 91.44
Aggregate success payment(s) (in millions)	$ 10	$ 40	$ 90	$ 140	$ 200

The success payments will be owed if the per share fair value of the Company's common stock on the contractually specified valuation measurement dates during the term of the success payment agreement equals or exceeds the above outlined multiples. The valuation measurement dates are triggered by the following events: the one-year anniversary of the Company's IPO and each two-year anniversary of the Company's IPO thereafter, the closing of a change in control transaction and the last day of the term of the success payment agreement, unless the term has ended due to the closing of a change of control transaction. As of September 30, 2023, no success payments have been incurred as the per share fair value of the Company's common stock was below the price required for payment.

The success payment liability was estimated at fair value at inception and at each subsequent reporting period and the associated expense was accreted over the service period of the success payment obligations as research and development expense through 2022. As of December 31, 2022, the Company's associated success payment liability was fully accreted to fair value as Fred Hutch had provided the requisite service obligation to earn the potential success payment consideration under the continued collaboration. For the three and nine months ended September 30, 2023 and future periods, the change in the Fred Hutch success payment liability fair value is recognized in other income (expense), net, as the requisite service obligation had been met. The success payment liability was $0.4 million and $2.5 million as of September 30, 2023 and December 31, 2022, respectively. With respect to the Fred Hutch Collaboration Agreement success payment obligations, the Company recognized a gain of $1.5 million and expense of $1.4 million for the three months ended September 30, 2023 and 2022, respectively, and a gain of $2.1 million and expense of $0.8 million for the nine months ended September 30, 2023 and 2022, respectively.

Stanford

License Agreement - In 2019, the Company entered into a license agreement with The Board of Trustees of the Leland Stanford Junior University ("Stanford") to license specified patent rights. The Company is required to pay Stanford annual license maintenance payments of $50,000 on the second anniversary of the effective date, and each anniversary of the effective date thereafter until the date of the first commercial sale of a licensed product.

Milestone payments to Stanford of up to a maximum of $3.7 million per target are payable upon achievement of certain specified clinical and regulatory milestones. The Company is also obligated to pay Stanford $2.5 million collectively for all licensed products upon the achievement of a certain commercial milestone. Additionally, low single-digit tiered royalties based on annual net sales of the licensed products are payable to Stanford.

Collaboration Agreement - In October 2020, the Company entered into a research and collaboration agreement with Stanford ("Stanford Collaboration Agreement"), focused on research and development of cellular immunotherapy products. The Stanford Collaboration Agreement has a four-year term. The Company is committed to fund aggregate research performed by Stanford of $12.0 million under the Stanford Collaboration Agreement, and the research will be conducted in accordance with a research plan and budget approved by the parties. The Company incurred $0.8 million in expense in connection with the Stanford Collaboration Agreement for both the three months ended September 30, 2023 and 2022, respectively, and $2.3 million for both the nine months ended September 30, 2023 and 2022, respectively.

Success Payments - In October 2020, the Company granted Stanford rights to certain success payments, pursuant to the terms of the Stanford Collaboration Agreement. The potential payments for the Stanford Collaboration Agreement success payments are based on multiples of increased value ranging from 10x to 50x based on a comparison of the per share fair market value of the Company's common stock relative to the original $1.83 issuance price of the Company's Series A convertible preferred stock, which converted into an equal number of shares of the Company's common stock in connection with the Company's IPO. The aggregate success payments to Stanford are not to exceed $200.0 million, which would only occur upon a 50x increase in value. Each threshold is associated with a success payment, ascending from $10.0 million at $18.29 per share to $200.0 million at $91.44 per share, payable if such threshold is reached during the measurement period. Any previous success payments made are credited against the success payment owed as of any valuation date, so that Stanford does not receive multiple success payments in connection with the same threshold. The term of each success payment agreement ends on the earlier to occur of (i) the nine-year anniversary of the date of the agreement and (ii) a change in control transaction.

The following table summarizes the aggregate potential success payments, which are payable to Stanford in cash or cash equivalents, or at the Company's discretion, publicly-tradeable shares of the Company's common stock:

Multiple of initial equity value at issuance	**10x**	**20x**	**30x**	**40x**	**50x**
Per share common stock price required for payment	$ 18.29	$ 36.58	$ 54.86	$ 73.15	$ 91.44
Aggregate success payment(s) (in millions)	$ 10	$ 40	$ 90	$ 140	$ 200

The success payments will be owed if the per share fair value of the Company's common stock on the contractually specified valuation measurement dates during the term of the success payment agreement equals or exceeds

the above outlined multiples. The valuation measurement dates are triggered by the following events: the one-year anniversary of the Company's IPO and each two-year anniversary of the Company's IPO thereafter, the closing of a change in control transaction and the last day of the term of the success payment agreement, unless the term has ended due to the closing of a change of control transaction. As of September 30, 2023, no success payments have been incurred as the per share fair value of the Company's common stock was below the price required for payment.

The estimated fair values of the success payments to Stanford as of September 30, 2023 and December 31, 2022 were $0.8 million and $3.3 million, respectively. The success payment liability is estimated at the fair value at inception and at each subsequent reporting period and the expense is accreted over the service period of the Stanford Collaboration Agreement as research and development expense. The success payment liability was $0.6 million and $1.9 million as of September 30, 2023 and December 31, 2022, respectively. With respect to the Stanford Collaboration Agreement success payment obligations, the Company recognized a gain of $1.2 million and expense of $1.0 million for the three months ended September 30, 2023 and 2022, respectively, and a gain of $1.2 million and expense of $1.4 million for the nine months ended September 30, 2023 and 2022, respectively.

GSK

In 2019, the Company entered into the GSK Agreement with GSK for potential T-cell therapies that apply the Company's platform technologies and cell therapy innovations with TCRs or CARs under distinct collaboration programs. The GSK Agreement defined two initial collaboration targets, LYL331 and LYL132, and allowed GSK to nominate seven additional targets through July 2024, though no additional targets were nominated over the life of the GSK Agreement. The Company was expected to perform research and development services for each selected target up until a defined point (the "GSK Option Point"), at which time GSK would decide whether or not to exercise an option to obtain a license from the Company ("License Option") and take over the future development and commercialization. In April 2021, GSK exercised the License Option on LYL331 (NY-ESO-1 TCR with c-Jun) and assumed sole responsibility for future development and commercialization of the program at its own cost and expense. The investigational new drug ("IND") application for LYL132 was cleared in January 2022, though no patients were treated, and the IND for LYL331 was not submitted to the U.S. Food and Drug Administration. GSK terminated the GSK Agreement effective December 24, 2022, and Lyell has also discontinued any further work on these programs. There are no future performance obligations associated with the GSK Agreement.

The Company received a non-refundable upfront payment of $45.0 million under the GSK Agreement. In connection with the GSK Agreement, in May 2019, the Company also entered into a stock purchase agreement with GSK, pursuant to which the Company agreed to sell 30,253,189 shares of Series AA convertible preferred stock at a price of $6.78 per share, which was above the issuance date estimated fair value of $4.84 per share. The difference between the per share values resulted in $58.6 million additional deemed consideration, bringing the total upfront consideration of the GSK Agreement to $103.6 million.

The GSK Agreement was deemed to be within the scope of Accounting Standards Codification ("ASC") 606, *Revenue from Contracts with Customers*, because GSK engaged the Company to initially provide research and development services, which were outputs of its ongoing activities, in exchange for consideration. In June 2022, the Company recorded an adjustment to revenue related to a change in estimate in connection with the GSK Agreement due to GSK and the Company mutually agreeing to conclude research activities on an undisclosed target for hematological cancers. The change in estimate decreased the related estimated project costs, which resulted in an increase in the measure of proportional cumulative performance. This adjustment increased revenue by $35.3 million, decreased net loss by $35.3 million and resulted in a $0.14 reduction in the Company's basic and diluted net loss per common share for the nine months ended September 30, 2022.

The Company recognized no revenue related to the research and development services related to the two initial targets for both the three months ended September 30, 2023 and 2022, and zero and $36.3 million for the nine months ended September 30, 2023 and 2022, respectively. As of September 30, 2023 and December 31, 2022, there were no contract assets or contract liabilities related to the license contract.

PACT

In June 2020, the Company entered into a commitment agreement ("PACT Commitment Agreement") with PACT Pharma, Inc. ("PACT") to jointly develop and test an anti-cancer T-cell therapy against solid tumors, in connection with which it also purchased PACT Series C-1 convertible preferred stock, which was recorded in other investments at $36.4 million in the Company's Condensed Consolidated Balance Sheet. In December 2021, the Company recorded a $36.4 million impairment expense for its investment in PACT.

In February 2021, the Company filed a demand for arbitration seeking, among other things, rescission of the PACT Commitment Agreement. On October 1, 2022, the Company entered into a settlement agreement to resolve its

outstanding legal dispute with PACT, pursuant to which PACT issued shares of PACT's Series D convertible preferred stock to the Company in exchange for the Company's tender of its PACT Series C-1 convertible preferred stock. The settlement agreement also included the termination of the commitment agreement with PACT. The Company recorded a gain of $2.9 million in October 2022 for the estimated fair value of the PACT Series D convertible preferred stock, which was included in other investments in the Company's Condensed Consolidated Balance Sheet as of December 31, 2022. In connection with the preparation of the financial statements for the nine months ended September 30, 2023, the Company performed a qualitative assessment of potential indicators of impairment of the PACT Series D convertible preferred stock investment, resulting in $2.9 million impairment expense for the nine months ended September 30, 2023. See Note 5, *Other Investments*, for additional details regarding the PACT investment impairment.

4. Cash Equivalents and Marketable Securities

The fair value and amortized cost of cash equivalents and marketable securities by major security type are as follows (in thousands):

	September 30, 2023			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Money market funds	$ 168,800	$ —	$ —	$ 168,800
U.S. Treasury securities	249,643	6	(492)	249,157
U.S. government agency securities	69,497	—	(544)	68,953
Corporate debt securities	89,714	—	(151)	89,563
Total cash equivalents and marketable securities	$ 577,654	$ 6	$ (1,187)	$ 576,473

Classified as:	Fair Value
Cash equivalents	$ 264,527
Marketable securities	289,217
Marketable securities, non-current	22,729
Total cash equivalents and marketable securities	$ 576,473

	December 31, 2022			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Money market funds	$ 67,970	$ —	$ —	$ 67,970
U.S. Treasury securities	277,056	—	(5,257)	271,799
U.S. government agency securities	135,460	1	(1,416)	134,045
Corporate debt securities	221,608	3	(930)	220,681
Total cash equivalents and marketable securities	$ 702,094	$ 4	$ (7,603)	$ 694,495

Classified as:	Fair Value
Cash equivalents	$ 107,780
Marketable securities	516,598
Marketable securities, non-current	70,117
Total cash equivalents and marketable securities	$ 694,495

The fair values of securities held by the Company in an unrealized loss position for less than 12 months were $247.6 million and $287.8 million as of September 30, 2023 and December 31, 2022, respectively. The fair values of securities held by the Company in an unrealized loss position for greater than 12 months were $104.9 million and $278.7 million as of September 30, 2023 and December 31, 2022, respectively. As of September 30, 2023 and December 31, 2022, all of the Company's marketable securities had a maturity date of two years or less, were available for use and were classified as available-for-sale. The Company does not intend to sell these securities nor does the Company believe that it will be required to sell these securities before recovery of their amortized cost basis. The Company determined that there was no material change in the credit risk of the above investments as of both September 30, 2023 and

December 31, 2022. As such, an allowance for credit losses has not been recognized. Gross realized gains and losses were *de minimis* for the three and nine months ended September 30, 2023 and 2022 and as a result, amounts reclassified out of accumulated other comprehensive loss for the three and nine months ended September 30, 2023 and 2022 were also *de minimis*. See Note 6, *Fair Value Measurements*, for additional information regarding cash equivalents and marketable securities.

5. Other Investments

From time to time, the Company makes minority ownership strategic investments. As of September 30, 2023 and December 31, 2022, the aggregate carrying amounts of the Company's strategic investments in non-publicly traded companies were $32.0 million and $44.9 million, respectively. These investments are measured at initial cost, minus impairment, if any, and plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer. Cumulative impairments of strategic investments in equity investments without readily determinable fair values still held as of September 30, 2023 and December 31, 2022 were $17.9 million and $5.0 million, respectively.

As a part of the acquisition of each of the Company's other investments, the Company determines whether an investment or other interest is considered a variable interest. As of September 30, 2023 and December 31, 2022, the Company held an interest in two entities that were concluded to be variable interests for which the Company was not the primary beneficiary. As of September 30, 2023 and December 31, 2022, the carrying value and maximum exposure to loss of the Company's variable interests were $13.0 million and $15.9 million, respectively, which is recorded in other investments in the Company's Condensed Consolidated Balance Sheets.

In October 2022, the Company received shares of PACT's Series D non-voting convertible preferred stock (See Note 3, *License, Collaboration and Success Payment Agreements*). The Company recognized its investment in PACT preferred stock at its estimated fair value of $2.9 million on October 1, 2022, which was included in the Company's Condensed Consolidated Balance Sheet within other investments as of December 31, 2022.

For the nine months ended September 30, 2023 and the three and nine months ended September 30, 2022, the Company performed qualitative assessments of potential indicators of impairment and determined that indicators existed for certain of its other investments. The Company did not identify any impairments for the three months ended September 30, 2023. The Company did identify impairments for the nine months ended September 30, 2023 and for the three and nine months ended September 30, 2022. While there was no single event or factor in each instance, the Company considered the underlying companies' operating cash flow requirements over the next year, liquid asset balances to fund those requirements and the underlying companies' inability to raise funds as indicators of impairment. Due to these indicators, the Company assessed the valuation of these investments and determined the fair values to be negligible and the impairments to be other-than-temporary in nature. As a result, the Company recorded a $2.9 million impairment expense for the PACT Series D convertible preferred stock investment and a $10.0 million impairment expense for one investment for the nine months ended September 30, 2023 and $5.0 million impairment expense for one investment for the three and nine months ended September 30, 2022, which were recorded within impairment of other investments on the Condensed Consolidated Statements of Operations and Comprehensive Loss and as reductions to the investment balances within other investments on the Condensed Consolidated Balance Sheets.

6. Fair Value Measurements

The following table sets forth the fair value of the Company's financial assets and liabilities measured at fair value on a recurring basis based on the three-tier fair value hierarchy (in thousands):

	September 30, 2023			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Money market funds	$ 168,800	$ —	$ —	$ 168,800
U.S. Treasury securities	—	249,157	—	249,157
U.S. government agency securities	—	68,953	—	68,953
Corporate debt securities	—	89,563	—	89,563
Total financial assets	$ 168,800	$ 407,673	$ —	$ 576,473
Financial liabilities:				
Success payment liabilities	$ —	$ —	$ 1,047	$ 1,047
Total financial liabilities	$ —	$ —	$ 1,047	$ 1,047

	December 31, 2022			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Money market funds	$ 67,970	$ —	$ —	$ 67,970
U.S. Treasury securities	—	271,799	—	271,799
U.S. government agency securities	—	134,045	—	134,045
Corporate debt securities	—	220,681	—	220,681
Total financial assets	$ 67,970	$ 626,525	$ —	$ 694,495
Financial liabilities:				
Success payment liabilities	$ —	$ —	$ 4,356	$ 4,356
Total financial liabilities	$ —	$ —	$ 4,356	$ 4,356

The Company measures the fair value of money market funds based on quoted prices in active markets for identical assets or liabilities. The Level 2 marketable securities include U.S. Treasury securities, U.S. government agency securities and corporate debt securities, which are valued using third-party pricing sources. The pricing services applied industry standard valuation models. Inputs utilized include market pricing based on real-time trade data for the same or similar securities and other significant inputs derived from or corroborated by observable market data.

The Company's Level 3 financial instruments fair values are estimated using valuation models, including Monte Carlo simulations for the Company's success payment liabilities. Monte Carlo simulations model the future movement of stock prices based on several key variables combined with empirical knowledge of the process governing the behavior of the stock price. The following variables were incorporated in the estimated fair value of the success payment liabilities: fair value of the Company's common stock, expected volatility, the risk-free interest rate and the estimated number and timing of valuation measurement dates on the basis of which payments may be triggered. The computation of expected volatility was estimated based on available information about the historical volatility of stocks of similar publicly traded companies for a period matching the expected term assumption.

The following assumptions were incorporated into the calculation of the estimated fair value of the Fred Hutch success payment liability:

	September 30, 2023	December 31, 2022
Fair value of common stock	$ 1.47	$ 3.47
Risk-free interest rate	4.26% - 5.42%	3.58% - 4.65%
Expected volatility	80.0 %	80.0 %
Expected term (in years)	0.71 - 4.22	0.46 - 4.97

The following assumptions were incorporated into the calculation of the estimated fair value of the Stanford success payment liability:

	September 30, 2023	December 31, 2022
Fair value of common stock	$ 1.47	$ 3.47
Risk-free interest rate	4.21% - 5.42%	3.58% - 4.65%
Expected volatility	80.0 %	80.0 %
Expected term (in years)	0.71 - 6.00	0.46 - 6.75

The Company utilizes estimates and assumptions in determining the estimated success payment liabilities and associated changes in fair value. A small change in the valuation of the Company's common stock may have a relatively large change in the estimated fair value of the success payment liability and associated changes in fair value.

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

	Success Payment Liabilities
Balance at December 31, 2022	$ 4,356
Change in fair value [(1)]	(3,309)
Balance at September 30, 2023	$ 1,047

(1) The change in the fair value associated with the Fred Hutch success payment liabilities of approximately $(2.1) million is recorded in other income (expense), net. The change in the fair value of approximately $(1.2) million associated with the Stanford success payment liabilities is recorded as research and development expenses. (See Note 3, *License, Collaboration and Success Payment Agreements).*

In October 2022, the Company received non-voting PACT Series D convertible preferred stock with a fair value of $2.9 million (See Note 3, *License, Collaboration and Success Payment Agreements*). In connection with the preparation of the financial statements for the nine months ended September 30, 2023, the Company performed a qualitative assessment of potential indicators of impairment of the PACT Series D convertible preferred stock investment, resulting in $2.9 million impairment expense for the nine months ended September 30, 2023. See Note 5, *Other Investments*, for additional details regarding the PACT investment impairment.

7. Leases

The Company's lease portfolio is comprised of operating leases for laboratory, office and manufacturing facilities located in South San Francisco, California, and Seattle and Bothell, Washington with contractual periods expiring between December 2028 and March 2031. In addition to minimum rent, the leases require payment of real estate taxes, insurance, common area maintenance charges and other executory costs. These additional charges are considered variable lease costs and are recognized in the period in which the costs are incurred.

The following table summarizes the Company's future minimum operating lease commitments, including expected lease incentives to be received, as of September 30, 2023 (in thousands):

Year Ending December 31:		
2023 (remaining three months)	$	2,815
2024		11,347
2025		11,859
2026		12,209
2027		12,569
Thereafter		35,525
Total undiscounted lease payments		86,324
Less: imputed interest		(21,687)
Total operating lease liabilities	$	64,637

Reported as of September 30, 2023:		
Short-term portion of lease liabilities (included in accrued liabilities and other current liabilities)	$	6,061
Operating lease liabilities, non-current		58,576
Total	$	64,637

The operating lease costs for all operating leases were $2.3 million for both the three months ended September 30, 2023 and 2022, and $6.7 million and $7.0 million for the nine months ended September 30, 2023 and 2022, respectively. The operating lease costs and total commitments for short-term leases were *de minimis* for the three and nine months ended September 30, 2023 and 2022. Variable lease costs for operating leases were $1.3 million for both the three months ended September 30, 2023 and 2022, and $4.1 million and $3.8 million for the nine months ended September 30, 2023 and 2022, respectively. The weighted-average remaining lease terms for operating leases were 7.0 and 7.8 years as of September 30, 2023 and December 31, 2022, respectively. The weighted-average discount rates for operating leases were 8.5% as of both September 30, 2023 and December 31, 2022.

In May 2021, the Company entered into a sublease, whereby the Company agreed to sublease approximately 11,000 square feet of its space in South San Francisco, California currently leased by the Company. The sublease is classified as an operating lease and will expire in March 2031. The Company recognized sublease income for this sublease of $0.2 million for both the three months ended September 30, 2023 and 2022, and $0.6 million for both the nine months ended September 30, 2023 and 2022.

In September 2021, the Company entered into a sublease with Sonoma Biotherapeutics, Inc. ("Sonoma"), a related party, whereby the Company agreed to sublease approximately 18,000 square feet of space in South San Francisco, California currently leased by the Company. See Note 12, *Related-Party Transactions.* As a part of the sublease, in September 2021, the Company received a $4.6 million tenant improvement contribution payment, which is recognized over the term of the sublease. The sublease is classified as an operating lease and will expire in March 2031. The Company recognized Sonoma sublease income of $0.5 million for both the three months ended September 30, 2023 and 2022, and $1.4 million for both the nine months ended September 30, 2023 and 2022.

The Company's sublease income is recognized within other operating income, net in the Condensed Consolidated Statements of Operations and Comprehensive Loss.

8. Stockholders' Equity

Preferred Stock

The Company is authorized to issue 10.0 million shares of preferred stock with a par value of $0.0001 per share. As of September 30, 2023 and December 31, 2022, no shares of preferred stock were outstanding.

Common Stock

The Company is authorized to issue 500.0 million shares of common stock with a par value of $0.0001 per share. As of September 30, 2023 and December 31, 2022, there were 251,868,968 shares and 249,567,343 shares of the Company's common stock outstanding, respectively.

On August 4, 2022, the Company entered into an Equity Distribution Agreement with Goldman Sachs & Co. LLC ("Goldman Sachs") and BofA Securities, Inc. ("BofA", and together with Goldman Sachs, the "Agents") with respect to an at-the-market offering program (the "Equity Distribution Agreement"). In accordance with the terms of the Equity Distribution Agreement, the Company may offer and sell from time to time through the Agents shares of the Company's common stock having an aggregate offering amount of up to $200.0 million (the "Placement Shares"). Sales of the Placement Shares, if any, will be made at prevailing market prices on Nasdaq at the time of sale, or as otherwise agreed with the Agents, by any method permitted by law deemed to be an "at-the-market offering" as defined in Rule 415 of the Securities Act of 1933, as amended. The Company will pay commissions to the Agents of up to 3.0% of the gross proceeds of the sale of the Placement Shares sold under the Equity Distribution Agreement and reimburse the Agents for certain expenses. Neither the Company nor the Agents are obligated to sell any shares and, to date, the Company has not made any sales under the Equity Distribution Agreement.

9. Stock-based Compensation

2021 Equity Incentive Plan

In June 2021, the Company adopted the 2021 Equity Incentive Plan ("2021 Plan"), which on the date of the underwriting agreement related to the Company's IPO became effective with an initial reserve of 26,662,087 shares, plus any shares subject to outstanding awards granted under the 2018 Equity Incentive Plan ("2018 Plan") that, on or after the effectiveness of the 2021 Plan, terminate or expire before exercise or settlement, are not issued because the award is settled in cash, are forfeited because of the failure to vest, or are reacquired or withheld (or not issued) to satisfy a tax withholding obligation or the purchase or exercise price. In addition, the number of shares reserved for issuance under the 2021 Plan automatically increases on January 1 of each year for a period of ten years, beginning on January 1, 2022 and continuing through January 1, 2031, in an amount equal to (1) 5% of the total number of shares of the Company's common stock outstanding on December 31 of the immediately preceding year, or (2) a lesser number of shares determined by the Company's board of directors no later than December 31 of the immediately preceding year. On January 1, 2023, the Company reserved an additional 12,478,367 shares of common stock for issuance under the 2021 Plan representing 5% of the total common shares outstanding as of December 31, 2022. Under the 2021 Plan, the Company may grant incentive stock options, non-statutory stock options, restricted stock awards ("RSAs"), restricted stock units ("RSUs"), stock appreciation rights, performance awards and other stock-based awards. Terms of stock awards, including vesting requirements, are determined by the Company's board of directors or by a committee authorized by the Company's board of directors, subject to provisions of the 2021 Plan. The term of any stock option granted under the 2021 Plan cannot exceed ten years. Generally, awards granted by the Company vest over four years but may be granted with different vesting terms. In conjunction with adopting the 2021 Plan, the Company discontinued the 2018 Plan with respect to new equity awards.

As of September 30, 2023, 22,478,430 shares were available for future issuance pursuant to the 2021 Plan.

2021 Employee Stock Purchase Plan

In June 2021, the Company adopted the 2021 Employee Stock Purchase Plan ("2021 ESPP"), which became effective immediately prior to the execution of the underwriting agreement related to the Company's IPO with an initial reserve of 2,470,000 shares. The 2021 ESPP allows eligible employees to purchase shares of the Company's common stock at a discount through payroll deductions of up to 15% of their earnings, subject to plan limitations. Unless otherwise determined by the Company's board of directors, employees are able to purchase shares at 85% of the lower of the fair market value of the Company's common stock on the first date of an offering or on the purchase date. The number of shares of the Company's common stock reserved for issuance under the 2021 ESPP automatically increases on January 1 of each year for a period of ten years, beginning on January 1, 2022 and continuing through January 1, 2031, by the lesser of (1) 1% of the total number of shares of the Company's common stock outstanding on December 31 of the immediately preceding year, and (2) 4,940,000 shares; provided, however, that the Company's board of directors may act to provide a lesser increase in number of shares. The Company's board of directors elected to reserve no additional shares under the 2021 ESPP for the year beginning January 1, 2023. The Company may specify offerings with durations not more than 27 months and may specify shorter purchase periods within each offering. Under the 2021 ESPP, no shares were issued for both the three months ended September 30, 2023 and 2022, and 542,921 and 283,574 shares were issued for the nine months ended September 30, 2023 and 2022, respectively.

As of September 30, 2023, 3,905,099 shares were available for future issuance pursuant to the 2021 ESPP.

2018 Equity Incentive Plan

In 2018, the Company established the 2018 Plan that provided for the grant of incentive stock options, non-statutory stock options, RSAs, RSUs, stock appreciation rights and other stock-based awards. Terms of stock awards,

including vesting requirements, were determined by the board of directors or by a committee authorized by the Company's board of directors, subject to provisions of the 2018 Plan. The term of any stock option granted under the 2018 Plan cannot exceed ten years. Generally, awards granted by the Company vest over four years, but could have been granted with different vesting terms. Pursuant to the terms of the 2021 Plan, any shares subject to outstanding options originally granted under the 2018 Plan that terminate, expire or lapse for any reason without the delivery of shares to the holder thereof become available for issuance pursuant to awards granted under the 2021 Plan. While no shares are available for future issuance under the 2018 Plan, it continues to govern outstanding equity awards granted thereunder.

Stock-based Compensation Expense

Stock-based compensation expense by classification included within the Condensed Consolidated Statements of Operations and Comprehensive Loss was as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Research and development	$ 4,548	$ 4,442	$ 14,439	$ 12,401
General and administrative	5,968	14,681	24,182	51,160
Total stock-based compensation expense	$ 10,516	$ 19,123	$ 38,621	$ 63,561

At September 30, 2023, total stock-based compensation cost related to unvested awards not yet recognized was $76.5 million, which is expected to be recognized over a remaining weighted-average period of 2.79 years.

Restricted Stock Units

A summary of the Company's RSU activity was as follows:

	Restricted Stock Units Outstanding	Weighted-Average Value at Grant Date Per Share
Unvested RSUs as of December 31, 2022	872,077	$ 5.98
RSUs granted	2,559,677	$ 2.24
RSUs vested	(414,018)	$ 3.89
RSUs forfeited or canceled	(240,673)	$ 3.66
Unvested RSUs as of September 30, 2023	2,777,063	$ 3.04

Stock Options

A summary of the Company's stock option activity was as follows:

	Number of Stock Options	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value (in thousands)
Options outstanding as of December 31, 2022	53,849,045	$ 5.09	7.84	$ 24,887
Granted	12,276,063	$ 2.30		
Exercised	(1,478,537)	$ 0.10		
Canceled or forfeited	(4,196,756)	$ 5.26		
Options outstanding as of September 30, 2023	60,449,815	$ 4.63	7.58	$ 7,517
Options exercisable as of September 30, 2023	32,422,027	$ 4.90	6.47	$ 7,517

The fair value of stock options granted to employees, directors and consultants was estimated on the date of grant using the Black-Scholes option pricing model using the following weighted-average assumptions:

	Nine Months Ended September 30,	
	2023	2022
Risk-free interest rate	4.13 %	2.32 %
Expected volatility	88.2 %	85.6 %
Expected term (in years)	6.06	5.98
Expected dividend yield	0 %	0 %

The weighted-average grant date fair value of options granted for the nine months ended September 30, 2023 and 2022 were $1.69 per share and $4.33 per share, respectively.

10. Net Loss Per Share

Basic and diluted net loss per share is calculated by dividing net loss by the weighted-average number of common shares outstanding during the period, without consideration for common stock equivalents. The Company's potentially dilutive shares, which include unvested RSAs, unvested RSUs and options to purchase common stock, are considered to be common stock equivalents and are only included in the calculation of diluted net loss per share when their effect is dilutive. Shares subject to options to purchase common stock, unvested RSAs and unvested RSUs were all excluded from consideration in the calculation of diluted net loss per share in all periods presented due to their anti-dilutive effects.

11. Commitments and Contingencies

License and Collaboration Agreements

The Company has entered into certain license and collaboration agreements, including those identified in Note 3, *License, Collaboration and Success Payment Agreements* above, with third parties that include the funding of certain development, manufacturing and commercialization efforts with the potential for future milestone and royalty payments upon the achievement of pre-established developmental, regulatory and/or commercial milestones. The Company's obligation to fund these efforts is contingent upon continued involvement in the programs and/or the lack of any adverse events that could cause the discontinuance of the programs, including termination of such agreements. Due to the nature of these agreements, the future potential payments are inherently uncertain, and accordingly no amounts had been recorded for the potential future achievement of these targets as of both September 30, 2023 and December 31, 2022.

12. Related-party Transactions

In September 2021, the Company entered into a sublease with Sonoma ("Sonoma Sublease"), with whom the Company has common stockholders with board seats, whereby the Company agreed to sublease approximately 18,000 square feet of space in South San Francisco, California currently leased by the Company. Dr. Klausner, the Chair of the Company's board of directors, also serves as Board Chair of the board of directors of Sonoma. As a part of the Sonoma Sublease, a $4.6 million tenant improvement contribution payment was made by Sonoma, which is recognized over the term of the Sonoma Sublease. As of both September 30, 2023 and December 31, 2022, there were accrued liabilities and other current liabilities of $0.5 million, and as of September 30, 2023 and December 31, 2022, other non-current liabilities of $3.1 million and $3.5 million, respectively, in connection with the Sonoma Sublease. Total operating income from Sonoma and income solely attributable to the Sonoma Sublease are shown in the table below (in thousands). Total operating income includes income attributable to the sublease, as well as additional operating fees recognized in "other operating income, net" such as common area maintenance charges. See Note 7, *Leases*, for more detail on the Sonoma Sublease.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Sonoma other operating income, net	$ 638	$ 659	$ 1,955	$ 1,976
Sonoma sublease income	$ 466	$ 465	$ 1,396	$ 1,396

The Company was party to the GSK Agreement with GSK, which is a holder of more than 10% of the Company's outstanding common stock. See Note 3, *License, Collaboration and Success Payment Agreements*. GSK terminated the

GSK Agreement effective December 24, 2022. The Company had no current or non-current deferred revenue in connection with the GSK Agreement as of both September 30, 2023 and December 31, 2022. Revenue recognized in connection with the GSK agreement was zero for both the three months ended September 30, 2023 and 2022, and zero and $36.3 million for the nine months ended September 30, 2023 and 2022, respectively.

13. Subsequent Events

On November 6, 2023, the Company committed to and commenced a reduction in its workforce of approximately 25% to reduce operating costs and improve operating efficiency. The reduction in workforce is expected to be completed in the fourth quarter of 2023. In connection with this reduction in workforce, the Company estimates that it will incur charges of approximately $6 million to $7 million for severance payments, employee benefits and related costs, primarily in the fourth quarter of 2023. Substantially all of the estimated charges are expected to result in future cash expenditures.

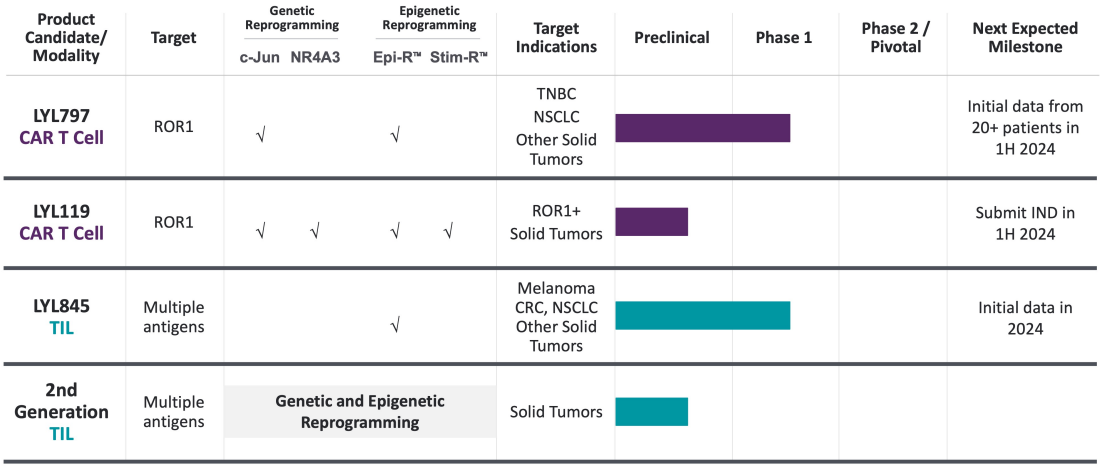
Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

You should read the following discussion and analysis of our financial condition and results of operations together with our unaudited Condensed Consolidated Financial Statements and the related notes included elsewhere in this Quarterly Report on Form 10-Q. This discussion and analysis and other parts of this Quarterly Report on Form 10-Q contain forward-looking statements based upon current beliefs, plans and expectations related to future events and our future financial performance that involve risks, uncertainties and assumptions, such as statements regarding our intentions, plans, objectives and expectations for our business. Our actual results and the timing of selected events could differ materially from those described in or implied by these forward-looking statements as a result of several factors, including those set forth in the section titled "Risk Factors" in Part II, Item 1A of this Quarterly Report on Form 10-Q. See also the section titled "Special Note Regarding Forward-Looking Statements."

Overview

We are a clinical-stage cell therapy company advancing a pipeline of product candidates for patients with solid tumors utilizing our proprietary ex vivo genetic and epigenetic T-cell reprogramming technologies. Our investigational therapies use the patient's own cells as the starting point to generate highly tumor-reactive, longer-lasting functional T cells with enhanced ability to defeat solid tumors. Our innovative reprogramming technologies address what we believe are the primary barriers that limit consistent and long-lasting responses to T-cell therapy in solid tumors: T-cell exhaustion and lack of durable stemness. Our technologies are designed to generate T cells with the ability to persist and self-renew while driving durable tumor cytotoxicity, even in the setting of an immunosuppressive tumor microenvironment. Our goal is to provide patients with T cells that are potent and long-lasting to achieve durable antitumor responses. Our technologies can be applied in a target agnostic manner to multiple T-cell modalities, including chimeric antigen receptor (CAR), tumor-infiltrating lymphocytes (TIL) and T-cell receptor (TCR) therapies.

We apply our technologies with the aim to develop T-cell therapies with improved and durable clinical outcomes. Our growing pipeline of promising cell product candidates targets solid tumor indications with large unmet needs that are collectively responsible for approximately 180,000 deaths in the U.S. annually. Each of our programs provide opportunities to expand into additional indications beyond the patient populations we are initially targeting. Our lead product candidates are summarized in the table below:



ROR1, receptor tyrosine kinase-like orphan receptor 1; IND, investigational new drug; CAR, chimeric antigen receptor; NSCLC, non-small cell lung cancer; TNBC, triple-negative breast cancer; TIL, tumor infiltrating lymphocytes; CRC, colorectal cancer

We were incorporated in June 2018. Our primary activities to date have included developing T-cell therapies, performing research and development, acquiring technology, entering into strategic collaboration and license agreements, enabling and executing manufacturing activities in support of our product candidate development efforts, organizing and staffing our company, business planning, establishing our intellectual property portfolio, making regulatory submissions, executing clinical trials, raising capital and providing general and administrative support for these activities. We are early in our research and development efforts and are in Phase 1 clinical development of LYL797, our ROR1 targeted CAR T-cell product candidate, and LYL845, our TIL product candidate. Two additional product candidates that each include novel genetic and epigenetic reprogramming technologies are in preclinical development: LYL119, a ROR1 targeted CAR T-cell product candidate and a second generation TIL product candidate. We do not have any products approved for sale.

Pipeline Programs and Operational Updates

Pipeline Programs

We are advancing four wholly-owned product candidates, including two product candidates in Phase 1 clinical development, LYL797 and LYL845. Two additional product candidates, LYL119 and a second generation TIL product candidate, are in preclinical development.

LYL797 - A genetically and epigenetically reprogrammed ROR1-targeted CAR T-cell product candidate designed for differentiated potency and durability targeting multiple solid tumor indications.

We are applying our c-Jun and Epi-R™ technologies to our lead CAR T-cell product candidate, LYL797, which is expected to be an intravenously-administered CAR T-cell product targeting the receptor tyrosine kinase-like orphan receptor 1 (ROR1) protein. ROR1 is a fetal protein expressed during embryogenesis and is believed to be important in cell migration, polarity and survival. It is expressed in several cancer types, including triple-negative breast cancer (TNBC), non-small cell lung cancer (NSCLC), ovarian cancer and chronic lymphocytic leukemia, and is generally associated with a poor prognosis. LYL797 contains a CAR with a 4-1BB/CD3ζ intracellular domain, a transmembrane domain, an optimized spacer domain and a single-chain variable fragment (scFv) derived from an R12 rabbit monoclonal antibody that recognizes and binds with high specificity to human ROR1. LYL797 also incorporates c-Jun overexpression and a proprietary optimized truncated version of human EGFR ($EGFR_{opt}$) used for tracking the CAR T cells in the peripheral blood post treatment and can also be used as a safety measure with the administration of cetuximab, if needed. LYL797 is manufactured utilizing our proprietary Epi-R technology. Our Epi-R manufacturing protocols comprise proprietary media, optimized cytokine compositions and well-defined cell activation and expansion protocols used during our manufacturing process.

We are initially developing LYL797 for the treatment of ROR1-positive TNBC and NSCLC. Literature indicates that significant subsets of patients with common cancers express ROR1, including TNBC (~60%) and NSCLC (~40%), two of the highest ROR1-expressing solid tumor indications and, to date, results from our own ROR1 screening program are consistent with what is reported in the literature. If successful, we may expand into other ROR1-positive cancers with a lower incidence of ROR1 expression, including potentially hormone-receptor positive breast cancer, ovarian and other solid tumors.

- Enrollment in the Phase 1 clinical trial of LYL797 is ongoing. The study includes patients with relapsed or refractory TNBC or NSCLC.
- Initial clinical and translational data from at least 20 patients in the Phase 1 trial of LYL797 are expected in the first half of 2024.
- The Phase 1 clinical trial is designed as an open label, dose escalation and expansion trial in patients with relapsed/refractory TNBC who have failed at least two lines of therapy and patients with relapsed/refractory NSCLC who have failed at least one line of therapy. All patients enrolled have tumor specimens positive for ROR1 protein expression by immunohistochemistry. The study will enroll at least 15 patients each with relapsed or refractory TNBC or with NSCLC in the expansion phase of the study.
- A CAR T-cell manufacturing proof-of-concept collaboration with Cellares was initiated as part of an overall manufacturing strategy to build scale and reduce cost. Under the collaboration, the companies have agreed on a proof-of-concept technology transfer process for the manufacture of Lyell's LYL797 CAR T-cell therapy, using Cellares' Cell Shuttle™.
- Initial results from Lyell's ROR1 screening program indicated that expression of ROR1 in TNBC and NSCLC, 53% (N=77) and 33% (N=18), respectively, is consistent with what has been reported in the literature. The screening program is designed to support Lyell's current and future clinical trials.
- Presented a LYL797 Trial in Progress poster at the 38th Annual Meeting of the Society for Immunotherapy of Cancer (SITC) in San Diego on November 1-5, 2023.

LYL845 - A novel epigenetically reprogrammed TIL product candidate designed for differentiated potency and durability targeting multiple solid tumor indications.

We are applying our Epi-R technology to our lead TIL product candidate, LYL845, which is expected to be an intravenously-administered autologous TIL therapy for multiple solid tumors. Our Epi-R manufacturing protocols comprise proprietary media, optimized cytokine compositions and well-defined cell activation and expansion protocols used during our manufacturing process.

TIL have previously shown clinical benefit in patients with advanced melanoma and other solid tumors with high mutational burden. Published data from third-party TIL trials show that treating metastatic melanoma patients with TIL can result in complete and durable responses. Response rates to TIL therapy in patients with other advanced solid tumors such as lung, colorectal and breast have been much lower than those observed in advanced melanoma. Broad TIL efficacy has been limited by poor enrichment of tumor-reactive T cells and the poor quality and limited growth potential of expanded T cells. Failure to maintain polyclonality of TIL during production may also limit their ability to eradicate cancer cells given the inherent heterogeneous nature of solid tumors. LYL845 incorporates our Epi-R technology that has been shown to generate TIL product with characteristics that have previously been associated with improved response rate, including a higher percentage of cytotoxic T cells and stemness phenotypes. We have also demonstrated that our Epi-R process led to enhanced T-cell potency and maintenance of tumor-reactive polyclonality in nonclinical experiments.

We are initially developing LYL845 for advanced melanoma, NSCLC and colorectal cancer (CRC). Based on our success with those indications, we may include patients with other solid tumors, potentially including head and neck, cervical, breast and pancreatic cancer.

- Enrollment in the Phase 1 clinical trial for LYL845 is ongoing. The study includes patients with relapsed and/or refractory metastatic or locally advanced melanoma, NSCLC and CRC.
- Initial clinical data from the Phase 1 trial of LYL845 are expected in 2024.
- The Phase 1 clinical trial is designed as an open label, dose escalation and expansion trial in patients with relapsed and/or refractory metastatic or locally advanced melanoma, NSCLC and CRC. The study will enroll at least 15 patients each with advanced melanoma, and relapsed or refractory NSCLC or CRC in the expansion phase of the study.
- Preclinical data on the Epi-R P2 manufacturing process designed to shorten TIL manufacturing time without impacting cell number and phenotype was presented at SITC. Epi-R P2 is expected to be incorporated into the Phase 1 trial in 2024.
- Presented a LYL845 Trial in Progress poster was presented at SITC.

LYL119 - An innovative ROR1 CAR T-cell product designed for enhanced cytotoxicity.

A key pillar of our strategy is to continually innovate to develop and advance novel, breakthrough technologies that address key barriers to successful cell therapy for solid tumors. We have advanced a new genetic reprogramming technology, NR4A3 knockout, and a new epigenetic reprogramming technology, Stim-R™, that are both incorporated in our next CAR T-cell product candidate, LYL119. These technologies are stackable and complementary to c-Jun and Epi-R and are designed to further improve the antitumor potency and durability of T cells. LYL119 is being advanced with the goal of potentially creating even greater benefit for patients with ROR1-positive solid tumors.

- An investigational new drug (IND) application is expected to be submitted for LYL119 in the first half of 2024.
- An abstract highlighting preclinical development of LYL119 was presented at SITC.

T-cell rejuvenation technologies: We and others have documented the impact of aging on T-cell function, which begins to decline after puberty, and at an increasingly accelerated rate after age 65. Morbidity and mortality from cancer also increase with age. Thus, we are working to advance another novel reprogramming technology that focuses on rejuvenation of antitumor T cells. We are developing a method to maintain T-cell identity while reducing the epigenetic age of the cells. This technology is currently in the research stage. We have generated data illustrating the ability to “turn back” the epigenetic clock in a process called cellular rejuvenation, without changing the T-cell’s identity as would occur in the setting of induced pluripotent stem cell-derived T cells.

Data demonstrating that T cells rejuvenated with Lyell’s technology have improved expansion capacity and increased expression of biomarkers associated with T-cell stemness, and also exhibit improved antitumor properties compared with non-rejuvenated T-cell controls in sequential cell-killing assays, were presented at the International Society for Stem Cell Research (ISSCR) 2023 Annual Meeting on June 14th in Boston, MA.

- An abstract highlighting rejuvenation of TIL through partial reprogramming was presented at SITC.

Our Manufacturing Capabilities

We believe it is critically important to control and continuously monitor all aspects of the cell therapy manufacturing process to mitigate risks, including challenges in managing production, supply chain, patient specimen chain of custody and quality control. As we developed our technologies, we made a strategic decision to invest in building our own manufacturing facility to control our supply chain, maximize efficiencies in cell product production time, optimize cost and quality, and have the ability to rapidly incorporate disruptive advancements and new innovations. Controlling

manufacturing also enables us to protect proprietary aspects of our reprogramming technologies. We view our manufacturing team and capabilities as a significant competitive advantage.

Our LyFE™ manufacturing center located in Bothell, Washington is approximately 73,000 square feet and is comprised of manufacturing suites, laboratories and offices. LyFE is commissioned and designed to be in compliance with U.S. and European Union current Good Manufacturing Practices (cGMP) standards and has a flexible and modular design enabling CAR T-cell, TIL, TCR T-cell and cGMP viral vector production to control and de-risk the manufacturing sequence and timing of the major components of our supply chain. Owning our own facility has enabled seamless collaboration across research, process development and manufacturing for high-quality reproducibility at manufacturing scale.

We are currently producing clinical supply for our Phase 1 trials at LyFE. At full staffing and capacity, we expect to be able to manufacture approximately 500 infusions per year depending on product candidate mix. While we believe this capacity is sufficient to support our pipeline programs into pivotal trials and, if approved, early commercialization, we are also evaluating third-party manufacturing options, such as the recently initiated CAR T-cell proof-of-concept collaboration with Cellares, as part of an overall manufacturing strategy to build scale and reduce cost.

Macroeconomic Environment

Our business and operations may be affected by worldwide economic conditions, which may continue to be impacted by global macroeconomic challenges such as the effects of the ongoing geopolitical conflicts in Ukraine, tensions in U.S.-China relations, escalating armed conflicts and turmoil in the Middle East, the lingering effects of the COVID-19 pandemic, inflationary pressures, interest rate environment, instability in the banking industry and overall market volatility. Fiscal year 2022 and the first half of 2023 were marked by significant market uncertainty, increasing inflationary pressures, banking upheaval, supply constraints and lingering effects from the COVID-19 pandemic. Although some of these negative impacts improved throughout the fiscal year, these market dynamics may continue for the rest of 2023, and these and similar adverse market conditions may negatively impact our business.

For a further discussion of trends, uncertainties and other factors that could impact our operating results, see the section entitled “Risk Factors” in Part II, Item 1A of this Quarterly Report on Form 10-Q.

Reduction in Workforce

On November 6, 2023, we committed to and commenced a reduction in our workforce of approximately 25% to reduce operating costs and improve operating efficiency. The restructuring prioritized investment in our clinical stage programs and core research platforms and streamlined operations. The reduction in workforce is expected to be completed in the fourth quarter of 2023. In connection with this reduction in workforce, we estimate that we will incur charges of approximately $6 million to $7 million for severance payments, employee benefits and related costs, primarily in the fourth quarter of 2023. Substantially all of the estimated charges are expected to result in future cash expenditures. The estimated charges that we expect to incur are subject to a number of assumptions, and actual results may differ materially from these estimates. We may also incur additional costs not currently contemplated due to events that may occur as a result of, or that are associated with, the reduction in workforce.

Components of Results of Operations

Revenue

We have no products approved for sale and have never generated any revenue from product sales.

We have generated revenue primarily from the recognition of the upfront payment under the Collaboration and License Agreement, entered into in 2019 and amended in June 2020 and December 2021 (GSK Agreement) with GlaxoSmithKline Intellectual Property (No. 5) Limited and Glaxo Group Limited (together, GSK). GSK terminated the GSK Agreement effective December 2022, and we do not expect further revenue from the collaboration. See Note 3, *License, Collaboration and Success Payment Agreements*, in the accompanying notes to the unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q, for additional details regarding termination of the GSK Agreement.

In the future, we may generate additional revenue from other collaborations, strategic alliances, licensing agreements, product sales, or a combination of these.

Operating Expenses

Research and Development

To date, research and development expenses consist of costs incurred by us for the discovery and development of our technology platforms and product candidates and include costs incurred in connection with strategic collaborations, costs to license technology, personnel-related costs, including stock-based compensation expense, facility and technology related costs, research and laboratory expenses, as well as other expenses, which include consulting fees and other costs. Upfront payments and milestones paid to third parties in connection with technology platforms that have not reached technological feasibility and do not have an alternative future use are expensed as incurred.

Research and development expenses also include non-cash expenses related to the change in the estimated fair value of the success payment obligations over their respective requisite service terms granted to Fred Hutchinson Cancer Center (Fred Hutch) and The Board of Trustees of the Leland Stanford Junior University (Stanford). As of December 31, 2022, Fred Hutch had provided the requisite service obligation to earn the potential success payment consideration under the continued collaboration. For the three and nine months ended September 30, 2023 and future periods, the change in the Fred Hutch success payment liability fair value is recognized in other income (expense), net, as the requisite service obligation had been met. See Note 3, *License, Collaboration and Success Payment Agreements*, in the accompanying notes to the unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q. Research and development expenses related to our success payment liabilities are unpredictable and may vary significantly from quarter-to-quarter and year-to-year due to changes in our assumptions used in the calculation.

We deploy our employee and infrastructure resources across multiple research and development programs for identifying and developing product candidates and establishing manufacturing capabilities. Due to the stage of development and number of ongoing programs and our ability to use resources across several programs, most of our research and development costs are not recorded on a program-specific basis. These include costs for personnel, laboratory and other indirect facility and operating costs.

Research and development activities account for a significant portion of our operating expenses. We anticipate that our research and development expenses will increase over the foreseeable future as we expand our research and development efforts including completing nonclinical studies, commencing planned clinical trials, conducting and completing current and planned clinical trials, seeking regulatory approvals of our product candidates, identifying new product candidates and incurring costs to acquire and license technology platforms. A change in the outcome of any of these variables could mean a significant change in the costs and timing associated with the development of our product candidates. Because we are early in our research and clinical development efforts of our product candidates, and the outcome of these efforts is uncertain, we cannot estimate the actual amounts necessary to successfully complete the nonclinical development, clinical development and commercialization of product candidates or whether, or when, we may achieve profitability.

Our research and development expenses may vary significantly based on factors such as:

- the number and scope of nonclinical and IND-enabling studies;
- per patient trial costs;
- the number of trials required for approval;
- the number of sites included in the trials;
- the countries in which the trials are conducted;
- the length of time required to enroll eligible patients;
- the number of patients that participate in the trials;
- the drop-out or discontinuation rates of patients;
- potential additional safety monitoring requested by regulatory agencies;
- the duration of patient participation in the trials and follow-up;
- the cost and timing of manufacturing our product candidates;
- the phase of development of our product candidates;
- the efficacy and safety profile of our product candidates;
- the extent to which we establish additional collaboration or license agreements; and

- whether we choose to partner any of our product candidates and the terms of such partnership.

A change in the outcome of any of these variables with respect to the development of any of our product candidates could significantly change the costs and timing associated with the development of that product candidate. We may never succeed in obtaining regulatory approval for any of our product candidates. We may obtain unexpected results from our nonclinical studies and clinical trials.

General and Administrative

General and administrative costs include personnel-related expenses, including stock-based compensation expense for personnel in executive, legal, finance and other administrative functions, legal costs, transaction costs related to collaboration and licensing agreements, as well as fees paid for accounting and tax services, consulting fees and facilities costs not otherwise included in research and development expenses. Legal costs include those related to corporate, dispute and patent matters.

We anticipate that our general and administrative expenses will increase over the foreseeable future to support our continued research and development activities, operations generally, future business development opportunities, consulting fees, as well as due to the increased costs of operating as a public company such as costs related to accounting, audit, legal, regulatory and tax-related services associated with maintaining compliance with exchange listing and Securities and Exchange Commission (SEC) requirements, director and officer insurance costs and investor and public relations costs.

Other Operating Income, Net

Other operating income, net consists primarily of service and occupancy fees received associated with subleases as well as losses on the retirement of property and equipment.

Interest Income, Net

Interest income, net consists primarily of interest earned on our cash, cash equivalents and marketable securities balances.

Other Income (Expense), Net

Other income (expense), net consists primarily of the change in fair value associated with our success payment liabilities to Fred Hutch for three and nine months ended September 30, 2023 and primarily of changes in the fair value of an equity warrant investment held for the three and nine months ended September 30, 2022.

Impairment of Other Investments

Impairment of other investments consists of a reduction in the value of certain other investments.

Results of Operations

Three and Nine Months Ended September 30, 2023 and 2022

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

	Three Months Ended September 30,			Nine Months Ended September 30,		
	2023	2022	Change	2023	2022	Change
Revenue	$ 25	$ 3	$ 22	$ 117	$ 36,297	$ (36,180)
Operating expenses:						
Research and development	43,849	41,607	2,242	135,950	121,156	14,794
General and administrative	15,507	26,084	(10,577)	53,816	90,959	(37,143)
Other operating income, net	(292)	(1,251)	959	(2,149)	(3,544)	1,395
Total operating expenses	59,064	66,440	(7,376)	187,617	208,571	(20,954)
Loss from operations	(59,039)	(66,437)	7,398	(187,500)	(172,274)	(15,226)
Interest income, net	6,608	2,251	4,357	16,369	3,600	12,769
Other income (expense), net	1,578	(1,068)	2,646	2,352	(1,047)	3,399
Impairment of other investments	—	(5,000)	5,000	(12,923)	(5,000)	(7,923)
Total other income (loss), net	8,186	(3,817)	12,003	5,798	(2,447)	8,245
Net loss	$ (50,853)	$ (70,254)	$ 19,401	$ (181,702)	$ (174,721)	$ (6,981)

Revenue

Revenue was approximately zero for both the three months ended September 30, 2023 and 2022, and $0.1 million and $36.3 million for the nine months ended September 30, 2023 and 2022, respectively. The GSK Agreement was terminated in December 2022 and, therefore, no further research and development pursuant to the GSK Agreement was performed in the first nine months of 2023, which drove the decrease in revenue of $36.2 million for the nine months ended September 30, 2023. The revenue for the nine months ended September 30, 2022 was primarily due to a $35.3 million revenue adjustment recorded in 2022 due to a change in estimate in connection with the GSK Agreement following a mutual agreement with GSK to conclude research activities on an undisclosed target for hematological cancers. The change in estimate decreased the related estimated project costs, which resulted in an increase in the measure of proportional cumulative performance. See Note 3, *License, Collaboration and Success Payment Agreements – GSK*, in the accompanying notes to the unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q for additional information about the termination of the GSK Agreement.

Research and Development Expenses

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

	Three Months Ended September 30,			Nine Months Ended September 30,		
	2023	2022	Change	2023	2022	Change
Personnel	$ 19,922	$ 16,488	$ 3,434	$ 61,727	$ 50,513	$ 11,214
Facilities and technology	12,899	13,623	(724)	39,732	39,296	436
Research activities, collaborations and outside services	12,274	9,055	3,219	35,740	29,170	6,570
Success payments	(1,246)	2,441	(3,687)	(1,249)	2,177	(3,426)
Total research and development expenses	$ 43,849	$ 41,607	$ 2,242	$ 135,950	$ 121,156	$ 14,794

Research and development expenses were $43.8 million and $41.6 million for the three months ended September 30, 2023 and 2022, respectively. The increase of $2.2 million was primarily due to an increase of $3.4 million in personnel-related expenses mainly due to an increase in headcount to expand our research, development and manufacturing capabilities; an increase of $3.2 million in research activities, collaborations and outside services primarily driven by an increase in research and laboratory costs mainly due to clinical trials, partially offset by a reduction in professional services and collaborations and license expenses primarily related to the completion of certain sponsored research agreements; a decrease of $3.7 million associated with our success payment liabilities driven by the decrease in our stock price, with $1.4 million of the change due to recognizing the Fred Hutch success payment liability fair value change in other income (expense), net for the three months ended September 30, 2023; and a decrease of $0.7 million in facilities and technology costs primarily related to lower software implementation costs.

Research and development expenses were $136.0 million and $121.2 million for the nine months ended September 30, 2023 and 2022, respectively. The increase of $14.8 million was primarily due to an increase of $11.2 million in personnel-related expenses, that was mainly due to an increase in headcount to expand our research, development and manufacturing capabilities to support increases in clinical trial enrollment; an increase of $6.6 million in research activities, collaborations and outside services primarily driven by an increase in research and laboratory costs mainly due to clinical trials, partially offset by a reduction professional services and collaboration and license expenses primarily related to the completion of certain sponsored research agreements; an increase of $0.4 million in facilities and technology costs primarily related to increased infrastructure to support our expansion in research and development, manufacturing capabilities and associated headcount growth; and a decrease of $3.4 million in expense associated with our success payment liabilities driven by the decrease in our stock price, with $0.8 million of the change due to recognizing the Fred Hutch success payment liability fair value change in other income (expense), net for the nine months ended September 30, 2023.

General and Administrative Expenses

General and administrative expenses were $15.5 million and $26.1 million for the three months ended September 30, 2023 and 2022, respectively. The decrease of $10.6 million was primarily due to a decrease of $8.7 million in stock-based compensation expense, primarily related to significant awards being fully expensed, a decrease of $1.4 million in outside services primarily due to a decrease in legal and consulting expenses and a decrease of $0.7 million in other administrative expenses.

General and administrative expenses were $53.8 million and $91.0 million for the nine months ended September 30, 2023 and 2022, respectively. The decrease of $37.1 million was primarily due to a decrease of $27.0 million in stock-based compensation expense, primarily related to significant awards being fully expensed, a decrease of $8.2 million in outside services attributed to lower legal and consulting expenses and a decrease of $2.0 million in other administrative expenses.

Other Operating Income, Net

Other operating income, net was $0.3 million and $1.3 million for the three months ended September 30, 2023 and 2022, respectively, and $2.1 million and $3.5 million for the nine months ended September 30, 2023 and 2022, respectively.

Interest Income, Net

Interest income, net was $6.6 million and $2.3 million for the three months ended September 30, 2023 and 2022, respectively, and $16.4 million and $3.6 million for the nine months ended September 30, 2023 and 2022, respectively. The increase in interest income, net was primarily driven by higher interest rates in 2023.

Other Income (Expense), Net

Other income (expense), net was $1.6 million and $(1.1) million for the three months ended September 30, 2023 and 2022, respectively, and $2.4 million and $(1.0) million for the nine months ended September 30, 2023 and 2022, respectively. The changes in other income (expense), net were primarily due to the change in fair value associated with our success payment liabilities to Fred Hutch for the three and nine months ended September 30, 2023; the fair value changes of Fred Hutch success payment liabilities are recognized in other income (expense), net for the three and nine months ended September 30, 2023 as Fred Hutch had provided the requisite service obligation to earn the potential success payment consideration under the continued collaboration as of December 2022.

Impairment of Other Investments

For the nine months ended September 30, 2023, the $12.9 million impairment of other investments consisted of the full impairment of two of our other investments. For the three and nine months ended September 30, 2022, the $5.0 million impairment consisted of the full impairment of one of our other investments. See Note 5, *Other Investments*, in the accompanying notes to the unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q, for additional details regarding the impairments of other investments.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception, we have funded our operations primarily through the sale and issuance of convertible preferred stock, the sale of common stock in connection with our initial public offering (IPO) and business development activities. As of September 30, 2023, we had $598.2 million in cash, cash equivalents and marketable securities. Since our inception, we have incurred significant operating losses. We have not yet commercialized any product candidates, and we do not expect to generate revenue from sales of any product for a number of years, if ever. We had an accumulated deficit of $949.2 million as of September 30, 2023. From June 29, 2018 (inception) through September 30, 2023, we raised an aggregate of $1,405.7 million in gross proceeds from the sales of our convertible preferred stock prior to the IPO and sales of our common stock in the IPO.

On August 4, 2022, we entered into an Equity Distribution Agreement (the Equity Distribution Agreement) with Goldman Sachs & Co. LLC (Goldman Sachs) and BofA Securities, Inc. (BofA, and together with Goldman Sachs, the Agents) with respect to an at-the-market offering program. In accordance with the terms of the Equity Distribution Agreement, we may offer and sell from time to time, through the Agents, shares of our common stock having an aggregate offering amount of up to $200.0 million (the Placement Shares). Sales of the Placement Shares, if any, will be made at prevailing market prices on Nasdaq at the time of sale, or as otherwise agreed with the Agents, by any method permitted by law deemed to be an “at-the-market offering” as defined in Rule 415 of the Securities Act of 1933, as amended (the Securities Act). We will pay commissions to the Agents of up to 3.0% of the gross proceeds of the sale of the Placement Shares sold under the Equity Distribution Agreement and reimburse the Agents for certain expenses. Neither us nor the Agents are obligated to sell any shares and, to date, we have not made any sales under the Equity Distribution Agreement.

Future Funding Requirements

We expect to incur additional expenses and operating losses in the foreseeable future as we conduct and expand our research and development efforts, including conducting nonclinical studies and clinical trials, developing new product candidates, establishing manufacturing capabilities and funding our operations generally. Based on our current operating

plan, we believe that our existing cash, cash equivalents and marketable securities will be sufficient to meet our working capital and capital expenditure needs into 2027. However, we anticipate that we will need to raise additional capital in the future to fund our operations, including further development of our product candidates and the commercialization of any approved product candidates. In addition, we regularly consider fund-raising opportunities and may decide, from time to time, to raise additional capital, including pursuant to the Equity Distribution Agreement, based on various factors, including market conditions and our plans of operation. We are subject to the risks typically related to the development of new products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. For example, although we committed to implementing a reduction in workforce in the fourth quarter of 2023 to reduce our operating costs and improve operating efficiency, we may not achieve the expected benefits of our cost preservation efforts on the expected timeline, or at all, and we could otherwise consume capital more rapidly than we currently anticipate.

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

- the scope, timing, progress, costs and results of discovery, nonclinical development and clinical trials for our current and future product candidates;
- the number of clinical trials required for regulatory approvals of our current and future product candidates;
- the costs, timing and outcome of regulatory review of any of our current and future product candidates;
- advances in our genetic and epigenetic reprogramming technologies, as well as other research and development efforts;
- the cost of manufacturing clinical and commercial supplies of our current and future product candidates;
- the costs and timing of future commercialization activities, including manufacturing, marketing, sales and distribution, for any of our product candidates for which we receive marketing approval;
- the need to build additional manufacturing facilities or expand the capacity of our existing one or find suitable third-party manufacturing partners;
- the costs and timing of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending any intellectual property-related claims;
- our ability to maintain existing, and establish new, collaborations, licenses, product acquisitions or other strategic transactions and the fulfillment of our financial obligations under any such agreements, including the timing and amount of any success payments, future contingent payments, milestone, royalty or other payments due under any such agreement;
- the revenue, if any, received from commercial sales of our product candidates for which we receive marketing approval;
- expenses to attract, hire and retain skilled personnel;
- the costs of operating as a public company;
- the need to expand our operational, financial and management systems;
- any potential disputes or litigation and our related responses; and
- the extent to which we acquire or invest in businesses, products and technology platforms.

Until such time as we complete nonclinical and clinical development and receive regulatory approval of our product candidates and can generate significant revenue from product sales, if ever, we expect to finance our operations from the sale of additional equity or debt financings, or other capital that may come in the form of strategic collaborations, licensing, or other arrangements. In the event that additional capital is required, we may not be able to raise it on terms acceptable to us, or at all. If we raise additional funds through the issuance of equity or convertible debt securities, including pursuant to the Equity Distribution Agreement, it may result in dilution to our existing stockholders. Debt financing or preferred equity financing, if available, may result in increased fixed payment obligations and the existence of securities with rights that may be senior to those of our common stock. If we incur indebtedness, we could become subject to covenants that would restrict our operations. If we raise funds through strategic collaboration, licensing or other arrangements, we may relinquish significant rights or grant licenses on terms that are not favorable to us. Our ability to raise additional funds may be adversely impacted by potentially unfavorable global economic conditions and disruptions to, and volatility in, the credit and financial markets in the United States and worldwide, actual or perceived changes in interest rates and economic inflation, the current or anticipated impact of geopolitical instability and otherwise. If we are

unable to raise additional capital when desired, our business, results of operations and financial condition would be adversely affected.

Material Cash Requirements

We continually evaluate our liquidity and capital resources to ensure that we can adequately and efficiently finance our operations. As of September 30, 2023, our material cash requirements consisted primarily of paying salaries and benefits, conducting clinical trials and research, improving our manufacturing capabilities, providing the technology and facilities necessary to support our operations, funding operating lease obligations and other payments related to our collaborative agreements, including anticipated success payments and license fees. See Note 3, *License, Collaboration and Success Payment Agreements*, and Note 7, *Leases*, in the accompanying notes to the unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q, for additional information.

Cash Flows

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

	Nine Months Ended September 30,	
	2023	2022
Net cash (used in) provided by:		
Operating activities	$ (123,059)	$ (129,288)
Investing activities	284,738	(58,188)
Financing activities	984	9,772
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 162,663	$ (177,704)

Operating Activities

During the nine months ended September 30, 2023, net cash used in operating activities was $123.1 million, reflecting our net loss of $181.7 million, partially offset by non-cash items primarily related to stock-based compensation expense of $38.6 million, depreciation and amortization expense of $15.2 million and impairment of other investments of $12.9 million. Non-cash net amortization and accretion on marketable securities of $6.2 million also contributed to net cash used in operating activities.

During the nine months ended September 30, 2022, net cash used in operating activities was $129.3 million, primarily reflecting our net loss of $174.7 million, partially offset by non-cash items mainly related to stock-based compensation expense of $63.6 million, depreciation and amortization of $13.0 million and impairment of other investments of $5.0 million. Non-cash deferred revenue of $36.3 million and accrued liabilities and other current liabilities of $5.8 million also contributed to net cash used in operating activities.

Investing Activities

During the nine months ended September 30, 2023, cash provided by investing activities was $284.7 million, consisting of net maturities, sales and purchases of marketable securities of $287.4 million offset by purchases of property and equipment of $2.7 million.

During the nine months ended September 30, 2022, cash used in investing activities was $58.2 million, consisting of net maturities, sales and purchases of marketable securities of $38.5 million and purchases of property and equipment of $19.7 million.

Financing Activities

During the nine months ended September 30, 2023, cash provided by financing activities was $1.0 million, consisting of proceeds from the employee stock purchase plan of $1.2 million and proceeds from the exercise of stock options of $0.2 million, partially offset by taxes paid related to the net share settlement of equity awards of $0.3 million.

During the nine months ended September 30, 2022, cash provided by financing activities was $9.8 million, consisting of proceeds from the exercise of stock options of $9.3 million and proceeds from the employee stock purchase plan of $0.9 million, partially offset by $0.4 million in taxes paid related to the net share settlement of equity awards.

Off-Balance Sheet Arrangements

Since our inception, we did not have, and we do not currently have, any off-balance sheet arrangements as defined under the applicable rules and regulations of the SEC.

Critical Accounting Policies and Significant Judgments and Estimates

Our unaudited Condensed Consolidated Financial Statements are prepared in accordance with U.S. generally accepted accounting principles (GAAP). The preparation of these unaudited Condensed Consolidated Financial Statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the unaudited Condensed Consolidated Financial Statements, as well as the reported revenue and expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

There have been no material changes to our critical accounting policies and estimates as compared to those described in our Annual Report on Form 10-K for the year ended December 31, 2022 (Annual Report).

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risks in the ordinary course of our business. Our primary risks include interest rate sensitivities.

Interest Rate Risk

We had cash equivalents of $264.5 million as of September 30, 2023, which consisted of money market funds and highly liquid investments purchased with original maturities of three months or less from the purchase date. We also had marketable securities of $311.9 million as of September 30, 2023. The primary objective of our investment activities is to preserve capital to fund our operations, and we currently do not hedge our interest rate risk exposure. Because our marketable securities are primarily short-term in duration, we believe that our exposure to interest rate risk is not significant, and a hypothetical 10% relative change in interest rates during any of the periods presented would not have had a material effect on our unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q. We had no debt outstanding as of September 30, 2023.

Foreign Currency Exchange Risk

All of our employees and operations are currently located in the United States and our expenses are generally denominated in U.S. dollars. We therefore are not currently exposed to significant market risk related to changes in foreign currency exchange rates. However, we have contracted with and may continue to contract with non-U.S. vendors who we may pay in their local currency. Our operations may be subject to fluctuations in foreign currency exchange rates in the future. To date, foreign currency transaction gains and losses have not been material to our Condensed Consolidated Financial Statements, and we have not had a formal hedging program with respect to foreign currency. We believe a hypothetical 10% change in exchange rates during any of the periods presented would not have a material effect on our unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

Effects of Inflation

Inflation generally affects us by increasing our cost of labor and our clinical trial costs. We believe that inflation has not had a material effect on our unaudited Condensed Consolidated Financial Statements included elsewhere in this Quarterly Report on Form 10-Q.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

As of September 30, 2023, management, with the participation and supervision of our Chief Executive Officer and our Chief Financial Officer, have evaluated our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act. Our disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and that such information is accumulated and communicated to our management, including the Chief Executive Officer and the Chief Financial Officer, to allow timely decisions regarding required disclosures.

Any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objective and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of September 30, 2023, the design and operation of our disclosure controls and procedures were effective at a reasonable assurance level.

Changes in Internal Control over Financial Reporting

There has been no change in our internal control over financial reporting during the quarter ended September 30, 2023 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings.

From time to time, we have been or may become involved in material legal proceedings or be subject to claims arising in the ordinary course of our business. We are currently not party to any legal proceedings material to our operations or of which any of our property is the subject, nor are we aware of any such proceedings that are contemplated by a government authority.

Regardless of outcome, any such proceedings or claims is subject to inherent uncertainties and can have an adverse impact on us because of defense and settlement costs, diversion of time and resources and other factors, and there can be no assurances that favorable outcomes will be obtained.

Item 1A. Risk Factors.

Our business involves significant risks, some of which are described below. You should carefully consider the risks described below, as well as the other information contained in this Quarterly Report on Form 10-Q, including our unaudited Condensed Consolidated Financial Statements and the related notes and the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations." The occurrence of any of the events or developments described below could harm our business, financial condition, results of operations and growth prospects. In such an event, the market price of our common stock could decline and you may lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations. The risk factors set forth below that are marked with an asterisk (*) contain substantive changes to the similarly titled risk factors included in, or did not appear as separate risk factors in, Item 1A of our Annual Report, which was filed with the SEC on February 28, 2023.

Summary of Risk Factors

Below is a summary of material factors that make an investment in our securities speculative or risky. Importantly, this summary does not address all of the risks and uncertainties that we face. Additional discussion of the risks and uncertainties summarized in this risk factor summary, as well as other risks and uncertainties that we face, follows this summary. This summary is qualified in its entirety by that more complete discussion of such risks and uncertainties.

- We are an early clinical stage biopharmaceutical company and have incurred substantial losses since our inception and anticipate that we will continue to incur substantial and increasing net losses for the foreseeable future.
- We operate in a rapidly evolving field and have a limited operating history, which may make it difficult to evaluate the success of our business to date and to assess our future viability.
- We currently have no products approved for sale and have never generated revenue from product sales. We may never generate revenue from product sales or achieve profitability.
- We will require substantial additional capital to achieve our goals, and a failure to obtain this necessary capital when needed could force us to delay, limit, reduce or terminate our product development or commercialization efforts.
- Our success payment obligations in our success payment agreements may result in dilution to our stockholders or may be a drain on our cash resources to satisfy the payment obligations.
- We are early in our research and clinical development efforts of our product candidates. If we are unable to successfully develop and commercialize product candidates or experience significant delays in doing so, our business may be harmed.
- Our product candidates and technology platforms are based on novel technologies that are unproven and may not result in approvable or marketable products, which exposes us to unforeseen risks and makes it difficult for us to predict the time and cost of product development and potential for regulatory approval, and we may not be successful in our efforts to use and expand our technology platforms to build a pipeline of product candidates.

- We currently have no marketing, sales or distribution infrastructure, and we intend to either establish a sales and marketing infrastructure or outsource this function to a third party. Either of these commercialization strategies carries substantial risks to us.
- Our business could continue to be adversely affected by the effects of health epidemics in regions where we or third parties on which we rely have significant manufacturing facilities, concentrations of potential clinical trial sites or other business operations.
- We currently manufacture drug products for our clinical trials ourselves. Delays in further qualifying or in receiving regulatory approvals for any manufacturing facility or product candidates, or in expanding our manufacturing capacity or finding suitable third-party manufacturing partners, could delay our development plans and thereby limit our ability to generate product revenues.
- The manufacturing of cellular therapies is very complex. We are subject to a multitude of manufacturing risks, including risks associated with supply chain complexity related to patient materials, any of which could substantially increase our costs, delay our programs or limit supply of our product candidates.
- If a sole clinical or commercial manufacturing facility or any of our contract manufacturing organizations are damaged or destroyed or production at these facilities is otherwise interrupted, our business would be negatively affected.
- We may rely on third parties to manufacture our product candidates, which subjects us to risks and could delay or prevent our development and/or commercialization, if approved, of our product candidates.
- Cell-based therapies rely on the availability of specialty raw materials, which may not be available to us on acceptable terms or at all.
- We rely on third parties to conduct, supervise and monitor a significant portion of our research and nonclinical studies and clinical trials for our product candidates, and, if those third parties do not successfully carry out their contractual duties, comply with regulatory requirements or otherwise perform satisfactorily, 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 have in the past, and we may in the future, form or seek collaborations or strategic alliances or enter into additional licensing arrangements, and we may not realize the benefits of such alliances or licensing arrangements.
- We depend on the enrollment and retention of patients in our current and planned clinical trials for our product candidates. If we experience delays or difficulties enrolling or retaining patients in our clinical trials, our research and development efforts and business, financial condition and results of operations could be materially adversely affected.
- We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.
- Our cellular therapy product candidates represent new therapeutic approaches that could result in heightened regulatory scrutiny, delays in clinical development or delays in or our inability to achieve regulatory approvals, commercialization or payor coverage of our product candidates.
- The results of research, nonclinical studies or earlier clinical trials are not necessarily predictive of future results. Any product candidate we advance into clinical trials may not have favorable results in later clinical trials or receive regulatory approval.
- Clinical development involves a lengthy and expensive process with an uncertain outcome.
- Interim, topline or preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available or as we make changes to our manufacturing processes and are subject to audit and verification procedures that could result in material changes in the final data.

- Unstable market and economic conditions may have serious adverse consequences on our business, financial condition and stock price.
- If we are unable to obtain and maintain sufficient intellectual property protection for our product candidates, or if the scope of the intellectual property protection is not sufficiently broad, our ability to commercialize our product candidates successfully and to compete effectively may be adversely affected.
- We have in-licensed a significant portion of our intellectual property from our partners. If we breach any of our license agreements with these partners, we could potentially lose the ability to continue the development and potential commercialization of one or more of our product candidates.

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

We are an early clinical stage biopharmaceutical company and have incurred substantial losses since our inception and anticipate that we will continue to incur substantial and increasing net losses for the foreseeable future.*

Investment in biopharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that a product candidate will fail to prove safe and effective, gain regulatory approval or become commercially viable. We are an early clinical stage biopharmaceutical company, and we do not have any products approved by regulatory authorities and have incurred significant research, development and other expenses related to our ongoing operations and expect to continue to incur such expenses. Since our inception, we have not generated any revenue from product sales and have incurred significant net losses. Substantially all of our net losses since inception have resulted from our research and development programs and general and administrative costs associated with our operations. As of September 30, 2023, we had an accumulated deficit of $949.2 million.

We do not expect to generate revenue from product sales for the foreseeable future, if at all. We also expect to continue to incur significant expenses and operating losses for the foreseeable future. We anticipate these losses to increase as we continue to research, develop and seek regulatory approvals for our product candidates, expand our manufacturing capabilities, in-license or acquire additional technologies and potentially begin to commercialize product candidates that may achieve regulatory approval. We may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenues. Moreover, our net losses may fluctuate significantly from quarter to quarter and year to year, such that a period-to-period comparison of our results of operations may not be a good indication of our future performance. If any of our product candidates fails in research and development or clinical trials or does not gain regulatory approval, or, if approved, fails to achieve market acceptance, we may never become profitable. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods.

We expect to incur additional expenses and operating losses in the foreseeable future, if and as we:

- continue nonclinical development of our current and future product candidates and initiate additional nonclinical studies;
- commence and continue clinical trials of our current and future product candidates;
- advance our genetic and epigenetic reprogramming technologies as well as other research and development efforts;
- attract, hire and retain qualified personnel;
- seek regulatory approval of our current and future product candidates;
- expand our manufacturing and process development capabilities;
- expand our operational, financial and management systems;
- acquire and license technology or technology platforms;
- continue to develop, protect and defend our intellectual property portfolio; and
- incur additional legal, accounting or other expenses in operating our business, including the additional costs associated with operating as a public company.

We operate in a rapidly evolving field and have a limited operating history, which may make it difficult to evaluate the success of our business to date and to assess our future viability.

We operate in a rapidly evolving field and, having commenced operations in June 2018, have a limited operating history, which makes it difficult to evaluate our business and prospects. Our primary activities to date have included developing T-cell therapies, performing research and development, acquiring technology, entering into strategic collaboration and license agreements, enabling and executing manufacturing activities in support of our product candidate development efforts, organizing and staffing the company, business planning, establishing our intellectual property portfolio, regulatory submissions and other preparations to initiate and execute clinical trials, raising capital and providing general and administrative support for these activities. Any predictions about our future success, performance or viability, may not be as accurate as they could be if we had a longer operating history or approved products on the market.

In addition, we may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown factors. We will need to transition at some point from a company with a research and development focus to a company capable of supporting commercial activities. We may not be successful in such a transition. We expect our financial condition and operating results to continue to fluctuate significantly from quarter to quarter and year to year due to a variety of factors, many of which are beyond our control. Accordingly, any of our quarterly or annual periods' results are not indicative of future operating performance.

We currently have no products approved for sale and have never generated revenue from product sales. We may never generate revenue from product sales or achieve profitability.

To date, we have not generated any revenues from product sales. Our ability to generate revenues from product sales and achieve profitability will depend on our ability to successfully develop and subsequently obtain regulatory approval for and commercialize our product candidates. Our ability to generate revenues and achieve profitability also depends on a number of additional factors, including our ability to:

- successfully complete our research activities to identify the technologies and product candidates to further investigate in clinical trials;
- successfully complete development activities, including the necessary clinical trials;
- complete and submit regulatory submissions to the FDA, the European Medicines Agency (EMA) or other agencies and obtain regulatory approval for indications for which there is a commercial market;
- obtain coverage and adequate reimbursement from third parties, including government and private payors;
- set commercially viable prices for our products, if any;
- develop manufacturing and distribution processes for our product candidates;
- produce commercial quantities of our products at acceptable cost levels;
- maintain adequate supply of our product candidates, including the starting materials and reagents needed;
- maintain the supply of our product candidates in a manner that is compliant with global legal requirements or to the extent necessary;
- establish and maintain manufacturing relationships with reliable third parties;
- achieve market acceptance of our products, if any;
- attract, hire and retain qualified personnel;
- protect our rights in our intellectual property portfolio;
- develop a commercial organization capable of sales, marketing and distribution for any products we intend to sell ourselves in the markets in which we choose to commercialize on our own; and
- find suitable distribution partners to help us market, sell and distribute our approved products in other markets.

Our revenues for any product for which regulatory approval is obtained will be dependent, in part, upon the size of the markets in the territories for which we gain regulatory approval, the accepted price for the product, the ability to get reimbursement at any price and whether we own the commercial rights for that territory. In addition, we anticipate incurring significant costs associated with commercializing any approved product. As a result, even if we generate revenue from product sales, we may not become profitable and may need to obtain additional funding to continue operations. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and may be forced to reduce our operations.

We will require substantial additional capital to achieve our goals, and a failure to obtain this necessary capital when needed could force us to delay, limit, reduce or terminate our product development or commercialization efforts.*

We expect to expend substantial resources for the foreseeable future to advance and expand our research pipeline, conduct nonclinical studies and pursue clinical development and manufacturing of our product candidates. We also expect to continue to expend resources for the development of our technology platforms. These expenditures will include costs associated with research and development, potentially acquiring or licensing new technologies, conducting nonclinical studies and clinical trials and potentially obtaining regulatory approvals and manufacturing products, as well as marketing and selling products approved for sale, if any. We will also need to make significant expenditures to develop a commercial organization capable of sales, marketing and distribution for any products, if any, that we intend to sell ourselves in the markets in which we choose to commercialize. In addition, we may be required to make substantial payments related to our success payment agreements and other contingent consideration payments under our license and collaboration agreements. Because the design and outcome of our planned and anticipated clinical trials are highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully complete the discovery, development and commercialization of our existing and potential product candidates, and other unanticipated costs may arise.

As of September 30, 2023, we had $598.2 million in cash, cash equivalents and marketable securities. As a result of expense timing, as well as diligent expense management, we believe that our existing cash, cash equivalents and marketable securities will be sufficient to meet our working capital and capital expenditure needs into 2027. However, our future capital requirements and the period for which our existing resources will support our operations may vary significantly from what we expect, and we will in any event require additional capital to complete clinical development of any of our current programs.

We do not have any committed external source of funds. Additional funds may not be available when we need them on terms that are acceptable to us, or at all, and our ability to raise additional capital may be adversely impacted by potentially unfavorable global economic conditions or conditions in the biotechnology sector of the market, including disruptions to, or volatility in the credit and financial markets in the United States and worldwide, actual or perceived changes in interest rates and economic inflation, the current or anticipated impact of geopolitical instability and otherwise. If adequate funds are not available to us on a timely basis, including pursuant to the Equity Distribution Agreement, we may be required to delay, limit, reduce or terminate nonclinical studies, clinical trials or other development activities for our product candidates or delay, limit, reduce or terminate our establishment of sales, marketing and distribution capabilities or other activities that may be necessary to commercialize our product candidates.

Our success payment obligations in our success payment agreements may result in dilution to our stockholders or may be a drain on our cash resources to satisfy the payment obligations.

We agreed to make success payments payable in cash or publicly-tradeable shares of our common stock at our discretion pursuant to our success payment agreements with Fred Hutch and Stanford. On each contractually prescribed measurement date, we may be required to make success payments based on increases in the per share fair value of our common stock. The total amount of success payments that we may become obligated to make is currently $400.0 million and may increase in the future due to amendments of our existing success payment agreements. For information related to our success payment obligations, see Note 3, *License, Collaboration and Success Payment Agreements*, in the accompanying notes to the unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

In order to satisfy our obligations to make these success payments, if and when they are triggered, we may issue equity or convertible debt securities that may cause dilution to our stockholders, or we may use our existing cash to satisfy the success payment obligation in cash, which may adversely affect our financial position. In addition, these success payments may impede our ability to raise money in future public offerings of debt or equity securities or to obtain a third-party line of credit.

The success payment agreements may cause operating results to fluctuate significantly from quarter to quarter and year to year, which may reduce the usefulness of our consolidated financial statements.*

Our success payment obligations are recorded as liabilities on our Condensed Consolidated Balance Sheets. Under U.S. generally accepted accounting principles (GAAP), we are required to estimate the fair value of these liabilities as of each quarter end and changes in the estimated fair value are accreted to research and development expense over the service period of the collaboration agreement. Once the requisite service obligation to earn the potential success payment consideration is met under our continued collaboration agreements, the change in the success payment liabilities fair value is recognized in other income or expense, net. For example, in December 2022, Fred Hutch had provided the requisite service obligation to earn the potential success payment consideration under the continued collaboration; accordingly in

2023 and future periods, the change in the success payments liability fair value is recognized in other income or expense, net.

Factors that may lead to increases or decreases in the estimated fair value of our success payment liabilities include, among others, changes in the value of the common stock, changes in volatility and changes in the risk-free rate. As a result, our operating results and financial condition as reported by GAAP may fluctuate significantly from quarter to quarter and from year to year and may reduce the usefulness of our GAAP consolidated financial statements. See Note 3, *License, Collaboration and Success Payment Agreements*, in the accompanying notes to the unaudited Condensed Consolidated Financial Statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q for additional information.

Risks Related to Our Business and Industry

We are early in our research and clinical development efforts. If we are unable to successfully develop and commercialize product candidates or experience significant delays in doing so, our business may be harmed.

We are early in our research and clinical development efforts of our product candidates. Besides LYL797 and LYL845, which are in Phase 1 clinical development, our other proprietary product candidates are currently in preclinical development. We have not yet demonstrated our ability to successfully complete any clinical trials (including any Phase 3 or other pivotal clinical trials), obtain regulatory approvals, manufacture a commercial-scale product or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization. We have invested substantial resources in developing our technology platforms and our product candidates, conducting nonclinical studies, commencing clinical trials and building our manufacturing facilities and capabilities, each of which will be required prior to any regulatory approval and commercialization. Our ability to generate revenue from product sales, which we do not expect will occur for several years, if ever, will depend heavily on the successful research and development and eventual commercialization of one or more product candidates. The success of our efforts to identify and develop product candidates will depend on many factors, including the following:

- timely and successful completion of our nonclinical studies and research activities to identify and develop product candidates to investigate in clinical trials;
- submission of INDs to the FDA to proceed with clinical trials, or comparable applications to foreign regulatory authorities that allow the commencement of our planned clinical trials for our product candidates;
- successful enrollment and completion of clinical trials in compliance with Good Clinical Practice (GCP) requirements with positive results;
- the level of efficacy observed with our product candidates;
- the prevalence and severity of adverse events experienced with any of our product candidates;
- successfully developing, or making arrangements with third parties for, manufacturing and distribution processes for our product candidates and for commercial manufacturing and distribution for any of our product candidates that receive regulatory approval;
- receipt of timely regulatory approvals from applicable authorities for our product candidates for their intended uses;
- protecting our rights in our intellectual property portfolio, including by obtaining and maintaining patent and trade secret protection and regulatory exclusivity for our product candidates;
- establishing capabilities and infrastructure to obtain the tumor tissues needed to develop and, if successful, commercialize approved products;
- manufacturing our product candidates at an acceptable cost;
- launching commercial sales of our products, if approved by applicable regulatory authorities, whether alone or in collaboration with others;
- acceptance of our products, if approved by applicable regulatory authorities, by patients and the medical community;
- obtaining and maintaining coverage and adequate reimbursement by third-party payors, including government payors, for our products, if approved by applicable regulatory authorities;
- effectively competing with other marketed therapies;
- maintaining compliance with regulatory requirements, including the cGMP requirements;

- maintaining a continued acceptable benefit/risk profile of the products following approval; and
- maintaining and growing an organization of scientists and functional experts who can develop and commercialize our products and technology.

If we do not achieve one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to successfully develop and commercialize our product candidates, which could harm our business. If we do not receive marketing approvals for any product candidate we develop, we may not be able to continue our operations.

Our product candidates and technology platforms are based on novel technologies that are unproven and may not result in approvable or marketable products, which exposes us to unforeseen risks and makes it difficult for us to predict the time and cost of product development and potential for regulatory approval, and we may not be successful in our efforts to use and expand our technology platforms to build a pipeline of product candidates.

We are seeking to identify and develop a broad pipeline of product candidates using our proprietary technology platforms. The scientific research that forms the basis of our efforts to develop product candidates with our technology platforms is still ongoing. We are not aware of any FDA approved therapeutics utilizing similar technology. Further, the scientific evidence to support the feasibility of developing therapeutic treatments based on our technology platforms are both preliminary and limited. Additionally, although LYL797 and LYL845 are in Phase 1 clinical development, our current clinical data are limited, and nonclinical data from murine tumor models and in vitro experiments with tumor cell lines may not translate into humans or may not accurately predict the safety and efficacy of our product candidates in humans. As a result, we are exposed to a number of unforeseen risks, and it is difficult to predict the types of challenges and risks that we may encounter during development of our product candidates.

Given the novelty of our technology platforms, we intend to work closely with the FDA and comparable foreign regulatory authorities to perform the requisite scientific analyses and evaluation of our methods to obtain regulatory approval for our product candidates; however, due to a lack of relevant experiences, the regulatory pathway with the FDA and comparable regulatory authorities may be more complex and time-consuming relative to other more well-known therapeutics. Even if we obtain human data to support our product candidates, the FDA or comparable foreign regulatory agencies may lack experience in evaluating the safety and efficacy of our product candidates developed using our technology platforms, which could result in a longer than expected regulatory review process, increase our expected development costs and delay or prevent commercialization of our product candidates. The validation process takes time and resources, may require independent third-party analyses and may not be accepted or approved by the FDA and comparable foreign regulatory authorities. There can be no assurance as to the length of clinical development, the number of patients that the FDA may require to be enrolled in clinical trials to establish the safety, purity and potency of our product candidates or the acceptability to the FDA of data generated in these clinical trials to support marketing approvals. We cannot be certain that our approach will lead to the development of approvable or marketable products, alone or in combination with other therapies.

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

Our ability to compete in the highly competitive biotechnology and pharmaceutical industries depends upon our ability to attract and retain highly qualified managerial, scientific and medical personnel. We are highly dependent on our management, manufacturing, scientific and medical personnel. The loss of the services of any of our executive officers, other key employees and other scientific and medical advisors and our inability to find suitable replacements could result in delays in product development and harm our business. We conduct substantially all of our operations at our facilities in the San Francisco, Seattle and Bothell metropolitan areas. These regions are headquarters to many other biopharmaceutical companies and many academic and research institutions. Competition for skilled personnel in these markets is intense and may limit our ability to hire and retain highly qualified personnel on acceptable terms or at all.

To induce valuable employees to remain at our company, in addition to salary and cash incentives, we have provided equity that vests over time. The value to employees of equity incentives that vest over time may be significantly affected by factors beyond our control, including market conditions and volatility, and may at any time be insufficient to counteract more lucrative offers from other companies. Despite our efforts to retain valuable employees, we may nevertheless experience attrition from members of our management, scientific and development teams. For example, over the past twelve months, there have been departures of executive officers, including most recently our chief medical officer. Although we have employment agreements with our key employees, these employment agreements provide for at-will employment, which means that any of our employees could leave our employment at any time, with or without notice. We do not maintain “key man” insurance policies on the lives of these individuals or the lives of any of our other employees. Our success also depends on our ability to continue to attract, retain and motivate highly skilled junior, mid-level and

senior managers as well as junior, mid-level and senior scientific and medical personnel. Our recently announced reduction in workforce may yield unintended consequences and costs, such as difficulty retaining and motivating remaining employees, increased difficulty in our day-to-day operations and loss of institutional knowledge and expertise and difficulty in attracting and hiring qualified employees in the future. We may also be subject to reputational risks and litigation risks and expenses.

Any litigation or adversarial proceedings could be costly and time-consuming to defend.

We have been and may in the future become subject to legal proceedings and claims that arise in the ordinary course of business, such as claims brought by us or third parties in connection with commercial disputes or employment claims made by our current or former employees. Litigation or adversarial proceedings might result in substantial costs and may divert management's attention and resources, which might seriously harm our business, reputation, overall financial condition and operating results. For example, in February 2021, we filed a demand for arbitration seeking, among other things, rescission of each of the joint-development agreement and stock purchase agreement with PACT Pharma, Inc. (PACT) and recovery of the consideration paid thereunder and in October 2022, we entered into a settlement agreement with PACT to resolve the outstanding legal dispute. Insurance might not cover such claims, might not provide sufficient payments to cover all the costs to resolve one or more such claims and might not continue to be available on terms acceptable to us. Any claim brought by us or against us that is uninsured or underinsured could result in unanticipated costs, thereby harming our business.

If we cannot maintain our company culture as we grow, our success and our business may be harmed.

We believe our culture has been a key contributor to our success to date. Any failure to preserve our culture could negatively affect our ability to retain and recruit personnel, which is critical to our growth, and to effectively focus on and pursue our objectives. As we grow and are required to implement more complex organizational management structures, we may find it increasingly difficult to maintain the beneficial aspects of our culture. If we fail to maintain our company culture, our business may be adversely affected.

We currently have no marketing, sales or distribution infrastructure, and we intend to either establish a sales and marketing infrastructure or outsource this function to a third party. Either of these commercialization strategies carries substantial risks to us.

We currently have no marketing, sales and distribution capabilities. To support commercial marketing and distribution of any of our product candidates that complete clinical development and are approved, we would either establish a sales and marketing organization with technical expertise and supporting distribution capabilities to commercialize our product candidates in a legally compliant manner or outsource this function to a third party. There are risks involved if we decide to establish our own sales and marketing capabilities or enter into arrangements with third parties to perform these services. To the extent that we enter into collaboration agreements with respect to marketing, sales or distribution, our product revenue may be lower than if we directly marketed or sold any approved products. Such collaborative arrangements with partners may place the commercialization of our products outside of our control and would make us subject to a number of risks, including that we may not be able to control the amount or timing of resources that our collaborative partner devotes to our products or that our collaborator's willingness or ability to complete its obligations, and our obligations under our arrangements may be adversely affected by business combinations or significant changes in our collaborator's business strategy.

If we are unable to enter into these arrangements on acceptable terms or at all, we may not be able to successfully commercialize any approved products. If we are not successful in commercializing any approved products, either on our own or through collaborations with one or more third parties, our future product revenue will suffer, and we may incur significant additional losses, which would have a material adverse effect on our business, financial condition and results of operations.

Our business could continue to be adversely affected by the effects of health epidemics in regions where we or third parties on which we rely have significant manufacturing facilities, concentrations of potential clinical trial sites or other business operations.*

Our business could continue to be adversely affected by health epidemics in regions where we or third parties on which we rely have significant manufacturing facilities, concentrations of potential clinical trial sites or other business operations. For example, health epidemics, including the COVID-19 pandemic, have in the past and could again in the future result in quarantines, stay-at-home orders, remote work policies or other similar events that may disrupt businesses, delay our research and development programs and timelines, negatively impact productivity and increase risks associated with cybersecurity, the future magnitude of which will depend, in part, on the length and severity of the restrictions and other limitations. These types of events presented substantial public health and economic challenges around the world and affected employees, patients, communities and business operations, as well as the United States and international economy

and financial markets. In this regard, the COVID-19 pandemic and government measures taken in response have had a significant impact in the last three years, both direct and indirect, on businesses and commerce, as significant reductions in business-related activities have occurred, supply chains have been disrupted, availability and cost of materials have been affected and manufacturing and clinical development activities have been impacted.

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

The global credit and financial markets have experienced extreme volatility and disruptions (including as a result of the COVID-19 pandemic and actual or perceived changes in interest rates and economic inflation), which has included severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, high inflation, uncertainty about economic stability and swings in unemployment rates. The financial markets and the global economy may also be adversely affected by the current or anticipated impact of supply chain disruptions, labor shortages, fluctuations in currency exchange rates, changes in interest rates, military conflict, acts of terrorism or other geopolitical events. Sanctions imposed by the United States and other countries in response to geopolitical conflicts, including the one in Ukraine, may also continue to adversely impact the financial markets and the global economy, and any economic countermeasures by the affected countries or others could exacerbate market and economic instability. There can be no assurance that further deterioration in credit and financial markets and confidence in economic conditions will not occur. Our general business strategy may be adversely affected by any such economic downturn, volatile business environment or continued unpredictable and unstable market conditions, including disruption to enrollment within our ongoing trials and our ability to purchase necessary supplies on acceptable terms, if at all. If the current equity and credit markets deteriorate, it may make any necessary debt or equity financing more difficult, more costly and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance and stock price and could require us to delay or abandon clinical development plans. In addition, there is a risk that one or more of our current service providers, manufacturers and other partners may not survive an economic downturn, which could directly affect our ability to attain our operating goals on schedule and on budget.

Adverse developments affecting the financial services industry could adversely affect our current and projected business operations and our financial condition and results of operations.*

Adverse developments that affect financial institutions, such as events involving liquidity that are rumored or actual, have in the past and may in the future lead to bank failures and market-wide liquidity problems. For example, in March 2023, Silicon Valley Bank (SVB) was closed by the California Department of Financial Protection and Innovation, which appointed the Federal Deposit Insurance Corporation (FDIC) as receiver. Similarly, later in March 2023, Signature Bank and Silvergate Capital Corp. were each swept into receivership. While the U.S. Department of Treasury, FDIC and Federal Reserve Board have announced a program to provide up to $25 billion of loans to financial institutions secured by certain of such government securities held by financial institutions to mitigate the risk of potential losses on the sale of such instruments, widespread demands for customer withdrawals or other liquidity needs of financial institutions for immediate liquidity may exceed the capacity of such program, and there is no guarantee that such programs will be sufficient. Additionally, it is uncertain whether the U.S. Department of Treasury, FDIC and Federal Reserve Board will provide access to uninsured funds in the future in the event of the closure of other banks or financial institutions, or that they would do so in a timely fashion.

While we have not experienced any adverse impact to our liquidity or to our current and projected business operations, financial condition or results of operations as a result of the matters relating to SVB, Signature Bank and Silvergate Capital Corp, uncertainty remains over liquidity concerns in the broader financial services industry, and our business, our business partners or industry as a whole may be adversely impacted in ways that we cannot predict at this time.

Although we assess our banking relationships as we believe necessary or appropriate, our access to cash in amounts adequate to finance or capitalize our current and projected future business operations could be significantly impaired by factors that affect the financial institutions with which we have banking relationships and, in turn, us. These factors could include, among others, events such as liquidity constraints or failures, the ability to perform obligations under various types of financial, credit or liquidity agreements or arrangements, disruptions or instability in the financial services industry or financial markets, or concerns or negative expectations about the prospects for companies in the financial services industry. These factors could also include factors involving financial markets or the financial services industry generally. The results of events or concerns that involve one or more of these factors could include a variety of material and adverse impacts on our current and projected business operations and our financial condition and results of operations. These could include, but may not be limited to, delayed access to deposits or other financial assets or the uninsured loss of deposits or other financial assets; or termination of cash management arrangements and/or delays in accessing or actual loss of funds subject to cash management arrangements.

In addition, widespread investor concerns regarding the U.S. or international financial systems could result in less favorable commercial financing terms, including higher interest rates or costs and tighter financial and operating covenants, or systemic limitations on access to credit and liquidity sources, thereby making it more difficult for us to acquire financing on acceptable terms or at all. Any decline in available funding or access to our cash and liquidity resources could, among other risks, adversely impact our ability to meet our operating expenses, financial obligations or fulfill our other obligations, result in breaches of our financial and/or contractual obligations or result in violations of federal or state wage and hour laws. Any of these impacts, or any other impacts resulting from the factors described above or other related or similar factors not described above, could have material adverse impacts on our liquidity and our current and/or projected business operations and financial condition and results of operations.

Risks Related to Manufacturing

We currently manufacture drug products for our clinical trials ourselves. Delays in further qualifying or in receiving regulatory approvals for any manufacturing facility or product candidates, or in expanding our manufacturing capacity, could delay our development plans and thereby limit our ability to generate product revenues.*

We have built our own manufacturing facility in Bothell, Washington. The facility is designed to support the production of nonclinical and clinical development product candidates and early commercialization of products, and ongoing facility and equipment qualification to support clinical production is required. If we are not able to further qualify our existing facility or the appropriate regulatory approvals for the facility are delayed, or if we are unable to otherwise expand our manufacturing capacity, we may be unable to manufacture sufficient quantities of our product candidates, if at all, which would limit our development activities and our opportunities for growth.

In addition, our manufacturing facility will be subject to ongoing, periodic inspection by the FDA, EMA or other applicable regulatory agencies to ensure compliance with cGMPs and current Good Tissue Practices (cGTPs). Our failure to follow and document our adherence to these regulations or other regulatory requirements may lead to significant delays in the availability of products for clinical or, in the future, commercial use. This may result in the termination of or a hold on a clinical trial or may delay or prevent filing or approval of commercial marketing applications for our product candidates. We also may encounter problems with the following:

- achieving adequate or clinical-grade materials that meet regulatory agency standards or specifications with consistent and acceptable production yield and costs;
- maintaining continuity among our key manufacturing-related electronic systems;
- shortages of qualified personnel, raw materials or key contractors; and
- ongoing compliance with cGMP regulations and other requirements of the FDA, EMA or other comparable regulatory agencies.

Failure to comply with applicable regulations could also result in sanctions being imposed on us, including fines, injunctions, civil penalties, a requirement to suspend or put on hold one or more of our clinical trials, failure of regulatory authorities to grant marketing approval of our product candidates, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of product candidates, operating restrictions and criminal prosecutions, any of which could harm our business.

Developing advanced manufacturing techniques and process controls is required to fully utilize our facility. Without further investment, advances in manufacturing techniques may render our facility and equipment inadequate or obsolete. We may also require further investment to build additional manufacturing facilities or expand the capacity of our existing ones.

The manufacturing of cellular therapies is very complex. We are subject to a multitude of manufacturing risks, any of which could substantially increase our costs, delay our programs or limit supply of our product candidates.

Developing commercially viable manufacturing processes for cellular therapies is a difficult and uncertain task and requires significant expertise and capital investment. We are developing and implementing manufacturing processes for our product candidates. In particular, for autologous cell therapies, the starting material is the patient’s own cells, which inherently adds complexity and variability to the manufacturing process. In addition, our ability to consistently and reliably manufacture our cellular therapy product candidates is essential to our success, and there are risks associated with scaling to the level required for advanced clinical trials or commercialization, including cost overruns, potential problems with process scale-up, process reproducibility, stability issues, consistency and timely availability of reagents or raw materials. Furthermore, our manufacturing processes may have significant dependencies on third parties, which will pose additional risks to our manufacturing capabilities. Additionally, we do not yet have sufficient information to reliably estimate the cost

of the commercial manufacturing and processing of our product candidates, and the actual cost to manufacture and process our product candidates could materially and adversely affect the commercial viability of our product candidates. As a result, we may never be able to develop a commercially viable product.

In addition to the factors mentioned above, the overall process of manufacturing cellular therapies is extremely susceptible to product loss due to low cell viability, contamination, equipment failure or improper installation or operation of equipment, or vendor or operator error. Even minor deviations from normal manufacturing and distribution processes for any of our product candidates could result in reduced production yields, impact to key product quality attributes and other supply disruptions. Product defects can also occur unexpectedly. These deviations and disruptions could delay our programs. If we are not able to capably manage this complexity and variability, our ability to timely and successfully provide our product candidates to patients could be delayed. In addition, the complexities of utilizing a patient's own cells as the starting material requires that we have suitable cells capable of yielding a viable cellular therapy product, which may not be possible for severely immune-compromised or heavily pre-treated patients.

The process of successfully manufacturing products for clinical testing and commercialization may be particularly challenging, even if such products otherwise prove to be safe and effective. The manufacture of these product candidates involves complex processes. Some of these processes require specialized equipment and highly skilled and trained personnel. The process of manufacturing these product candidates will be susceptible to additional risks, given the need to maintain aseptic conditions throughout the manufacturing process. Contamination with microbes, viruses or other pathogens in either the donor material or materials utilized in the manufacturing process or ingress of microbiological material at any point in the process may result in contaminated, unusable product or necessitate the closing of a manufacturing facility for an extended period of time to allow us to investigate and remedy the contamination. These types of contaminations could result in delays in the manufacture of products, which could result in delays in the development of our product candidates. These contaminations could also increase the risk of adverse side effects.

Any adverse developments affecting manufacturing operations for our product candidates may result in lot failures, inventory shortages, shipment delays, product withdrawals or recalls or other interruptions in supply that could delay the development of our product candidates. If we are unable to obtain sufficient supply of our product candidates, whether due to production shortages or other supply interruptions resulting from any lingering effects of the COVID-19 pandemic, the Russia-Ukraine conflict or otherwise, our clinical trials or regulatory approvals may be delayed. We may also have to write off inventory, incur other charges and expenses for supply of product that fails to meet specifications, undertake costly remediation efforts or seek more costly manufacturing alternatives. In addition, parts of the supply chain may have long lead times or may come from a small number of suppliers. If we are not able to appropriately manage our supply chain, our ability to successfully produce our product candidates could be delayed or harmed. Inability to meet the demand for our product candidates could damage our reputation and the reputation of our products among physicians, healthcare payors, patients or the medical community that supports our product development efforts, including hospitals and outpatient clinics.

Furthermore, the manufacturing facilities in which our product candidates will be made could be adversely affected by earthquakes and other natural disasters, equipment failures, labor shortages, power failures, health epidemics and numerous other factors. If any of these events were to occur and impact our manufacturing facilities, our business would be materially and adversely affected.

If our sole clinical or commercial manufacturing facility or any of our contract manufacturing organizations is damaged or destroyed or production at these facilities is otherwise interrupted, our business would be negatively affected.*

We operate a single manufacturing facility in Bothell, Washington and may rely on third-party contract manufacturing organizations to meet our current and future manufacturing needs. If our manufacturing facility or any facility in our manufacturing network, or the equipment in these facilities, is either damaged or destroyed, we may not be able to quickly or inexpensively replace our manufacturing capacity, if at all. In the event of a temporary or protracted loss of a facility or its equipment, we may not be able to transfer manufacturing to a third party in the time required to maintain supply. Even if we are able to transfer manufacturing to a third party, the shift would likely be expensive and time-consuming, particularly since the new facility would need to comply with the necessary regulatory requirements or may require regulatory approval before selling any products manufactured at that facility. Such an event could substantially delay our clinical trials or commercialization of our product candidates.

Currently, we maintain insurance coverage against damage to our property and to cover business interruption and research and development restoration expenses. However, our insurance coverage may not reimburse us, or may not be sufficient to reimburse us, for any expenses or losses we may suffer. We may be unable to meet our requirements for our product candidates if there were a catastrophic event or failure of our current manufacturing facility or processes.

We may rely on third parties to manufacture our product candidates, which subjects us to risks and could delay or prevent our development and/or commercialization, if approved, of our product candidates.*

We may rely on third parties to manufacture our current or future product candidates. We may be unable to identify manufacturers for our product candidates or the materials required to develop the cellular therapy on acceptable terms or at all because the number of potential manufacturers is limited. We are currently evaluating third-party manufacturing options, including an automated manufacturing platform from Cellares for the manufacture of our LYL797 CAR T-cell therapy. Engaging a third-party manufacturer will require testing and regulatory interactions, and a new manufacturer would have to be educated in, or develop substantially equivalent processes for, production of our products after receipt of FDA questions, if any. Such potential third-party manufacturers may be unable to timely formulate and manufacture our product or produce the quantity and quality required to meet our clinical and commercial needs, if any.

Furthermore, the facilities used by manufacturers are subject to ongoing periodic unannounced inspections by the FDA and corresponding state agencies to ensure strict compliance with government regulations and corresponding foreign standards, and we do not have control over third-party manufacturers' compliance with cGMPs for the manufacture of our product candidates. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or others, we will not be able to obtain and/or maintain regulatory approval for our product candidates manufactured in these facilities. In addition, we have no control over the ability of our third-party manufacturers to maintain adequate control, quality assurance and qualified personnel required to meet our clinical and commercial needs, if any. If the FDA or a comparable foreign regulatory authority does not approve the manufacture of our product candidates at these facilities or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved. In addition, any failure to achieve and maintain compliance with these laws, regulations and standards could subject us to the risk that we may have to suspend the manufacturing of our product candidates or that any approvals we have obtained could be revoked, which would adversely affect our business and reputation.

We may not own, or may have to share, the intellectual property rights to any improvements made by our third-party manufacturers in the manufacturing process for our products. Also, our third-party manufacturers could breach or terminate their agreement with us because of their own financial difficulties or business priorities at a time that is costly or otherwise inconvenient for us. If we were unable to find adequate replacement or another acceptable solution in time, our clinical trials could be delayed or our commercial activities could be harmed.

Furthermore, our third-party manufacturers would also be subject to the same risks we face in developing our own manufacturing capabilities, as described above. Each of these risks could delay our clinical trials, the approval, if any, of our product candidates by the FDA or the commercialization of our product candidates or result in higher costs or deprive us of potential product revenue.

Cell-based therapies rely on the availability of specialty raw materials, which may not be available to us on acceptable terms or at all.

Our product candidates require many specialty raw materials. As a result, we may be required to outsource aspects of our manufacturing supply chain. Many of the specialty raw materials may be manufactured by small companies with limited resources and experience to support a commercial product, and the suppliers may not be able to deliver raw materials to our specifications. 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 may not be able to develop, manufacture and market our product candidates in a timely and competitive manner, or at all. An inability to continue to source product from any of these suppliers, which could be due to a number of issues, including regulatory actions or requirements affecting the supplier, adverse financial or other strategic developments experienced by a supplier, labor disputes or shortages, unexpected demands or quality issues, could adversely affect our ability to satisfy demand for our product candidates, which could adversely and materially affect our product sales and operating results or our ability to conduct clinical trials, either of which could significantly harm our business.

In addition, those suppliers may not have the capacity to support commercial products manufactured by biopharmaceutical firms. The suppliers may be ill-equipped to support our needs, especially in non-routine circumstances like an FDA inspection, or medical crises such as widespread contamination. We may not be able to contract with these companies on acceptable terms or at all. Accordingly, we may experience delays in receiving key raw materials to support clinical or commercial manufacturing. In addition, some raw materials are currently available from a single supplier, or a

small number of suppliers. We cannot be sure that these suppliers will remain in business, or that they will not be purchased by one of our competitors or another company that is not interested in continuing to produce these materials for our intended purpose. These factors could cause the delay of studies or trials, regulatory submissions, required approvals or commercialization of product candidates that we develop, cause us to incur higher costs and prevent us from commercializing our product candidates successfully.

Risks Related to Our Dependence on Third Parties

We intend to rely on third parties to conduct, supervise and monitor a significant portion of our research and nonclinical studies and clinical trials for our product candidates, and, if those third parties do not successfully carry out their contractual duties, comply with regulatory requirements or otherwise perform satisfactorily, 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 intend to rely on medical institutions, clinical investigators, contract laboratories and other third parties, such as CROs, to conduct GCP-compliant clinical trials on our product candidates properly and on time. For example, we are relying on CROs to conduct significant parts of our LYL797 and LYL845 Phase 1 clinical trials. Negotiating budgets and contracts with CROs and study sites may result in delays to our development timelines and increased costs. Switching or adding CROs involves substantial cost and requires management time and focus. In addition, there is a natural transition period when a new CRO commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines. Though we intend to carefully manage our relationships with our CROs, there can be no assurance that we will not encounter challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects.

In addition, any third parties conducting our clinical trials or nonclinical studies will not be our employees, and, except for remedies available to us under our agreements with such third parties, we cannot control whether or not they devote sufficient time and resources to our programs. If these third parties do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain are compromised due to the failure to adhere to our clinical protocols, regulatory requirements or for other reasons, our clinical trials or nonclinical studies may be extended, delayed or terminated, and we may not be able to obtain regulatory approval or successfully commercialize our product candidates. Consequently, our results of operations and the commercial prospects for our product candidates would be harmed, our costs could increase substantially and our ability to generate revenue could be delayed significantly.

We rely on these parties for execution of our nonclinical studies and clinical trials, and generally do not control their activities. Our reliance on these third parties for research and development activities will reduce our control over these activities but will not relieve us of our responsibilities. 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 standards, commonly referred to as GCPs, for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. If we or any of our CROs or other third parties, including trial sites, fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable, and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials complies with GCP regulations. In addition, our clinical trials must be conducted with product produced under cGMP conditions. Our failure to comply with these regulations may require us to add patients to or repeat clinical trials, which would delay the regulatory approval process. Moreover, our business may be implicated if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

If any of our relationships with the third parties that we currently use or that we may use in the future terminates, we may not be able to enter into arrangements with alternative third parties or do so on commercially reasonable terms. As a result, delays occur, which can materially impact our ability to meet desired research and clinical development timelines.

We do and will continue to or intend to rely on outside scientists and clinical trial investigators and their third-party research institutions for research and development and early clinical testing of our product candidates. These scientists, investigators and institutions may have other commitments or conflicts of interest, which could limit our access to their expertise and harm our ability to leverage our technology platforms.

We rely on our third-party research institution collaborators for some research capabilities. However, the research we are funding constitutes only a small portion of the overall research of each research institution. Other research being conducted by these institutions may at times receive higher priority than research on the programs we are funding. We

typically have less control of the research, clinical trial protocols and patient enrollment than we might with activity led by our employees.

The outside scientists and clinical trial investigators who conduct the research and development upon which portions of our product candidate pipeline depends are not our employees; rather, they serve as either independent contractors or the primary investigators under research collaboration agreements that we have with their sponsoring academic or research institution. Such scientists and collaborators may have other commitments that would limit their availability to us. Although our scientific advisors generally agree not to do competing work, if an actual or potential conflict of interest between their work for us and their work for another entity arises, we may lose their services. These factors could adversely affect the timing of the clinical trials, the timing of receipt and reporting of clinical data, the timing of our IND submissions and our ability to conduct our current and planned clinical trials. It is also possible that some of our valuable proprietary knowledge may become publicly known through these scientific advisors if they breach their confidentiality agreements with us, which would cause competitive harm to, and have an adverse effect on, our business.

We have in the past, and we may in the future, form or seek collaborations or strategic alliances or enter into additional licensing arrangements, and we may not realize the benefits of such alliances or licensing arrangements.

We have entered into research and development collaborations in the past, and may in the future, enter into additional license and collaboration arrangements. Any collaboration arrangement that we enter into is subject to numerous risks, which may include the following:

- the collaborator has significant discretion in determining the efforts and resources that they will apply to a program or product candidate under the collaboration;
- the collaborator may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in their strategic focus due to the acquisition of competitive products, availability of funding or other external factors, such as a business combination that diverts resources or creates competing priorities;
- the collaborator may delay or halt clinical trials, provide insufficient funding for a clinical trial, preferentially enroll patients on a portion of a clinical trial not testing our product candidates, stop a clinical trial, abandon a product candidate, repeat or conduct new clinical trials, or require a new formulation of a product candidate for clinical testing;
- the collaborator could independently develop, or develop with third parties, products that compete directly or indirectly with our products or product candidates;
- the collaborator may not commit sufficient resources to marketing and distribution of our products;
- the collaborator may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;
- disputes may arise between us and the collaborator that cause the delay or termination of the research, development or commercialization of our product candidates, or that result in costly litigation or arbitration that diverts management attention and resources;
- the collaboration may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates; and
- the collaborator may own or co-own intellectual property covering our product candidates that results from our collaborating with them, and in such cases, we would not have the exclusive right to commercialize such intellectual property.

In particular, failure by any collaborator to meet its obligations under our collaboration agreements or to apply sufficient efforts at developing and commercializing collaboration products may adversely affect our business, financial condition and our results of operations. For example, we were previously party to a research and development collaboration with GSK for our NY-ESO-1 program and other potential product opportunities and, effective December 2022, GSK terminated the agreement and discontinued its development of product candidates targeting NY-ESO-1, including the second-generation product candidates that incorporated our genetic and epigenetic reprogramming technologies. No patients had been treated with these product candidates and, given the early stage of these second-generation programs, the termination was not based on any clinical efficacy or safety data from these programs. We have also discontinued any further work on these programs.

We may form or seek further strategic alliances, create joint ventures or collaborations, or enter into additional licensing arrangements with third parties that we believe will complement or augment our development and commercialization efforts with respect to our product candidates, our research and any future product candidates that we may pursue. Such alliances will be subject to many of the risks set forth above. Moreover, any of these relationships may require us to incur non-recurring and other charges, increase our near and long-term expenditures, issue securities that dilute our existing stockholders or disrupt our management and business. In addition, we face significant competition in seeking appropriate strategic partners and the negotiation process is time-consuming and complex.

As a result of these risks, we may not be able to realize the benefit of our existing collaboration or any future collaborations or licensing agreements we may enter into. Any delays in entering into new collaborations or strategic partnership agreements related to our product candidates could delay the development and commercialization of our product candidates in certain geographies for certain indications, which would harm our business prospects, financial condition and results of operations.

We may not realize the benefits of potential future collaborations, licenses, product acquisitions or other strategic transactions.

We have entered into, and may desire to enter into in the future, collaborations, licenses or other strategic transactions for the acquisition of products or business opportunities, in each case where we believe such arrangement will complement or augment our existing business. These relationships or transactions, or those like them, may require us to incur nonrecurring and other charges, increase our near- and long-term expenditures, issue securities that dilute our existing stockholders, reduce the potential profitability of the products that are the subject of the relationship or disrupt our management and business. In addition, we face significant competition in seeking appropriate strategic alliances and transactions and the negotiation process is time-consuming and complex, and there can be no assurance that we can enter into any of these transactions even if we desire to do so. Moreover, we may not be successful in our efforts to establish a strategic alliance or other alternative arrangements for any future product candidates and programs because our research and development pipeline may be insufficient, our product candidates or programs may be deemed to be at too early a stage of development for collaborative effort and third parties may not view our product candidates and programs as having the requisite potential to demonstrate a positive benefit/risk profile. Any delays in entering into new strategic alliance agreements related to our product candidates could also delay the development and commercialization of our product candidates and reduce their competitiveness even if they reach the market.

If we license products or acquire businesses, we may not be able to realize the benefit of these transactions if we are unable to successfully integrate them with our existing operations and company culture. There are other risks and uncertainties involved in these transactions, including unanticipated liabilities related to acquired intellectual property rights, products or companies and disruption in our relationship with collaborators or suppliers as a result of such a transaction. We cannot be certain that, following an acquisition or license, we will achieve the financial or strategic results that would justify the transaction.

We depend on the enrollment and retention of patients in our current and planned clinical trials for our product candidates. If we experience delays or difficulties enrolling or retaining patients in our clinical trials, our research and development efforts and business, financial condition, and results of operations could be materially adversely affected.

Successful and timely completion of clinical trials require that we enroll and retain a sufficient number of patient candidates. Any clinical trials we conduct may be subject to delays for a variety of reasons, including as a result of patient enrollment taking longer than anticipated, manufacturing failures resulting in patients being unable to be treated, patient withdrawal or adverse events. These types of developments could cause us to delay the trial or halt further development. For example, we announced in 2022 that enrollment for the Phase 1 trial of LYL797 had been slower than anticipated due to delays in clinical site activations.

Our clinical trials compete with other clinical trials that are in the same therapeutic areas as our product candidates, and this competition reduces the number and types of patients available to us, as some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. Moreover, enrolling patients in clinical trials for diseases in which there is an approved standard of care is challenging, as patients will first receive the applicable standard of care. Many patients who respond positively to the standard of care do not enroll in clinical trials. This may limit the number of eligible patients able to enroll in our clinical trials who have the potential to benefit from our product candidates and could extend development timelines or increase costs for these programs. Patients who fail to respond positively to the standard of care treatment will be eligible for clinical trials of unapproved drug candidates. However, these prior treatment regimens may render our therapies less effective in clinical trials.

Because the number of qualified clinical investigators and clinical trial sites is limited, we expect to conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which will reduce the number of patients who are available for our clinical trials at such clinical trial sites.

Furthermore, healthcare and hospital resources, including both front-line and administrative staff, may continue to be negatively impacted by the lingering effects of the COVID-19 pandemic and other macroeconomic factors, which may delay enrollment in our current and planned clinical trials. For example, some patients may not be able to comply with clinical trial protocols due to lack of healthcare support or potential interruptions of healthcare services. Our ability to recruit and retain patients, principal investigators and site staff may also be hindered, which would adversely affect our trial operations.

Patient enrollment depends on many additional factors, including:

- the size and nature of the patient population;
- the severity of the disease under investigation;
- eligibility criteria for the trial;
- the proximity of patients to clinical sites;
- the design of the clinical protocol;
- the ability to obtain and maintain patient consents;
- perceived risks and benefits of the product candidate under evaluation, including any perceived risks associated with genetically modified product candidates;
- the ability to recruit clinical trial investigators with the appropriate competencies and experience;
- the risk that patients enrolled in clinical trials will drop out of the trials before the administration of our product candidates or trial completion;
- the availability of competing clinical trials;
- the availability of new drugs approved for the indication that the clinical trial is investigating; and
- clinicians' and patients' perceptions as to the potential advantages of the drug being studied in relation to other available approved or investigational therapies.

These factors may make it difficult for us to enroll enough patients to complete our clinical trials in a timely and cost-effective manner. Delays in the completion of any clinical trial of our product candidates will increase our costs, slow down our product candidate development and approval process and delay or potentially jeopardize our ability to commence product sales and generate revenue. In addition, some 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.

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

We face competition from numerous pharmaceutical and biotechnology enterprises, as well as from academic institutions, government agencies and private and public research institutions. Our ability to enroll clinical trials or our commercial opportunities will be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer side effects or are less expensive than any products that we may develop. Additionally, our commercial opportunities will be reduced or eliminated if novel upstream products or changes in treatment protocols reduce the overall incidence or prevalence of our current or future target diseases. Competition could result in reduced sales and pricing pressure on our product candidates, if approved by applicable regulatory authorities. In addition, significant delays in the development of our product candidates could allow our competitors to bring products to market before us and impair any ability to commercialize our product candidates.

Risks Related to Regulation and Legal Compliance

We are in the first phase of clinical development of our product candidates, and our future success is dependent on the successful development and regulatory approval of our product candidates.

We currently have no products approved for commercial sale, and we are in the first phase of clinical development of our product candidates. Besides LYL797 and LYL845, which are in Phase 1 clinical development, our other proprietary product candidates are currently in preclinical development. The future success of our business is substantially dependent on our ability to obtain regulatory approval for our product candidates for the indications we seek, and, if approved, to

successfully commercialize one or more product candidates in a timely manner. Each of our programs and product candidates will require clinical development, regulatory approval, obtaining manufacturing supply, capacity and expertise, building a commercial organization or successfully outsourcing commercialization, substantial investment and significant marketing efforts before we generate any revenue from product sales. We do not have any products that are approved for commercial sale, and we may never be able to develop or commercialize marketable products.

We cannot commercialize product candidates in the United States without first obtaining regulatory approval for the product from the FDA; similarly, we cannot commercialize product candidates outside of the United States without obtaining regulatory approval from comparable foreign regulatory authorities. Before obtaining regulatory approvals for the commercial sale of any product candidate for a target indication, we must demonstrate with substantial evidence from and to the satisfaction of the FDA and foreign regulatory authorities, that the product candidate is safe, pure and potent for use for that target indication and that the manufacturing facilities, processes and controls are adequate with respect to such product candidate to assure safety, purity and potency.

The time required to obtain approval by the FDA and comparable foreign regulatory authorities is unpredictable but typically takes many years following the commencement of nonclinical studies and clinical trials and depends upon numerous factors, including the substantial discretion of the regulatory authorities. In addition, approval policies, regulations or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions. We have not obtained regulatory approval for any product candidate, and it is possible that none of our existing product candidates or any future product candidates will ever obtain regulatory approval. Furthermore, the regulatory approval process for novel product candidates, such as T-cell product candidates and next-generation T-cell programs, can be more complex and consequently more expensive and take longer than for other, better known or extensively studied pharmaceutical or other product candidates.

Even if a product candidate were to successfully obtain approval from the FDA and comparable foreign regulatory authorities, any approval might contain significant limitations related to use restrictions for specified age groups, warnings, precautions or contraindications, or may be subject to burdensome post-approval study or risk management requirements. If we are unable to obtain regulatory approval for one of our product candidates in one or more jurisdictions, or any approval contains significant limitations, we may not be able to obtain sufficient funding to continue the development of that product or generate revenues attributable to that product candidate. Also, any regulatory approval of our current or future product candidates, once obtained, may be withdrawn.

Our cellular therapy product candidates represent new therapeutic approaches that could result in heightened regulatory scrutiny, delays in clinical development or delays in or our inability to achieve regulatory approval, commercialization or payor coverage of our product candidates.

Our future success is dependent on the successful development of our cellular therapies in general and our development product candidates, in particular. Because these programs represent a new approach to the treatment of cancer, developing and, if approved, commercializing our product candidates subject us to a number of challenges. Moreover, we cannot be sure that the manufacturing processes used in connection with our cellular therapy product candidates will yield a sufficient supply of satisfactory products that are safe, pure and potent, scalable or profitable.

In addition to oversight by the FDA and by institutional review boards (IRBs) under guidelines promulgated by the National Institutes of Health (NIH), gene therapy clinical trials, such as those for LYL797 which evaluates T cells expressing a synthetic CAR and overexpressing c-Jun, are also subject to review and oversight by an institutional biosafety committee (IBC), a local institutional committee that reviews and oversees research utilizing recombinant or synthetic nucleic acid molecules at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment. While the NIH guidelines are not mandatory unless the research in question is being conducted at or sponsored by institutions receiving NIH funding of recombinant or synthetic nucleic acid molecule research, many companies and other institutions not otherwise subject to the NIH Guidelines voluntarily follow them. Although the FDA decides whether trials of cell therapies that involve genetic engineering may proceed, the review process and determinations of other reviewing bodies can impede or delay the initiation of a clinical trial, even if the FDA has reviewed the trial and approved its initiation.

Actual or perceived safety issues, including adoption of new therapeutics or novel approaches to treatment, may adversely influence the willingness of subjects to participate in clinical trials, or if approved by applicable regulatory authorities, of physicians to subscribe to the novel treatment mechanics. The FDA or other applicable regulatory authorities may ask for specific post-marketing requirements, and additional information informing benefits or risks of our products may emerge at any time prior to or after regulatory approval.

Physicians, hospitals and third-party payors often are slow to adopt new products, technologies and treatment practices that require additional upfront costs and training. Physicians may not be willing to undergo training to adopt this

novel therapy, may decide the therapy is too complex to adopt without appropriate training or not cost-efficient and may choose not to administer the therapy. Based on these and other factors, hospitals and payors may decide that the benefits of this new therapy do not or will not outweigh its costs.

The results of research, nonclinical studies or earlier clinical trials are not necessarily predictive of future results. Any product candidate we advance into clinical trials may not have favorable results in later clinical trials or receive regulatory approval.

Success in research, nonclinical studies and early clinical trials does not ensure that later clinical trials will generate similar results and otherwise provide adequate data to demonstrate the efficacy and safety of an investigational product. Likewise, a number of companies in the pharmaceutical and biotechnology industries, including those with greater resources and experience than us, have suffered significant setbacks in late-stage clinical trials, even after seeing promising results in earlier nonclinical studies or clinical trials. Thus, even if the results from our initial research and nonclinical activities appear positive, we do not know whether subsequent late-stage clinical trials we may conduct will demonstrate adequate efficacy and safety to result in regulatory approval to market any product candidates.

Moreover, final study results may not be consistent with interim study results. If later-stage clinical trials do not produce favorable results, our ability to achieve regulatory approval for any of our product candidates may be adversely impacted. Even if we believe that we have adequate data to support an application for regulatory approval to market any of our product candidates, the FDA or other regulatory authorities may not agree and may require that we conduct additional clinical trials.

Clinical development involves a lengthy and expensive process with an uncertain outcome.

We are in the first phase of clinical development of our product candidates. Besides LYL797 and LYL845, which are in Phase 1 clinical development, our other proprietary product candidates are currently in preclinical development. The risk of failure of our product candidates is high. The clinical trials and manufacturing of our product candidates are, and the manufacturing and marketing of our products, if approved, will be, subject to extensive and rigorous review and regulation by numerous government authorities in the United States and in other countries where we intend to test and market our product candidates. Before obtaining regulatory approvals for the commercial sale of any of our product candidates, we must demonstrate through lengthy, complex and expensive nonclinical testing and clinical trials that our product candidates are both safe and effective for use in each target indication. In particular, because our product candidates are subject to regulation as biological products, we will need to demonstrate that they are safe, pure and potent for use in their target indications. Each product candidate must demonstrate an adequate risk versus benefit profile in its intended patient population and for its intended use.

The clinical testing that will be required for any product candidates we choose to advance is expensive and can take many years to complete, and its outcome is inherently uncertain. We cannot guarantee that any clinical trials will be conducted as planned or completed on schedule, if at all. Failure can occur at any time during the clinical trial process. Even if our current and planned clinical trials are completed as planned, we cannot be certain that their results will support the safety and effectiveness of our product candidates for their targeted indications or support continued clinical development of such product candidates. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through nonclinical and clinical trials.

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

To date, we have not fully enrolled or completed any clinical trials required for the approval of our product candidates. We may experience delays in initiating, enrolling or conducting our current and planned clinical trials, and we do not know whether clinical trials will begin or enroll subjects on time, will need to be redesigned, will achieve expected enrollment rates or will be completed on schedule, if at all. Obtaining sufficient and specific tumor tissues is needed for our Phase 1 clinical trials of LYL797 and LYL845 in multiple solid tumor indications. Our inability to obtain the specific tumor tissues or sufficient amount of tumor tissues in a timely manner or at all could delay or preclude our ability to execute and complete the clinical trials. There can be no assurance that the FDA or comparable foreign regulatory

authorities will not put clinical trials of any of our product candidates on clinical hold in the future. Clinical trials can be delayed, suspended or terminated for a variety of reasons, including in connection with:

- inability to generate sufficient nonclinical, toxicology, or other in vivo or in vitro data to support the initiation of clinical trials;
- delays in sufficiently developing, characterizing or controlling a manufacturing process suitable for advanced clinical trials;
- delays in reaching agreement with the FDA or other regulatory authorities as to the design or implementation of our clinical trials;
- obtaining regulatory authorization to commence a clinical trial;
- reaching an agreement on acceptable terms with clinical trial sites or prospective CROs, the terms of which can be subject to extensive negotiation and may vary significantly among different clinical trial sites;
- obtaining IRB or ethics committee approval at each trial site;
- recruiting suitable patients to participate in a clinical trial;
- having patients complete a clinical trial or return for post-treatment follow-up;
- inspections of clinical trial sites or operations by applicable regulatory authorities, or the imposition of a clinical hold;
- clinical sites, CROs or other third parties deviating from trial protocol or dropping out of a trial;
- failure to perform in accordance with applicable regulatory requirements, including the FDA's GCP requirements, or applicable regulatory requirements in other countries;
- addressing patient safety concerns that arise during the course of a trial, including occurrence of adverse events associated with the product candidate that are viewed to outweigh its potential benefits;
- adding a sufficient number of clinical trial sites;
- manufacturing sufficient quantities of product candidate for use in clinical trials; or
- 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 regulatory authorities due to a number of factors, including those described above.

Further, a clinical trial may be suspended or terminated by us, the IRBs for the institutions in which such trials are being conducted, the Data Monitoring Committee for such trial or the FDA or other regulatory authorities due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a product candidate, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial.

We cannot predict with any certainty whether or when we might complete a given clinical trial, if at all. If we experience delays or quality issues in the conduct, completion or termination of any clinical trial of our product candidates, the approval and commercial prospects of such product candidate will be harmed, and our ability to generate product revenues from such product candidate will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow down our product candidate development and approval process and jeopardize our ability to commence product sales and generate revenues. Many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may ultimately lead to the denial of regulatory approval of our product candidates.

Our product candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial profile of an approved label or result in significant negative consequences following any regulatory approval. Additionally, our product candidates, if approved, could be subject to labeling and other restrictions and market withdrawal, and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our products.

Undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign regulatory authority. As a result of safety or toxicity issues that we may experience in our clinical trials, we may not continue the development of nor receive approval to market any product candidates, which could

prevent us from ever generating product revenues or achieving profitability. For example, previous clinical trials utilizing CAR T cells to treat hematologic tumors have shown an increased risk of cytokine release syndrome and immune effector cell-associated neurotoxicity syndrome. Adverse events may also be associated with the lymphodepletion or IL-2 regimen utilized with cellular therapies. Additionally, ROR1 is expressed on a number of normal tissues. As a result, ROR1 could cause on-target, off-tumor toxicity. c-Jun is also potentially an oncogene and could cause healthy cells to transform into malignant cells. Results of our trials could reveal an unacceptably high severity and incidence of side effects, or side effects outweighing the benefits of our product candidates. In such an event, our trials could be suspended or terminated, and the FDA or comparable foreign regulatory authorities could order us to cease further development or deny approval of our product candidates for any or all targeted indications. The side effects experienced could affect patient recruitment or the ability of enrolled subjects to complete the trial or result in potential product liability claims.

In the event that any of our product candidates receives regulatory approval and we or others later identify undesirable or unacceptable side effects caused by such products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw or limit approvals of such products and require us to take our approved product off the market;
- regulatory authorities may require the addition of labeling statements, specific warnings, a contraindication or field alerts to physicians and pharmacies, or issue other communications containing warnings or other safety information about the product;
- regulatory authorities may require a medication guide outlining the risks of such side effects for distribution to patients, or that we implement a risk evaluation and mitigation strategy (REMS) plan to ensure that the benefits of the product outweigh its risks;
- we may be required to change the dose or the way the product is administered, conduct additional clinical trials or change the labeling of the product;
- we may be subject to limitations on how we may promote or manufacture the product;
- sales of the product may decrease significantly;
- we may be subject to litigation or product liability claims; and
- our reputation may suffer.

Any of these events could prevent us or our potential future partners from achieving or maintaining market acceptance of the affected product or could substantially increase commercialization costs and expenses, which in turn could delay or prevent us from generating significant revenue from the sale of any products.

Interim, topline or preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available or as we make changes to our manufacturing processes and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we may publicly disclose interim, topline or preliminary data from our nonclinical studies and clinical trials, which are based on a preliminary analysis of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data related to the particular study or trial. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. Further, modifications or improvements to our manufacturing processes for a therapy may result in changes to the characteristics or behavior of the product candidate that could cause our product candidates to perform differently and affect the results of our ongoing clinical trials. As a result, the topline 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. Topline data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, topline data should be viewed with caution until the final data are available.

From time to time, we may also disclose preliminary or interim data from our nonclinical studies and clinical trials. Preliminary or interim data from clinical trials are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Adverse differences between preliminary or interim data and final data could significantly harm our business prospects. Additionally, disclosure of preliminary or interim data by us or by our competitors could result in volatility in the price of our common stock.

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 and our company in general. If the interim, topline or preliminary data 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, any of our potential product candidates may be harmed, which could harm our business, operating results, prospects, or financial condition.

The FDA regulatory approval process is lengthy, time-consuming and inherently unpredictable. If we are not able to obtain required regulatory approval of our product candidates, our business will be substantially harmed.

We expect the novel nature of our product candidates to create challenges in obtaining regulatory approval. For example, the FDA has limited experience with commercial development of T-cell therapies for cancer. Accordingly, the regulatory approval pathway for our product candidates may be uncertain, complex, expensive and lengthy, and approval may not be obtained.

Prior to obtaining approval to commercialize any drug product candidate in the United States or abroad, we must demonstrate with substantial evidence from well-controlled clinical trials, and to the satisfaction of the FDA or foreign regulatory agencies, that such product candidates are safe, pure and potent for their intended uses. Results from nonclinical studies and clinical trials can be interpreted in different ways. Even if we believe the nonclinical or clinical data for our product candidates are promising, such data may not be sufficient to support approval by the FDA and other regulatory authorities. The FDA may also require us to conduct additional nonclinical studies or clinical trials for our product candidates either prior to or after approval, or it may object to elements of our clinical development programs.

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

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that a product candidate is safe and effective for its proposed indication;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that a product candidate’s clinical and other benefits outweigh its safety risks;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA or comparable foreign authorities may significantly change in a manner rendering our clinical data insufficient for approval.

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

We could also encounter delays if physicians experience unresolved ethical issues associated with enrolling patients in clinical trials of our product candidates in lieu of prescribing existing treatments that have established safety and efficacy profiles. Further, a clinical trial may be suspended or terminated by us, the IRBs for the institutions in which such trials are being conducted, the Data Monitoring Committee for such trial, the FDA or other regulatory authorities due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a product candidate, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial.

Moreover, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and receive cash or equity compensation in connection with such services. If these relationships and any related compensation result in perceived or actual conflicts of interest, or a regulatory authority concludes that the financial relationship may have affected the interpretation of the trial, the integrity of the data generated at the applicable clinical trial site may be questioned and the utility of the clinical trial itself may be jeopardized, which could result in the delay or

rejection of the marketing application we submit. Any such delay or rejection could prevent or delay us from commercializing our current or future product candidates.

If we experience termination of, or delays in the completion of, any clinical trial of our product candidates, the commercial prospects for our product candidates will be harmed, and our ability to generate product revenue will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow down our product development and approval process and jeopardize our ability to commence product sales and generate revenue. Many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may ultimately lead to the denial of regulatory approval of our product candidates.

Even if our product candidates obtain regulatory approval, we will be subject to ongoing obligations and continued regulatory review, which may result in significant additional expense. Additionally, our product candidates, if approved, could be subject to labeling and other restrictions and market withdrawal, and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our products.

If the FDA or a comparable foreign regulatory authority approves any of our product candidates, the manufacturing processes, testing, labeling, packaging, distribution, import, export, adverse event reporting, storage, advertising, promotion and recordkeeping for the product will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMPs for any clinical trials that we conduct post-approval, all of which may result in significant expense and limit our ability to commercialize such products. In addition, any regulatory approvals that we receive for our product candidates may also be subject to limitations on the approved indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase 4 clinical trials, and surveillance to monitor the safety and efficacy of the product if approved.

Manufacturers and manufacturers' facilities are required to comply with extensive FDA and comparable foreign regulatory authority requirements, including ensuring that quality control and manufacturing procedures conform to cGMP regulations, as well as, for the manufacture of certain of our product candidates, the FDA's cGTPs for the use of human cellular and tissue products to prevent the introduction, transmission or spread of communicable diseases. As such, we and our contract manufacturers will be subject to continual review and inspections to assess compliance with cGMPs, cGTPs and adherence to commitments made in any approved marketing application. Accordingly, we and others with whom we work must continue to expend time, money and effort in all areas of regulatory compliance, including manufacturing, quality control and distribution.

If there are changes in the application of legislation or regulatory policies, or if problems are discovered with a product or our manufacture of a product, or if we or one of our distributors, licensees or co-marketers fails to comply with regulatory requirements, the regulators could take various actions. These include issuing warning letters or untitled letters, imposing fines on us, imposing restrictions on the product or its manufacture and requiring us to recall or remove the product from the market. The regulators could also suspend or withdraw our marketing authorizations, requiring us to conduct additional clinical trials, change our product labeling or submit additional applications for marketing authorization. If any of these events occurs, our ability to sell such product may be impaired, and we may incur substantial additional expense to comply with regulatory requirements, which could materially adversely affect our business, financial condition and results of operations.

In addition, if we have any product candidate approved, our product labeling, advertising and promotion will be subject to regulatory requirements and continuing regulatory review. In the United States, the FDA and the Federal Trade Commission (FTC) strictly regulate the promotional claims that may be made about pharmaceutical products to ensure that any claims about such products are consistent with regulatory approvals, not misleading or false in any particular way and adequately substantiated by clinical data. The promotion of a drug product in a manner that is false, misleading, unsubstantiated or for unapproved (or off-label) uses may result in enforcement letters, inquiries and investigations and civil and criminal sanctions by the FDA, FTC and other regulatory authorities. In particular, a product may not be promoted for uses that are not approved by the FDA as reflected in the product's approved labeling. If we receive marketing approval for a product candidate, physicians may nevertheless prescribe it to their patients in a manner that is inconsistent with the approved label. If we are found to have promoted such off-label uses, we may become subject to significant liability. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant sanctions and may result in false claims litigation under federal and state statutes, which can lead to consent decrees, civil monetary penalties, restitution, criminal fines and imprisonment, and exclusion from participation in Medicare, Medicaid and other federal and state healthcare programs. 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

government has also required that companies enter into consent decrees and/or imposed permanent injunctions under which specified promotional conduct is changed or curtailed.

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

- issue warning letters;
- issue, or require us to issue, safety-related communications, such as safety alerts, field alerts, “Dear Doctor” letters to healthcare professionals, or import alerts;
- impose civil or criminal penalties;
- suspend, limit or withdraw regulatory approval;
- suspend any of our nonclinical studies and clinical trials;
- refuse to approve pending applications or supplements to approved applications submitted by us;
- impose restrictions on our operations, including closing our and our contract manufacturers’ facilities; or
- seize or detain products, refuse to permit the import or export of products, or require us to conduct a product recall.

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

Moreover, the policies of the FDA and of comparable foreign regulatory authorities may change and additional government regulations may be enacted that could prevent, limit, or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, during the Trump administration several executive actions were taken, including the issuance of a number of Executive Orders, that imposed significant burdens on, or otherwise delayed, the FDA’s ability to engage in routine oversight activities such as implementing statutes through rulemaking, issuance of guidance and review and approval of marketing applications. It is difficult to predict how similar orders in the future would be implemented, and the extent to which they would impact the FDA’s ability to exercise its regulatory authority. If executive actions are taken that impose restrictions on the FDA’s ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted. In addition, if we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

We may be subject to applicable fraud and abuse, including anti-kickback and false claims, transparency, health information privacy and security and other healthcare laws. Failure to comply with such laws, may result in substantial penalties.

We may be subject to broadly applicable healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we conduct research, market, sell and distribute any product candidates for which we obtain marketing approval. The healthcare laws that may affect us include: the federal fraud and abuse laws, including the federal anti-kickback, and false claims and civil monetary penalties laws; federal data privacy and security laws, including the Health Insurance Portability and Accountability Act, as amended by the Health Information Technology for Economic and Clinical Health Act; and federal transparency laws related to ownership and investment interests and payments and/or other transfers of value made to or held by physicians (including doctors, dentists, optometrists, podiatrists and chiropractors), other healthcare professionals (such as physician assistants and nurse practitioners) and teaching hospitals, as well as information regarding ownership and investment interests held by physicians and their immediate family members. In addition, many states have similar laws and regulations that may differ from each other and federal law in significant ways, thus complicating compliance efforts. Moreover, several states require biopharmaceutical companies to comply with the biopharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government and may require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing

expenditures. Additionally, some state and local laws require the registration of biopharmaceutical sales representatives in the jurisdiction.

Ensuring that our operations and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices, including our relationships with physicians and other healthcare providers, some of whom are compensated in the form of stock options for consulting services provided, may 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 civil, criminal and administrative penalties, damages, disgorgement, fines, imprisonment, exclusion of products from government funded healthcare programs, such as Medicare and Medicaid, additional reporting requirements and/or oversight if a corporate integrity agreement or similar agreement is executed to resolve allegations of non-compliance with these laws and the curtailment or restructuring of operations. In addition, violations may also result in reputational harm, diminished profits and lower future earnings. For additional detail on healthcare laws that may affect our business, see "Other Healthcare Laws" in the business section of our Annual Report.

Changes in healthcare policies, laws and regulations may impact our ability to obtain approval for, or commercialize our product candidates, if approved.*

In the United States and some foreign jurisdictions there have been, and continue to be, several legislative and regulatory changes and proposed reforms of the healthcare system in an effort to contain costs, improve quality and expand access to care. In the United States, there have been and continue to be a number of healthcare-related legislative initiatives, as well as executive, judicial and Congressional challenges to existing healthcare laws that have significantly affected, and could continue to significantly affect, the healthcare industry. For example, there have been efforts to repeal, substantially modify or invalidate some or all of the provisions of the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Reconciliation Act of 2010 (collectively, the ACA), some of which have been successful. While the U.S. Supreme Court dismissed in June 2021 a challenge on procedural grounds that argued the ACA is unconstitutional in its entirety because the "individual mandate" was repealed by Congress, such efforts may continue.

In addition, there continues to be heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several U.S. presidential executive orders, Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under government payor programs and review the relationship between pricing and manufacturer patient programs. For example, President Biden issued an executive order in July 2021 supporting legislation to enact drug pricing reforms and, in response, the U.S. Department of Health and Human Services (HHS) released a Comprehensive Plan for Addressing High Drug Prices in September 2021 with specific legislative and administrative policies that Congress could enact to help improve affordability of, and access to, prescription drugs. Further, on August 16, 2022, President Biden signed the Inflation Reduction Act of 2022 (IRA) into law, which among other things: (i) directs HHS to negotiate the price of certain high-expenditure, single-source drugs and biologics covered under Medicare, and subject drug manufacturers to civil monetary penalties and a potential excise tax by offering a price that is not equal to or less than the negotiated "maximum fair price" under the law, and (ii) imposes rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation. Additionally, the IRA also extends enhanced subsidies for individuals purchasing health insurance coverage in the ACA marketplaces through plan year 2025. The IRA also eliminates the "donut hole" under the Medicare Part D program beginning in 2025 by significantly lowering the beneficiary maximum out-of-pocket cost and through a newly established manufacturer discount program. The IRA permits HHS to implement many of these provisions through guidance, as opposed to regulation, for the initial years. HHS has and will continue to issue and update guidance as these programs are implemented. These provisions will take effect progressively starting in fiscal year 2023, although the Medicare drug price negotiation program is currently subject to legal challenges. It is currently unclear how the IRA will be effectuated but is likely to have a significant impact on the pharmaceutical industry. Further, in response to the Biden administration's October 2022 executive order, on February 14, 2023, HHS released a report outlining three new models for testing by the CMS Innovation Center, which will be evaluated on their ability to lower the cost of drugs, promote accessibility and improve quality of care. It is unclear whether the models will be utilized in any health reform measures in the future. We expect that additional U.S. federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that the U.S. federal government will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures.

The successful commercialization of our product candidates will depend in part on the extent to which governmental authorities and health insurers establish adequate coverage, reimbursement levels and pricing policies. Failure to obtain or maintain coverage and adequate reimbursement for our product candidates, if approved, could limit our ability to market those products and decrease our ability to generate revenue.

The availability and adequacy of coverage and reimbursement by governmental healthcare programs such as Medicare and Medicaid, private health insurers and other third-party payors are essential for most patients to be able to afford prescription medications such as our product candidates, assuming FDA approval. Our ability to achieve acceptable levels of coverage and reimbursement for products by governmental authorities, private health insurers and other organizations will have an effect on our ability to successfully commercialize our product candidates. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own coverage and reimbursement policies. However, decisions regarding the extent of coverage and amount of reimbursement to be provided are made on a payor-by-payor basis. Reimbursement by a third-party payor may depend upon a number of factors, including the third-party payor's determination that a procedure is safe, effective and medically necessary; appropriate for the specific patient; cost effective; supported by peer-reviewed medical journals; included in clinical practice guidelines; and neither cosmetic, experimental, nor investigational. Assuming we obtain coverage for our product candidates by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. We cannot be sure that coverage and reimbursement in the United States, the European Union or elsewhere will be available for our product candidates or any product that we may develop, and any reimbursement that may become available may be decreased or eliminated in the future. Additionally, we or our collaborators may develop companion diagnostic tests for use with our product candidates. We or our collaborators will be required to obtain coverage and reimbursement for these tests separate and apart from the coverage and reimbursement we may seek for our product candidates.

Similarly, a significant trend in the healthcare industry is cost containment. Third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. As such, cost containment reform efforts may result in an adverse effect on our operations. Obtaining coverage and adequate reimbursement for our product candidates may be particularly difficult because of the higher prices often associated with drugs administered under the supervision of a physician. Similarly, because our product candidates will be physician-administered, separate reimbursement for the product itself may or may not be available. Instead, the administering physician may or may not be reimbursed for providing the treatment or procedure in which our product is used.

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 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 ability to hire and retain key personnel and accept the payment of user fees and other events that may otherwise affect the FDA's ability to perform routine functions. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of other government agencies that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable. Disruptions at the FDA and other agencies may also slow the time necessary for new biologics or modifications to be cleared or 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 FDA employees and stop critical activities.

Separately, in response to the COVID-19 pandemic, in March 2020, the FDA announced its intention to postpone most inspections of foreign manufacturing facilities, and the FDA temporarily postponed routine surveillance inspections of domestic manufacturing facilities. In February 2022, the FDA resumed on-site inspections of domestic manufacturing facilities, subject to a risk-based prioritization system. The FDA intends to use this risk-based assessment system to identify the categories of regulatory activity that can occur within a given geographic area, ranging from mission critical inspections to resumption of all regulatory activities. Additionally, in April 2021, the FDA issued a guidance document in which the FDA described its plans to conduct voluntary remote interactive evaluations of certain drug manufacturing facilities and clinical research sites. According to the guidance, the FDA intends to request such remote interactive evaluations in situations where an in-person inspection would not be prioritized or deemed mission-critical, or where direct inspection is otherwise limited by travel restrictions, but where the FDA determines that remote evaluation would still be appropriate. Regulatory authorities outside the United States may adopt similar restrictions or other policy measures in response to health epidemics. 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.

Risks Relating to Our Intellectual Property

If we are unable to obtain and maintain sufficient intellectual property protection for our product candidates, or if the scope of the intellectual property protection is not sufficiently broad, our ability to commercialize our product candidates successfully and to compete effectively may be adversely affected.

We rely upon a combination of patents, trademarks, trade secrets and confidentiality agreements to protect the intellectual property related to our technology and product candidates. We own or possess certain intellectual property, and other intellectual property are owned or possessed by our partners and are in-licensed to us. When we refer to "our" technologies, inventions, patents, patent applications or other intellectual property rights, we are referring to both the rights that we own or possess as well as those that we in-license, many of which are critical to our intellectual property protection and our business. If the intellectual property that we rely on is not adequately protected, competitors may be able to use our technologies and erode or negate any competitive advantage we may have.

The patentability of inventions and the validity, enforceability and scope of patents in the biotechnology field is uncertain because it involves complex legal, scientific and factual considerations, and it has in recent years been the subject of significant litigation. Moreover, the standards applied by the U.S. Patent and Trademark Office (USPTO) and non-U.S. patent offices in granting patents are not always applied uniformly or predictably. There is also no assurance that all potentially relevant prior art relating to our patents and patent applications is known to us or has been found in the instances where searching was done. We may be unaware of prior art that could be used to invalidate an issued patent or prevent a pending patent application from issuing as a patent. There also may be prior art of which we are aware, but which we do not believe affects the validity, enforceability or patentability of a claim of one of our patents or patent applications, which may, nonetheless, ultimately be found to affect the validity, enforceability or patentability of such claim. As a consequence of these and other factors, our patent applications may fail to result in issued patents with claims that cover our product candidates in the United States or in other countries.

Even if patents have issued or do successfully issue from patent applications, and even if these patents cover our product candidates, third parties may challenge the validity, enforceability or scope thereof, which may result in these patents being narrowed, invalidated or held to be unenforceable. No assurance can be given that if challenged, our patents would be declared by a court to be valid or enforceable. Even if unchallenged, our patents and patent applications or other intellectual property rights may not adequately protect our intellectual property, provide exclusivity for our product candidates or prevent others from designing around our claims. The possibility exists that others will develop products on an independent basis which have the same effect as our product candidates and which do not infringe our patents or other intellectual property rights, or that others will design around the claims of patents that we have had issued that cover our product candidates. If the breadth or strength of protection provided by our patents and patent applications with respect to our product candidates is threatened, it could jeopardize our ability to commercialize our product candidates and dissuade companies from collaborating with us.

We may also desire to seek licenses from third parties who own or have rights to intellectual property that may be useful for providing exclusivity for our product candidates, or for providing the ability to develop and commercialize a product candidate in an unrestricted manner. There is no guarantee that we will be able to obtain such licenses from third parties on commercially reasonable terms, or at all.

In addition, the USPTO and various foreign governmental or inter-governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during and after the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete, irreversible loss of patent rights in the relevant jurisdiction. In such an event, our competitors might be able to enter the market, which could have a material adverse effect on our business.

United States patent applications containing or that at any time contained a claim not entitled to a priority date before March 16, 2013 are subject to the "first to file" system implemented by the America Invents Act (2011). The first to file system requires us to be cognizant going forward of the time from invention to filing of a patent application. Because patent applications in the U.S. and most other countries are confidential for a period of time after filing, and some remain so until issued, we cannot be certain that we or our partners were the first to file any patent application related to a product candidate.

In addition, our registered or unregistered trademarks or trade names may be challenged, infringed or declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and

trade names, which we view as valuable to building name recognition among potential partners and customers in our markets of interest. At times, competitors or other third parties have adopted or may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion and/or litigation. 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 registered or unregistered trademarks or trade names. Over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively, and our business may be adversely affected. Our efforts to enforce, protect or defend our proprietary rights related to trademarks may be ineffective and could result in substantial costs and diversion of resources and could adversely affect our business, financial condition, results of operations and prospects.

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

Patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after its first nonprovisional effective filing date. Although various extensions may be available, the life of a patent, and the protection it affords, is limited. Even if patents covering our product candidates are obtained, once the patent life has expired for a product, we may be open to competition from biosimilar or generic medications. In addition, although upon issuance in the United States a patent's life can be increased based on certain delays caused by the USPTO, this increase can be reduced or eliminated based on certain delays caused by the patent applicant during patent prosecution. While the patent term of certain patents can also be extended with respect to a specific product to recapture time lost in clinical trials and regulatory review by the FDA, a patent's life also can be shortened by a terminal disclaimer over an earlier filed patent or patent application. If we do not have sufficient patent life to protect our products, our business and results of operations will be adversely affected.

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

Filing, prosecuting, enforcing and defending patents on all of our product candidates in all countries throughout the world would be prohibitively expensive. Our intellectual property rights in certain countries outside the United States may be less extensive than those in the United States. In addition, the laws of certain foreign countries do not protect intellectual property rights to the same extent as laws in the United States. Consequently, we and our partners may not be able to prevent third parties from practicing our inventions in countries outside the United States, or from selling or importing infringing products made using our inventions in other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection or where we do not have exclusive rights under the relevant patents to develop their own products and, further, may export otherwise-infringing products to territories where we and our partners have patent protection but where enforcement is not as strong as that in the U.S. These infringing products may compete with our product candidates in jurisdictions where we or our partners have no issued patents or where we do not have exclusive rights under the relevant patents, or our patent claims and other intellectual property rights may not be effective or sufficient to prevent them from so competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biopharmaceuticals, which could make it difficult for us and our partners to stop the infringement of our patents or marketing of competing products in violation of our intellectual property rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly, could put our patent applications at risk of not issuing and could provoke third parties to assert claims against us or our partners. We or our partners may not prevail in any lawsuits that we or our licensors initiate, and even if we or our licensors are successful, the damages or other remedies awarded, if any, may not be commercially meaningful.

Many countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In addition, many countries limit the enforceability of patents against government agencies or government contractors. In these countries, we or our partners may have limited remedies, which could materially diminish the value of such patent. If we or our partners are forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business, financial condition, results of operations and prospects may be adversely affected.

If we are sued for infringing or misappropriating the intellectual property rights of third parties, the resulting litigation could be costly and time-consuming and could prevent or delay our development and commercialization efforts.

Our commercial success depends, in part, on us and our partners not infringing the patents and proprietary rights of third parties. There is a substantial amount of litigation and other adversarial proceedings, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries,

including patent infringement lawsuits, interference or derivation proceedings, oppositions, and inter partes and post-grant review proceedings before the USPTO and non-U.S. patent offices. Numerous U.S. and non-U.S. issued patents and pending patent applications owned by third parties exist in the fields in which we are developing, and may develop, product candidates. 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 third parties' patent rights, as it may not always be clear to industry participants, including us, which patents cover various types of products, methods of making or methods of use. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform or predictable.

Third parties may assert infringement or misappropriation claims against us based on existing or future intellectual property rights, alleging that we are employing their proprietary technology without authorization. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacturing of our product candidates that we failed to identify. For example, patent applications covering our product candidates could have been filed by others without our knowledge, since these applications generally remain confidential for some period of time after their filing date. Even pending patent applications that have been published, including some of which we are aware, could be later amended in a manner that could cover our product candidates or their use or manufacture. In addition, we may have analyzed patents or patent applications of third parties that we believe are relevant to our activities and believe that we are free to operate in relation to any of our product candidates, but our competitors may obtain issued claims, including in patents we consider to be unrelated, which may block our efforts or potentially result in any of our product candidates or our activities infringing their claims.

If we or our partners are sued for patent infringement, we would need to demonstrate that our product candidates, products and methods either do not infringe the patent claims of the relevant patent or that the patent claims are invalid or unenforceable, and we may not be able to do this. Proving that a patent is invalid is difficult and even if we are successful in the relevant proceedings, we may incur substantial costs, and the time and attention of our management and scientific personnel could be diverted from other activities. If one or more claims of any issued third-party patents were held by a court of competent jurisdiction to cover aspects of our materials, formulations, methods of manufacture or methods for treatment, we could be forced, including by court order, to cease developing, manufacturing or commercializing the relevant product candidate until the relevant patent expired. Alternatively, we may desire or be required to obtain a license from such third party in order to use the infringing technology and to continue developing, manufacturing or marketing the infringing product candidate. However, we may not be able to obtain any required license on commercially reasonably terms, or at all. Even if we were able to obtain a license, the rights may be nonexclusive, which could result in our competitors gaining access to the same intellectual property licensed to us. If we are unable to obtain a necessary license on commercially reasonable terms, or at all, our ability to commercialize our product candidates may be impaired or delayed, which could in turn significantly harm our business.

We may face claims that we misappropriated the confidential information or trade secrets of a third party. If we are found to have misappropriated a third-party's trade secrets, we may be prevented from further using these trade secrets, which could limit our ability to develop our product candidates.

Defending against intellectual property claims, regardless of their merit, could be costly and time consuming, regardless of the outcome. Thus, even if we were to ultimately prevail, or to settle before a final judgment, any litigation could burden us with substantial unanticipated costs. In addition, litigation or threatened litigation could result in significant demands on the time and attention of our management team, distracting them from the pursuit of other company business. During the course of any intellectual property litigation, there could be public announcements of the results of hearings, rulings on motions and other interim proceedings in the litigation and these announcements may have negative impact on the perceived value of our product candidates, programs or intellectual property. In the event of a successful intellectual property claim against us, we may have to pay substantial damages, including treble damages and attorneys' fees if we are found to have willfully infringed a patent, or to redesign our infringing product candidates, which may be impossible or require substantial time and monetary expenditure. In addition to paying monetary damages, we may lose valuable intellectual property rights or personnel, and the parties making claims against us may obtain injunctive or other equitable relief, which could impose limitations on the conduct of our business. We may also elect to enter into license agreements in order to settle patent infringement claims prior to litigation, and any of these license agreements may require us to pay royalties and other fees that could be significant. As a result of all of the foregoing, any actual or threatened intellectual property claim could prevent us from developing or commercializing a product candidate or force us to cease some aspect of our business operations.

We have in-licensed a significant portion of our intellectual property from our partners. If we breach any of our license agreements with these partners, we could potentially lose the ability to continue the development and potential commercialization of one or more of our product candidates.

We hold rights under license agreements with our partners. Our discovery and development technology platforms are built, in part, around intellectual property rights in-licensed from our partners. Under our existing license agreements, we are subject to various obligations, which may include diligence obligations with respect to development and commercialization activities, payment obligations upon achievement of certain milestones and royalties on product sales. If there is any conflict, dispute, disagreement or issue of nonperformance between us and our counterparties regarding our rights or obligations under these license agreements, including any conflict, dispute or disagreement arising from our failure to satisfy diligence or payment obligations, we may be liable to pay damages and our counterparties may have a right to terminate the affected license. The termination of any license agreement with one of our partners could adversely affect our ability to utilize the intellectual property that is subject to that license agreement in our discovery and development efforts, our ability to enter into future collaboration, licensing and/or marketing agreements for one or more affected product candidates and our ability to commercialize the affected product candidates. Furthermore, disagreements under any of these license agreements may arise, including those related to:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes may infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our right to sublicense patent and other rights to third parties under collaborative development relationships; and
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners.

These disagreements may harm our relationship with the partner, which could have negative impacts on other aspects of our business.

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.

Presently we have rights to the intellectual property, through licenses from third parties and under patent applications that we own or will own, to develop our product candidates. 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 will likely depend in part on our ability to acquire, in-license or use these proprietary rights.

Our product candidates may also require specific formulations, manufacturing methods or technologies 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. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms; such failure would harm our business. Even if we are able to obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. In that event, we may be required to expend significant time and resources to develop or license replacement technology. We may need to cease use of the compositions or methods covered by such third-party intellectual property rights.

The licensing and acquisition of third-party intellectual property rights is a competitive area, and companies that may be more established or have greater resources than we do may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive in order to commercialize our product candidates. More established companies may have a competitive advantage over us due to their size, cash resources and greater clinical development and commercialization capabilities.

Intellectual property discovered through government funded programs may be subject to federal regulations such as "march-in" rights, certain reporting requirements and a preference for U.S.-based companies. Compliance with such regulations may limit our exclusive rights and limit our ability to contract with non-U.S. manufacturers.

We have acquired or licensed, or may require in the future, intellectual property rights that have been generated through the use of U.S. government funding or grant. Pursuant to the Bayh-Dole Act of 1980, the U.S. government has certain rights in inventions developed with government funding. 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 us to grant exclusive, partially exclusive or non-exclusive licenses to any of these inventions to a third party if it determines that: (i) adequate steps have not been taken to commercialize the invention; (ii) government action is necessary to meet public health or safety needs; or (iii) government

action is necessary to meet requirements for public use under federal regulations (also referred to as "march-in rights"). The U.S. government also has the right to take title to these inventions if the grant recipient 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. 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 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 non-U.S. product manufacturers for products covered by such intellectual property.

We may become involved in lawsuits to protect or enforce our intellectual property, which could be expensive, time-consuming and unsuccessful and have an adverse effect on the success of our business.

Third parties may infringe our patents or misappropriate or otherwise violate our intellectual property rights. Our patent applications cannot be enforced against third parties practicing the technology claimed in these applications unless and until a patent issues from the applications, and then only to the extent the issued claims cover the technology. In the future, we or our partners may elect to initiate legal proceedings to enforce or defend our or our partners' intellectual property rights, to protect our or our partners' trade secrets or to determine the validity or scope of our intellectual property rights. Any claims that we or our partners assert against perceived infringers could also provoke these parties to assert counterclaims against us or our partners alleging that we or our partners infringe their intellectual property rights or that our intellectual property rights are invalid. In patent litigation in the United States, defendant counterclaims alleging noninfringement, invalidity and/or unenforceability are commonplace, and there are numerous grounds upon which a third party can assert noninfringement, invalidity or unenforceability of a patent. The outcome following legal assertions of noninfringement, unpatentability, invalidity and unenforceability is unpredictable. With respect to the validity of patent rights, for example, we cannot be certain that there is no invalidating prior art, of which we, our patent counsel and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of unpatentability, invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our product candidates. Such a loss of patent protection could have a material adverse impact on our business.

Interference, derivation or opposition proceedings provoked by third parties, brought by us or our partners, or brought by the USPTO or any non-U.S. patent authority may be necessary to determine the priority of inventions or matters of inventorship with respect to our patents or patent applications. We or our partners may also become involved in other proceedings, such as reexamination or opposition proceedings, inter partes review, post-grant review or other pre-issuance or post-grant proceedings in the USPTO or its foreign counterparts relating to our intellectual property or the intellectual property of others. Such proceedings could result in revocation or amendment to our patents in such a way that they no longer cover and protect our product candidates. An unfavorable outcome in any of these proceedings could require us or our partners to cease using the related technology and commercializing our product candidates, or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us or our partners a license on commercially reasonable terms if any license is offered at all. Even if we or our licensors obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us or our licensors. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

Any intellectual property proceedings can be expensive and time-consuming. Our or our partners' adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we or our partners can. Accordingly, despite our or our partners' efforts, we or our partners may not be able to prevent third parties from infringing upon or misappropriating our intellectual property rights, particularly in countries where the laws may not protect our rights as fully as in the U.S. Even if we are successful in the relevant proceedings, we may incur substantial costs, and the time and attention of our management and scientific personnel could be diverted from other activities. In addition, in an infringement proceeding, a court may decide that one or more of our patents is invalid or unenforceable, in whole or in part, may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question and/or may require us to pay the other party attorneys' fees. An adverse result in any litigation proceeding could put one or more of our patents at risk of being invalidated, held unenforceable or interpreted narrowly.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments.

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

We may in the future be subject to claims that former employees, collaborators or other third parties have an interest in our patents or other intellectual property as an inventor or co-inventor. For example, we may have inventorship disputes arise from conflicting obligations of consultants or others who are involved in developing our product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, intellectual property. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

If we are unable to protect the confidentiality of our trade secrets and other proprietary information, the value of our technology could be adversely affected and our business could be harmed.

In addition to seeking the protection afforded by patents, we rely on trade secret protection and confidentiality agreements to protect proprietary know-how that is not patentable or that we elect not to patent, processes for which patents are difficult to enforce and other elements of our technology, discovery and development processes that involve proprietary know-how, information or technology that is not covered by patents. Any disclosure to or misappropriation by third parties of our confidential proprietary information could enable competitors to quickly duplicate or surpass our technological achievements, including by enabling them to develop and commercialize products substantially similar to or competitive with our product candidates, thus eroding our competitive position in the market.

Trade secrets can be difficult to protect. We seek to protect our proprietary, confidential technology and processes, in part, by entering into confidentiality agreements and invention assignment agreements with our employees, consultants and outside scientific advisors, contractors and collaborators. These agreements are designed to protect our proprietary information. Although we use reasonable efforts to protect our trade secrets, our employees, consultants, contractors, or outside scientific advisors might intentionally or inadvertently disclose our trade secrets or confidential, proprietary information to competitors. In addition, competitors may otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. If any of our confidential proprietary information were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position.

Enforcing a claim that a third party illegally obtained and is using any of our trade secrets is expensive and time consuming, and the outcome is unpredictable. In addition, the laws of certain foreign countries do not protect proprietary rights such as trade secrets to the same extent or in the same manner as the laws of the U.S. Misappropriation or unauthorized disclosure of our trade secrets to third parties could impair our competitive advantage in the market and could adversely affect our business, results of operations and financial condition.

We may be subject to claims that our employees, consultants or independent contractors have breached non-compete or non-solicit obligations and/or wrongfully used or disclosed confidential information of third parties.

We have received confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies. We may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise breached non-compete or non-solicit obligations with respect to such individuals' prior employers, or used or disclosed confidential information of these third parties or such individuals' former employers. Dealing with such claims and negotiating with potential claimants could result in substantial cost and be a distraction to our management and employees. In addition, litigation may be necessary to defend against these claims, and even if we are successful in defending against these claims, such litigation could result in further costs to us and distraction to our management and employees.

Risks Related to Ownership of Our Common Stock

Delaware law and provisions in our amended and restated certificate of incorporation and bylaws 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 bylaws may discourage, delay, or prevent a merger, acquisition, or other change in control that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares of our common stock. These provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management. Therefore, these provisions could adversely affect the price of our common stock. Among other things, our organizational documents:

- establish that our board of directors is divided into three classes, Class I, Class II and Class III, with each class serving staggered three-year terms;

- provide that our directors may be removed only for cause;
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- eliminate cumulative voting in the election of directors;
- authorize our board of directors to issue shares of preferred stock and determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval;
- permit stockholders to take actions only at a duly called annual or special meeting and not by unanimous written consent;
- prohibit stockholders from calling a special meeting of stockholders;
- require that stockholders give advance notice to nominate directors or submit proposals for consideration at stockholder meetings;
- authorize our board of directors, by a majority vote, to amend certain provisions of the bylaws; and
- require the affirmative vote of at least 66 2/3% or more of the outstanding shares of common stock to amend many of the provisions described above.

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

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

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware will be the exclusive forum 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, the Court of Chancery of the State of Delaware will be the exclusive forum for the following types of actions or proceedings under Delaware statutory or common law:

- any derivative action or proceeding brought on our behalf;
- any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees, or stockholders to us or our stockholders;
- any action asserting a claim arising pursuant to any provision of the DGCL or our amended and restated certificate of incorporation and bylaws; and
- any action asserting a claim governed by the internal affairs doctrine.

Furthermore, to prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated certificate of incorporation also provides that unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States shall be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. However, these provisions would not apply to suits brought to enforce a duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. Any person purchasing or otherwise acquiring or holding any interest in shares of our capital stock is deemed to have received notice of and consented to the foregoing provisions. These choice of forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds more favorable for disputes with us or with our directors, officers, other employees or agents or our other stockholders, which may discourage such lawsuits against us and such other persons, or may result in additional expense to a stockholder seeking to bring a claim against us. Alternatively, if a court were to find this choice of forum provision inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business, results of operations and financial condition.

If we fail to maintain proper and effective internal controls over financial reporting or identify additional material weaknesses in the future, we may not be able to accurately or timely report our financial condition or results of operations, which may significantly harm our business and the value of our common stock.*

As a public company, we are required to maintain internal control over financial reporting and to report any material weaknesses in such internal control. Section 404 of the Sarbanes-Oxley Act (Section 404) requires that we evaluate and determine the effectiveness of our internal control over financial reporting. The rules governing the standards that must be met for management to assess our internal control over financial reporting are complex and require significant documentation, testing and possible remediation. Our independent registered public accounting firm is also required to attest to the effectiveness of our internal control over financial reporting. These assessments need to include the disclosure of any material weaknesses in such internal control. A material weakness is a deficiency or combination of deficiencies in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of our consolidated financial statements will not be prevented or detected on a timely basis. We and our independent auditors have previously identified a material weakness in our internal control over financial reporting, and we cannot assure you that we will not identify other material weaknesses in the future.

Furthermore, we may not have identified all material weaknesses, and our current controls and any new controls that we develop may become inadequate because of changes in personnel or conditions in our business or otherwise. Accordingly, we cannot assure you that any future material weaknesses will not result in a material misstatement of our consolidated financial statements and/or our failure to meet our public reporting obligations. In addition, if we and/or our independent registered public accounting firm are unable to conclude that our internal control over financial reporting is effective in the future, investor confidence in the accuracy and completeness of our consolidated financial statements would be adversely affected, which could significantly harm our business and the value of our common stock. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

General Risk Factors

Our disclosure controls and procedures may not prevent or detect all errors or acts of fraud.

We are subject to the periodic reporting requirements of the Exchange Act, and we must maintain disclosure controls and procedures designed to reasonably assure that information we must disclose in reports we file or submit under the Exchange Act is accumulated and communicated to management and recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures or internal controls and procedures, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. For example, our directors or executive officers could inadvertently fail to disclose a new relationship or arrangement, causing us to fail to make a required related party transaction disclosure or identify a potential conflict of interest. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls. Accordingly, because of the inherent limitations in our control system, misstatements due to error or fraud may occur and not be detected.

The market price of our common stock has been, and may continue to be, volatile, which could result in substantial losses for investors.*

The market price of our common stock has been, and may continue to be, volatile and may fluctuate substantially as a result of a variety of factors, many of which are beyond our control. Some of the factors that may cause the market price of our common stock to fluctuate are listed below and other factors described in this “Risk Factors” section:

- the timing and results of nonclinical studies and clinical trials for our product candidates;
- failure or discontinuation of any of our product development and research programs;
- the success of existing or new competitive product candidates or technologies;
- results of clinical trials or regulatory approvals of our competitors;
- commencement or termination of collaborations for our product development and research programs;
- regulatory or legal developments in the United States and other countries;
- the recruitment or departure of key personnel;
- developments or disputes including those concerning patent applications, issued patents, or other proprietary rights;

- any lingering effects of the COVID-19 pandemic on our business and on global economic conditions;
- labor discord or disruption, geopolitical events, social unrest, war, including repercussions of the military conflict between Russia and Ukraine, tensions in U.S.-China relations, escalating armed conflicts and turmoil in the Middle East, terrorism, political instability, acts of public violence, boycotts, hostilities and social unrest and other health pandemics;
- the level of expenses related to any of our research programs or clinical development programs;
- actual or anticipated changes in our estimates as to our financial results or development timelines;
- whether our financial results, forecasts and development timelines meet the expectations of securities analysts or investors;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders, or other stockholders;
- changes in estimates or recommendations by securities analysts, if any, that cover our stock;
- market conditions in the healthcare sector;
- general economic, industry and market conditions beyond our control, such as inflationary pressures, labor shortages and supply chain disruptions, bank failures and other macroeconomic factors and associated economic downturn; and
- the other factors described in this “Risk Factors” section.

In recent years, stock markets in general, and the market for biotechnology companies in particular, have experienced significant price and volume fluctuations that have often been unrelated or disproportionate to changes in the operating performance of the companies whose stock is experiencing those price and volume fluctuations. Broad market and industry factors have affected and may seriously affect the market price of our common stock, regardless of our actual operating performance. Following periods of such volatility in the market price of a company’s securities, securities class action litigation has often been brought against that company. Because of the potential volatility of our stock price, we may become the target of securities litigation in the future. Securities litigation could result in substantial costs and divert management’s attention and resources from our business.

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

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

Sales of a substantial number of shares of our common stock by our existing stockholders could cause the price of our common stock to decline.*

At any time, sales of a substantial number of shares of our common stock in the public market could occur, or there could be a perception in the market that the holders of a large number of shares of common stock intend to sell shares, and any such event could reduce the market price of our common stock. As of September 30, 2023, we have 251,868,968 shares of common stock outstanding. Substantially all of the shares of our common stock outstanding and shares issued upon the exercise of stock options outstanding under our equity incentive plans, subject to applicable securities law restrictions, may be able to be sold in the public market.

Moreover, certain holders of shares of our common stock have rights, subject to conditions, to require us to file registration statements with the SEC covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. If any of these additional shares are sold, or if it is perceived that they will be sold, in the public market, the market price of our common stock could decline.

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

We may seek additional capital through a combination of public and private equity offerings, debt financings, strategic partnerships and alliances and licensing arrangements. We, and indirectly, our stockholders, will bear the cost of issuing and servicing securities issued in any such transactions. Because our decision to issue debt or equity securities in

any future offering will depend on market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing or nature of any future offerings. In August 2022, we entered into an Equity Distribution Agreement pursuant to which we may offer and sell, from time to time, up to $200.0 million in shares of our common stock. To the extent that we raise additional capital through the sale of equity or debt securities, including pursuant to the Equity Distribution Agreement, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. The incurrence of indebtedness would result in increased fixed payment obligations and could involve restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell, or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. Additionally, any future collaborations we enter into with third parties may provide capital in the near term but limit our potential cash flow and revenue in the future. If we raise additional funds through strategic partnerships, alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies or our products, or grant licenses on terms unfavorable to us. Certain of the foregoing transactions may require us to obtain stockholder approval, which we may not be able to obtain.

We are no longer an "emerging growth company", and the reduced reporting requirements applicable to "emerging growth companies" no longer apply, which increases our costs as a result of being a public company and demands on management.

Effective December 31, 2022, we are no longer classified as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012 (JOBS Act). As such, we will incur significant additional expenses that we did not previously incur in complying with the Sarbanes-Oxley Act and rules implemented by the SEC. For instance, the cost of compliance with Section 404 has required, and will continue to require, us to incur substantial accounting expense and expend significant management time on compliance-related issues as we implement additional corporate governance practices and comply with reporting requirements, which could divert management attention and adversely affect our business, operating results and financial condition. Moreover, if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources.

Furthermore, investor perceptions of our company may suffer if, in the future, material weaknesses are found, and this could cause a decline in the market price of our stock. Irrespective of compliance with Section 404, any failure of our internal control over financial reporting could have a material effect on our stated operating results. If we are unable to implement these changes effectively or efficiently, it could harm our operations, financial reporting or financial results and could result in an adverse opinion on internal control from our independent registered public accounting firm.

In addition, as a "large accelerated filer," we were required to hold a say-on-pay vote and a say-on-frequency vote at our 2023 annual meeting of stockholders. As a result, we required additional attention from management with respect to our disclosures and have incurred and will incur increased costs, including higher legal fees, accounting fees, consultant fees and fees associated with investor relations activities, among others, and, as a result, our business, operating results and financial condition could be adversely affected.

Future acquisitions, strategic investments, partnerships or alliances could be difficult to identify and integrate, divert the attention of management, disrupt our business, dilute stockholder value and adversely affect our operating results and financial condition.

We may in the future seek to acquire or invest in businesses, products or technologies that we believe could complement or expand our technology platforms, enhance our technical capabilities, or otherwise offer growth opportunities. The pursuit of potential acquisitions or strategic investments may divert the attention of management and cause us to incur various expenses in identifying, investigating and pursuing suitable acquisitions or investments, whether or not such transactions are completed. In addition, we have only limited experience in acquiring or investing in other businesses, and we may not successfully identify desirable targets, or if we acquire additional businesses, we may not be able to integrate them effectively following the acquisition. Acquisitions could also result in dilutive issuances of equity securities or the incurrence of debt, as well as unfavorable accounting treatment and exposure to claims and disputes by third parties, including intellectual property claims. We also may not generate sufficient financial returns to offset the costs and expenses related to any acquisitions. In addition, if an acquired business fails to meet our expectations, our business, operating results and financial condition may suffer.

The requirements of being a public company require our management to devote substantial time to compliance initiatives and corporate governance practices and could divert management's attention and strain our resources.

As a public company, we incur and will continue to incur significant legal, accounting and other expenses that we did not incur as a private company. Section 404, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the

listing requirements and rules of The Nasdaq Stock Market LLC (Nasdaq Listing Rules) and other applicable U.S. rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. We continue to need to hire additional accounting, finance and other personnel in connection with our efforts to comply with the requirements of being a public company, and our management and other personnel will continue to need to devote a substantial amount of time towards maintaining compliance with these requirements. These requirements have and will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, the rules and regulations applicable to us as a public company have made it more expensive for us to obtain director and officer liability insurance. We cannot predict or estimate the amount of additional costs we may incur or the timing of such costs. These rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Changes in tax laws or regulations that are applied adversely to us or our customers may have a material adverse effect on our business, cash flow, financial condition or results of operations.*

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time, which could adversely affect our business operations and financial performance. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to us. For example, the Tax Cuts and Jobs Act of 2017 (the Tax Act), the Coronavirus Aid, Relief, and Economic Security Act (the CARES Act) and the recently enacted IRA made many significant changes to the U.S. tax laws. For example, the Tax Act made broad and complex changes to the U.S. tax code, including, among other things, reducing the federal corporate tax rate. Additionally, beginning in 2022, the Tax Act required the capitalization of research and experimentation expenses with amortization periods over five and fifteen years pursuant to Section 174 of the U.S. Internal Revenue Code of 1986, as amended (the Code). If the requirement to capitalize Section 174 expenditures is not modified, it may impact our effective tax rate and our cash tax liability in future years. We expect further guidance regarding Section 174 may be forthcoming from the Financial Accounting Standards Board and the SEC, as well as regulations, interpretations and rulings from federal and state agencies, which could impact our consolidated financial statements. Future guidance from the U.S. Internal Revenue Service and other tax authorities with respect to any such tax legislation may affect us, and certain aspects of the Tax Act could be repealed or modified in future legislation. Changes in corporate tax rates, the realization of net deferred tax assets relating to our U.S. operations and the deductibility of expenses under the Tax Act or future tax reform legislation could have a material impact on the value of our deferred tax assets, could result in significant one-time charges in the current or future taxable years and could increase our future U.S. tax expense. The foregoing items, as well as any other future changes in tax laws, could have a material adverse effect on our business, cash flow, financial condition or results of operations.

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

Under the Tax Act, as modified by the CARES Act, our net operating losses (NOLs) generated in tax years beginning after December 31, 2017 may be carried forward indefinitely, but the deductibility of such federal NOLs is limited to 80% of taxable income. There is variation in how states have responded and may continue to respond to the Tax Act and CARES Act. In addition, under Sections 382 and 383 of the Code, if a corporation undergoes an "ownership change," generally defined as a greater than 50 percentage point change (by value) in its equity ownership by certain stockholders over a three-year period, the corporation's ability to use its pre-change NOLs and other pre-change tax attributes (such as research and development tax credits) to offset its post-change income or taxes may be limited. We may have experienced ownership changes in the past, including as a result of our IPO, and may experience future ownership changes as a result of subsequent shifts in our stock ownership (some of which may be outside our control). As a result, our ability to use our pre-change NOLs and tax credits to offset post-change taxable income, if any, could be subject to limitations. Similar provisions of state tax law may also apply. In addition, at the state level, there may be periods during which the use of NOLs is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed. As a result, even if we attain profitability, we may be unable to use a material portion of our NOLs and tax credits.

Our business and operations would suffer in the event of computer system failures or security breaches.

Our internal computer systems, and those of our partners, are vulnerable to damage from computer viruses, unauthorized access, natural disasters, fire, terrorism, war and telecommunication and electrical failures. We exercise little or no control over these third parties, which increases our vulnerability to problems with their systems. To the extent that any disruption or security breach results in a loss of or damage to our data or applications or inappropriate disclosure of confidential or proprietary information, we could incur liability, the further development of our product candidates could be delayed and our business could be otherwise adversely affected.

While we have not experienced any material system failure, accident or security breach to date, we cannot assure you that our data protection efforts and our investment in information technology will prevent significant breakdowns, data leakages, breaches in our systems or other cyber incidents that could have a material adverse effect upon our reputation, business, operations or financial condition. For example, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our programs, and the development of our product candidates could be delayed. In addition, the loss of clinical trial data for our product candidates could result in delays in our marketing approval efforts and significantly increase our costs to recover or reproduce the data. Furthermore, significant disruptions of our internal information technology systems or security breaches could result in the loss, misappropriation and/or unauthorized access, use, or disclosure of, or the prevention of access to, confidential information (including trade secrets or other intellectual property, proprietary business information and personal information), which could result in financial, legal, business and reputational harm to us. For example, any such event that leads to unauthorized access, use or disclosure of personal information, including personal information regarding our clinical trial subjects or employees, could harm our reputation directly, compel us to comply with federal and/or state breach notification laws and foreign law equivalents, subject us to mandatory corrective action and otherwise subject us to liability under laws and regulations that protect the privacy and security of personal information, which could result in significant legal and financial exposure and reputational damages that could potentially have an adverse effect on our business.

Indemnity provisions in various agreements potentially expose us to substantial liability for intellectual property infringement, data protection and other losses.

Our agreements with third parties may include indemnification provisions under which we agree to indemnify them for losses suffered or incurred as a result of claims of intellectual property infringement or other liabilities relating to or arising from our contractual obligations. Large indemnity payments could harm our business and financial condition. Although we normally contractually limit our liability with respect to such obligations, we may still incur substantial liability. Any dispute with a third party with respect to such obligations could have adverse effects on our relationship with that third party and relationships with other existing or new partners, harming our business.

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

None.

Item 3. Defaults Upon Senior Securities.

Not applicable.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

Rule 10b5-1 Trading Plans

During the third quarter of 2023, none of our directors or executive officers adopted or terminated a Rule 10b5-1 trading arrangement or non-Rule 10b5-1 trading arrangement as defined in Item 408(a) and (c) of Regulation S-K, respectively.

Amended and Restated Bylaws

On November 3, 2023, our board of directors approved an amendment and restatement of our Amended and Restated Bylaws, effective as of such date (the Amended Bylaws). Among other matters, the Amended Bylaws (i) revises the procedures and disclosures for the nomination of directors in accordance with Rule 14a-19 of the Securities Exchange Act of 1934, as amended, including that the stockholder proposing business or nominating directors provide certain additional information regarding the stockholder and the proposal or nominee, as applicable, and any candidate for the board of directors nominated by a stockholder must provide certain additional information and representations; (ii) updates certain provisions in accordance with certain amendments to the Delaware General Corporation Law, including when additional notice need not be given of an adjourned meeting, board meeting quorum requirements and the elimination of the requirement that the stockholder list be made available for inspection during a meeting of stockholders; and (iii) makes other administrative, modernizing, clarifying and conforming changes.

The foregoing summary of the Amended Bylaws does not purport to be complete and is qualified in its entirety by reference to the complete text of the Amended Bylaws, a copy of which is filed as Exhibit 3.2 to this Quarterly Report on Form 10-Q and is incorporated herein by reference.

Reduction in Workforce

On November 6, 2023, we committed to and commenced a reduction in our workforce of approximately 25% to reduce operating costs and improve operating efficiency. The restructuring prioritized investment in our clinical stage programs and core research platforms and streamlined operations. The reduction in workforce is expected to be completed in the fourth quarter of 2023.

In connection with this reduction in workforce, we estimate that we will incur charges of approximately $6 million to $7 million for severance payments, employee benefits and related costs, primarily in the fourth quarter of 2023. Substantially all of the estimated charges are expected to result in future cash expenditures. The estimated charges that we expect to incur are subject to a number of assumptions, and actual results may differ materially from these estimates. We may also incur additional costs not currently contemplated due to events that may occur as a result of, or that are associated with, the reduction in workforce. This disclosure is provided in this Part II, Item 5 in lieu of disclosure under Item 2.05 of Form 8-K.

Item 6. Exhibits.

Exhibit Number	Description	Form	File Number	Exhibit/ Appendix Reference	Filing Date	Filed Herewith
3.1	Amended and Restated Certificate of Incorporation.	S-8	333-257249	4.1	06/21/2021	
3.2*	Amended and Restated Bylaws.					X
4.1	Form of Common Stock Certificate.	S-1/A	333-256470	4.1	06/09/2021	
4.2	Amended and Restated Investors' Rights Agreement, by and among the Registrant and certain of its stockholders, dated March 5, 2020.	S-1	333-256470	4.2	05/25/2021	
10.1*	Offer Letter by and between the Registrant and Matthew Lang, dated May 12, 2023.					X
10.2*	Non-Employee Director Compensation Policy.					X
31.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a).					X
31.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a).					X
32.1*«	Certifications of Principal Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350.					X
101.INS	XBRL Instance Document.	The XBRL instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.				
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					X
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)					X

* Filed herewith.

« The certification attached as Exhibit 32.1 that accompanies this Quarterly Report on Form 10-Q is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Quarterly Report on Form 10-Q, irrespective of any general incorporation language contained in such filing.

SIGNATURE

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

Lyell Immunopharma, Inc.

Date: November 7, 2023

By: /s/ CHARLES NEWTON

Charles Newton

Chief Financial Officer

(Principal Financial and Accounting Officer)

Exhibit 3.2

AMENDED AND RESTATED BYLAWS

OF

LYELL IMMUNOPHARMA, INC.
(A DELAWARE CORPORATION)

June 21, 2021

(as amended November 3, 2023)

Table of Contents

Page

ARTICLE I OFFICES 1
Section 1. Registered Office 1
Section 2. Other Offices 1
ARTICLE II CORPORATE SEAL 1
Section 3. Corporate Seal 1
ARTICLE III STOCKHOLDERS' MEETINGS 1
Section 4. Place of Meetings 1
Section 5. Annual Meetings. 1
Section 6. Special Meetings 6
Section 7. Notice of Meetings 8
Section 8. Quorum and Vote Required 8
Section 9. Adjournment and Notice of Adjourned Meetings 9
Section 10. Voting Rights 9
Section 11. Joint Owners of Stock 9
Section 12. List of Stockholders 10
Section 13. Action without Meeting 10
Section 14. Remote Communication; Delivery to the Corporation 10
Section 15. Organization 10
ARTICLE IV DIRECTORS **11**
Section 16. Number and Term of Office 11
Section 17. Powers 12
Section 18. Vacancies; Newly Created Directorships 12
Section 19. Resignation 12
Section 20. Removal 12
Section 21. Meetings. 12
Section 22. Quorum and Voting. 13
Section 23. Action without Meeting 13
Section 24. Fees and Compensation 13
Section 25. Committees. 13
Section 26. Duties of Chairperson of the Board of Directors and Lead Independent Director 14
Section 27. Organization 14
ARTICLE V OFFICERS **15**
Section 28. Officers Designated 15
Section 29. Tenure and Duties of Officers. 15
Section 30. Delegation of Authority 16
Section 31. Resignations 16
Section 32. Removal 16

Page

ARTICLE VI EXECUTION OF CORPORATE INSTRUMENTS AND VOTING OF SECURITIES OWNED BY THE CORPORATION **16**
Section 33. Execution of Corporate Instruments 16
Section 34. Voting of Securities Owned by the Corporation 17
ARTICLE VII SHARES OF STOCK **17**
Section 35. Form and Execution of Certificates 17
Section 36. Lost Certificates 17
Section 37. Transfers. 18
Section 38. Fixing Record Dates. 18
Section 39. Registered Stockholders 18
Section 40. Additional Powers of the Board 18
ARTICLE VIII OTHER SECURITIES OF THE CORPORATION **19**
Section 41. Execution of Other Securities 19
ARTICLE IX Dividends **19**
Section 42. Declaration of Dividends 19
Section 43. Dividend Reserve 19
ARTICLE X Fiscal Year **19**
Section 44. Fiscal Year 19
ARTICLE XI Indemnification **19**
Section 45. Indemnification of Directors, Executive Officers, Other Officers, Employees and Agents. 19
ARTICLE XII Notices **22**
Section 46. Notices. 22
ARTICLE XIII Amendments **23**
Section 47. Amendments 23
ARTICLE XIV **23**
Section 48. Loans to Officers 24

AMENDED AND RESTATED BYLAWS

OF

LYELL IMMUNOPHARMA, INC.
(A DELAWARE CORPORATION)

ARTICLE I

OFFICES

Section 1. Registered Office. The registered office of Lyell Immunopharma, Inc. (the "***Corporation***") in the State of Delaware and the name of its registered agent at such address shall be as set forth in the Amended and Restated Certificate of Incorporation of the Corporation, as the same may be amended or restated from time to time (the "***Certificate of Incorporation***").

Section 2. Other Offices. The Corporation may also have and maintain an office or principal place of business at such place as may be fixed by the board of directors of the Corporation (the "***Board of Directors***"), and may also have offices at such other places, both within and without the State of Delaware, as the Board of Directors may from time to time determine or the business of the Corporation may require.

ARTICLE II

CORPORATE SEAL

Section 3. Corporate Seal. The Board of Directors may adopt a corporate seal. If adopted, the corporate seal shall consist of the name of the Corporation and the inscription, "Corporate Seal-Delaware." Said seal may be used by causing it or a facsimile thereof to be impressed or affixed or reproduced or otherwise.

ARTICLE III

STOCKHOLDERS' MEETINGS

Section 4. Place of Meetings. Meetings of the stockholders of the Corporation may be held at such place, if any, either within or without the State of Delaware, as may be determined from time to time by the Board of Directors. The Board of Directors may, in its sole discretion, determine that the meeting shall not be held at any place, but may instead be held solely by means of remote communication as provided under the General Corporation Law of the State of Delaware (the "***DGCL***") and Section 14 below.

Section 5. Annual Meetings.

(a) The annual meeting of the stockholders of the Corporation, for the purpose of election of directors and for such other business as may properly come before it, shall be held on such date, time and place as may be designated from time to time by the Board of Directors. The Board or any director or officer of the corporation to whom the Board of Directors delegates authority may postpone, reschedule or cancel any annual meeting of stockholders previously scheduled by the Board of Directors. Nominations of persons for election to the Board of Directors and proposals of business to be considered by the stockholders may be made at an annual meeting of stockholders: (i) by or at the direction of the Board of Directors or a duly authorized committee thereof; or (ii) by any stockholder of the Corporation who was a stockholder of record (and, with respect to any beneficial owner, if different, on whose behalf such business is proposed or such nomination or nominations are made, only if such beneficial owner was the beneficial owner of shares of the Corporation) at the time of giving the stockholder's notice provided for in Section 5(b) below and who is a stockholder of record at the time of the annual meeting of

stockholders, who is entitled to vote at the meeting and who complied with the notice procedures set forth in this Section 5. For the avoidance of doubt, clause (ii) above shall be the exclusive means for a stockholder to make nominations and submit other business (other than matters properly included in the Corporation's notice of meeting of stockholders and proxy statement under Rule 14a-8 under the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder (the "***1934 Act***")) before an annual meeting of stockholders. A stockholder may not designate any substitute nominees unless the stockholder provides timely notice of such substitute nominee(s) in accordance with this Section 5, in the case of an annual meeting, or Section 6, in the case of a special meeting (and such notice contains all of the information, representations, questionnaires and certifications with respect to such substitute nominee(s) that are required by these Amended and Restated Bylaws, as the same may be amended or restated from time to time (the "***Bylaws***"), with respect to nominees for director).

(b) At an annual meeting of the stockholders, only such business shall be conducted as is a proper matter for stockholder action under the DGCL, the Certificate of Incorporation and these Bylaws, and only such nominations shall be made and such business shall be conducted as shall have been properly brought before the meeting in accordance with the procedures below.

(i) For nominations for the election to the Board of Directors to be properly brought before an annual meeting by a stockholder pursuant to clause (ii) of Section 5(a), the stockholder must deliver written notice to the Secretary of the Corporation at the principal executive offices of the Corporation on a timely basis as set forth in Section 5(b)(ii) and must update and supplement the information in contained in such written notice on a timely basis as set forth in Section 5(c). Such stockholder's notice shall set forth: (A) as to each nominee such stockholder proposes to nominate at the meeting: (1) the name, age, business address and residence address of such nominee; (2) the principal occupation or employment of such nominee; (3) the class or series and number of shares of each class or series of capital stock of the Corporation that are owned of record and beneficially by such nominee and list of any pledge of or encumbrances on such shares; (4) the date or dates on which such shares were acquired and the investment intent of such acquisition; (5) the questionnaire, representation and agreement required by Section 5(b)(iv)(D), completed and signed by such nominee, and (6) such other information concerning such nominee as would be required to be disclosed in a proxy statement soliciting proxies for the election of such nominee as a director in an election contest (even if an election contest is not involved and whether or not proxies are being or will be solicited), or that is otherwise required to be disclosed or provided to the Corporation pursuant to Section 14 of the 1934 Act (including such person's written consent to being named in a proxy statement and associated proxy card as a nominee of the stockholder and to serving as a director if elected); and (B) all of the information required by Section 5(b)(iv). The Corporation may require any proposed nominee to furnish such other information as it may reasonably require to determine the eligibility of such proposed nominee to serve as a director of the Corporation and to determine the independence of such proposed nominee (as defined by any applicable stock exchange listing requirements or applicable law) or of any committees or sub-committee of the Board of Directors under any applicable stock exchange listing requirements or applicable law, or that the Board determines, in its sole discretion, could be material to a reasonable stockholder's understanding of the background, qualifications, experience, independence, *or* lack thereof, of such proposed nominee. The number of nominees a stockholder may nominate for election at the annual meeting on its own behalf (or in the case of a stockholder giving the notice on behalf of a beneficial owner, the number of nominees a stockholder may nominate for election at the annual meeting on behalf of such beneficial owner) shall not exceed the number of directors to be elected at such annual meeting.

(ii) Other than proposals sought to be included in the Corporation's proxy materials pursuant to Rule 14a-8 under the 1934 Act, for business other than nominations for the election to the Board of Directors to be properly brought before an annual meeting by a stockholder pursuant to clause (iii) of Section 5(a), the stockholder must deliver written notice to the Secretary of the Corporation at the principal executive offices of the Corporation on a timely basis as set forth in Section 5(b)(iii), and must update and supplement such written notice on a timely basis as set forth in Section 5(c). Such stockholder's notice shall set forth: (A) as to each matter such stockholder proposes to bring before the meeting, a brief description of the business desired to be brought before the meeting, the text of the proposal or business (including the text of any resolutions proposed for consideration and in the event that such business includes a proposal to amend these Bylaws, the language of the proposed amendment), the reasons for conducting such business at the meeting, and any material interest (including any anticipated

benefit of such business to any Proponent (as defined below) other than solely as a result of its ownership of the Corporation's capital stock, that is material to any Proponent individually, or to the Proponents in the aggregate) in such business of any Proponent; and (B) the information required by Section 5(b)(iv).

(iii) To be timely, the written notice required by Section 5(b)(i) or 5(b)(ii) must be received by the Secretary of the Corporation at the principal executive offices of the Corporation not later than the close of business on the 90th day nor earlier than the 120th day prior to the first anniversary of the immediately preceding year's annual meeting; provided, however, that, subject to the last sentence of this Section 5(b)(ii), in the event that (A) the date of the annual meeting is advanced more than 30 days prior to or delayed by more than 30 days after the anniversary of the preceding year's annual meeting, notice by the stockholder to be timely must be so received not earlier than the 120th day prior to such annual meeting and not later than the close of business on the later of the 90th day prior to such annual meeting or the tenth day following the day on which public announcement of the date of such meeting is first made by the Corporation or (B) the Corporation did not have an annual meeting in the preceding year, notice by the stockholder to be timely must be so received not later than the tenth day following the day on which public announcement of the date of such meeting is first made. In no event shall an adjournment, recess or postponement of an annual meeting for which notice has been given, or the public announcement thereof has been made, commence a new time period (or extend any time period) for the giving of a stockholder's notice as described above.

(iv) The written notice required by Sections 5(b)(i) or 5(b)(ii) shall also set forth, as of the date of the notice and as to the stockholder giving the notice, the beneficial owner, if any, on whose behalf the nomination or proposal is made and any affiliate who controls either of the foregoing stockholder or beneficial owner, directly or indirectly (each, a "***Proponent***" and collectively, the "***Proponents***"): (A) the name and address of each Proponent, including, if applicable, such name and address as they appear on the Corporation's books and records; (B) the class, series and number of shares of each class or series of the capital stock of the Corporation that are directly or indirectly owned of record or beneficially (within the meaning of Rule 13d-3 under the 1934 Act) by each Proponent (provided, that for purposes of this Section 5(b)(iv), such Proponent shall in all events be deemed to beneficially own all shares of any class or series of capital stock of the Corporation as to which such Proponent or any of its affiliates or associates has a right to acquire beneficial ownership at any time in the future); (C) a description of any agreement, arrangement or understanding (whether oral or in writing) with respect to such nomination or proposal (and/or the voting of shares of any class or series of capital stock of the Corporation) between or among any Proponent and any of its affiliates or associates, and any other persons (including their names), including without limitation, any agreements, arrangements or understandings required to be disclosed pursuant to Item 5 or Item 6 of the 1934 Act Schedule 13D, regardless of whether the requirement to file a Schedule 13D is applicable, or otherwise under the agreement, arrangement or understanding, with any of the foregoing; (D) a representation that the stockholder is a holder of record of shares of the Corporation at the time of giving notice, will be entitled to vote at the meeting and intends to appear in person or by proxy at the meeting to nominate the person or persons specified in the notice (with respect to a notice under Section 5(b)(i)) or to propose the business that is specified in the notice (with respect to a notice under Section 5(b)(ii)); (E) a representation whether any Proponent or any other participant (as defined in Item 4 of Schedule 14A under the 1934 Act) will engage in a solicitation with respect to such nomination or proposal and, if so, the name of each participant in such solicitation and the amount of the cost of solicitation that has been and will be borne, directly or indirectly, by each participant in such solicitation, and a representation as to whether the Proponents intend, or are a part of a group which intends, (x) to deliver, or make available, a proxy statement and/or form of proxy to holders of at least the percentage of the Corporation's voting shares required to approve or adopt the proposal or elect the nominee, (y) to otherwise solicit proxies or votes from stockholders in support of such proposal or nomination and/or (z) to solicit proxies from the required number of the Corporation's voting shares in support of any proposed nominee in accordance with or as required by Rule 14a-19 promulgated under the 1934 Act; (F) to the extent known by any Proponent, the name and address of any other stockholder supporting the proposal on the date of such stockholder's notice; (G) a description of all Derivative Transactions (as defined below) by each Proponent during the previous 12-month period, including the date of the transactions and the class, series and number of securities involved in, and the material economic or voting terms of, such Derivative Transactions; (H) a certification regarding whether each Proponent has complied with all applicable federal, state and other legal requirements in connection with such Proponent's acquisition of shares of

capital stock or other securities of the Corporation and/or such Proponent's acts or omissions as a stockholder or beneficial owner of the Corporation and (I) any other information relating to the Proponents required to be disclosed in a proxy statement or other filings required to be made in connection with solicitations of proxies for, as applicable, the proposal and/or for the election of directors in an election contest pursuant to and in accordance with Section 14 of the 1934 Act and the rules and regulations promulgated thereunder.

(c) A stockholder providing the written notice required by Section 5(b)(i) or (ii) shall update and supplement such notice in writing, if necessary, so that the information provided or required to be provided in such notice is true and correct in all material respects as of (i) the record date for the determination of stockholders entitled to notice of the meeting and (ii) the date that is five business days(as defined below) prior to the meeting and, in the event of any adjournment, recess or postponement thereof, five business days prior to such adjourned, recessed or postponed meeting; provided, that no such update or supplement shall cure or affect the accuracy (or inaccuracy) of any representations made by any Proponent, any of its affiliates or associates, or a nominee or the validity (or invalidity) of any nomination or proposal that failed to comply with this Section 5 or is rendered invalid as a result of any inaccuracy therein. In the case of an update and supplement pursuant to clause (i) of this Section 5(c), such update and supplement shall be received by the Secretary of the Corporation at the principal executive offices of the Corporation not later than five business days after the later of the record date for the determination of stockholders entitled to notice of the meeting or the public announcement of such record date. In the case of an update and supplement pursuant to clause (ii) of this Section 5(c), such update and supplement shall be received by the Secretary of the Corporation at the principal executive offices of the Corporation not later than two business days prior to the date for the meeting, and, in the event of any adjournment or postponement thereof, two business days prior to such adjourned or postponed meeting.

(d) Notwithstanding anything in Section 5(b)(iii) to the contrary, in the event that the number of directors in an Expiring Class (as defined below) to be elected to the Board of Directors at the next annual meeting is increased effective after the time period for which nominations would otherwise be due under Section 5(b)(iii) and there is no public announcement by the Corporation naming all of the nominees for the additional directorships at least 10 days before the last day a stockholder may deliver a notice of nomination required by this Section 5 and that complies with the requirements in Section 5(b)(i), other than the timing requirements in Section 5(b)(iii), shall also be considered timely, but only with respect to nominees for the additional directorships in such Expiring Class, if it shall be received by the Secretary of the Corporation at the principal executive offices of the Corporation not later than the close of business on the tenth day following the day on which such public announcement is first made by the Corporation. For purposes of this section, an "***Expiring Class***" shall mean a class of directors whose term shall expire at the annual meeting of stockholders.

(e) To be eligible to be a nominee for election or re-election as a director of the Corporation pursuant to a nomination under clause (iii) of Section 5(a), each Proponent must deliver (in accordance with the time periods prescribed for delivery of notice under Sections 5(b)(iii) or 5(d), as applicable) to the Secretary of the Corporation at the principal executive offices of the Corporation a written questionnaire with respect to the background, qualifications, stock ownership and independence of such proposed nominee and the background of any other person or entity on whose behalf the nomination is being made (in the form provided by the Secretary of the Corporation within 10 days following a written request therefor by a stockholder of record) and a written representation and agreement (in the form provided by the Secretary of the Corporation within 10 days following a written request therefor by a stockholder of record) that such person (i) is not and will not become a party to (A) any agreement, arrangement or understanding (whether oral or in writing) with, and has not given any commitment or assurance to, any person or entity as to how such person, if elected as a director of the Corporation, will act or vote on any issue or question (a "***Voting Commitment***") that has not been disclosed to the Corporation in the questionnaire or (B) any Voting Commitment that could limit or interfere with such person's ability to comply, if elected as a director of the Corporation, with such person's fiduciary duties under applicable law; (ii) is not and will not become a party to any agreement, arrangement or understanding (whether oral or in writing) with any person or entity other than the Corporation with respect to any direct or indirect compensation, reimbursement or indemnification in connection with service or action as a director of the Corporation or a nominee that has not been disclosed in such questionnaire; (iii) would be in compliance, if elected as a director of the Corporation, and will comply

with, all applicable publicly disclosed corporate governance, conflict of interest, confidentiality and stock ownership and trading policies and guidelines of the Corporation and (iv) if elected as director of the Corporation, intends to serve the entire term until the next meeting at which such candidate would face re-election.

(f) A person shall not be eligible for election or re-election as a director at an annual meeting unless the person is nominated in accordance with Section 5(a) and in accordance with the procedures set forth in Section 5(b), Section 5(c), Section 5(d) and Section 5(e), as applicable, or in the case of a special meeting, in accordance with Section 6(c) and the requirements thereof. Only such business shall be conducted at any annual meeting of the stockholders of the Corporation as shall have been brought before the meeting in accordance with Section 5(a) and in accordance with the procedures set forth in Section 5(b) and Section 5(c), as applicable. Except as otherwise required by applicable law, the chairperson of the meeting shall have the power and duty to determine whether a nomination or any business proposed to be brought before the meeting was made, or proposed, as the case may be, in accordance with the procedures and requirements set forth in these Bylaws (including, without limitation, compliance with Rule 14a-19 promulgated under the 1934 Act) and, if any proposed nomination or business is not in compliance with these Bylaws, or the Proponent does not act in accordance with the representations required in in Section 5, to declare that such proposal or nomination shall not be presented for stockholder action at the meeting and shall be disregarded (and such nominee disqualified from standing for election or re-election), or that such business shall not be transacted, notwithstanding such proposal or nomination (as applicable) is set forth in the Corporation's proxy statement, notice of meeting or other proxy materials and notwithstanding that proxies or votes in respect of such nomination or such business may have been solicited or received. Notwithstanding the foregoing provisions of this Section 5, unless otherwise required by applicable law, if the stockholder (or a qualified representative of the stockholder) does not appear at the annual meeting of stockholders of the Corporation to present a nomination or proposed business, such nomination shall be disregarded (and such nominee disqualified from standing for election or re-election) and such proposed business shall not be transacted, notwithstanding such nomination or proposed business is set forth in the Corporation's proxy statement, notice of meeting or other proxy materials and notwithstanding that proxies or votes in respect of such vote may have been received by the Corporation. For purposes of this Section 5, to be considered a qualified representative of the stockholder, a person must be a duly authorized officer, manager or partner of such stockholder or must be authorized by a writing executed by such stockholder or an electronic transmission delivered by such stockholder to act for such stockholder as proxy at the meeting of stockholders and such person must produce such writing or electronic transmission, or a reliable reproduction of the writing or electronic transmission, at least five business days prior to the meeting of stockholders.

(g) Notwithstanding anything to the contrary in these Bylaws, unless otherwise required by applicable law, in the event that any Proponent (i) provides notice pursuant to Rule 14a-19(b) promulgated under the 1934 Act with respect to one or more proposed nominees and (ii) subsequently (x) fails to comply with the requirements of Rule 14a-19 promulgated under the 1934 Act (or fails to timely provide reasonable evidence sufficient to satisfy the Corporation that such Proponent has met the requirements of Rule 14a-19(a)(3) promulgated under the 1934 Act in accordance with the next sentence) or (y) fails to inform the Corporation that they no longer plan to solicit proxies in accordance with the requirements of Rule 14a-19 promulgated under the 1934 Act by delivering a written notice to the Secretary at the principal executive offices of the Corporation within two business days after the occurrence of such change, then the nomination of each such proposed nominee shall be disregarded (and such nominee disqualified from standing for election or re-election), notwithstanding that the nominee is included (as applicable) as a nominee in the Corporation's proxy statement, notice of meeting or other proxy materials for any stockholder meeting (or any supplement thereto) and notwithstanding that proxies or votes in respect of the election of such proposed nominees may have been received by the Corporation (which proxies and votes shall be disregarded). If any Proponent provides notice pursuant to Rule 14a-19(b) promulgated under the 1934 Act, such Proponent shall deliver to the Corporation, no later than five business days prior to the applicable meeting, reasonable evidence that it has met the requirements of Rule 14a-19(a)(3) promulgated under the 1934 Act. Notwithstanding anything to the contrary set forth herein, and for the avoidance of doubt, the nomination of any person whose name is included (as applicable) as a nominee in the Corporation's proxy statement, notice of meeting or other proxy materials for any stockholder meeting (or any supplement thereto) as a result of any notice provided by any

Proponent pursuant to Rule 14a-19(b) promulgated under the 1934 Act with respect to such proposed nominee and whose nomination is not made by or at the direction of the Board of Directors or any authorized committee thereof shall not be deemed (for purposes of clause (i) of Section 5(a) or otherwise) to have been made pursuant to the Corporation's notice of meeting (or any supplement thereto) and any such nominee may only be nominated by a Proponent pursuant to clause (ii) of Section 5(a) and, in the case of a special meeting of stockholders, pursuant to and to the extent permitted under Section 6(c) of these Bylaws. Nothing in these Bylaws shall be deemed to affect any rights of holders of any class or series of preferred stock to nominate and elect directors pursuant to and to the extent provided in any applicable provision of the Certificate of Incorporation.

(h) For purposes of Sections 5 and 6,

(i) "***affiliates***" and "***associates***" shall have the meanings set forth in Rule 405 under the Securities Act of 1933, as amended (the "***1933 Act***").

(ii) "***business day***" means any day other than Saturday, Sunday or a day on which banks are closed in New York City, New York.

(iii) "***close of business***" means 5:00 p.m. local time at the principal executive offices of the Corporation on any calendar day, whether or not the day is a Business Day.

(iv) "***Derivative Transaction***" means any agreement, arrangement, interest or understanding entered into by, or on behalf or for the benefit of, any Proponent or any of its affiliates or associates, whether record or beneficial:

(1) the value of which is derived in whole or in part from the value of any class or series of shares or other securities of the Corporation,

(2) that otherwise provides any direct or indirect opportunity to gain or share in any gain derived from a change in the value of securities of the Corporation,

(3) the effect or intent of which is to mitigate loss, manage risk or benefit from changes in value or price with respect to any securities of the Corporation, or

(4) that provides the right to vote or increase or decrease the voting power of, such Proponent, or any of its affiliates or associates, directly or indirectly, with respect to any securities of the Corporation,

which agreement, arrangement, interest or understanding may include, without limitation, any option, warrant, debt position, note, bond, convertible security, swap, stock appreciation or similar right, short position, profit interest, hedge, right to dividends, voting agreement, performance-related fee or arrangement to borrow or lend shares (whether or not subject to payment, settlement, exercise or conversion in any such class or series), and any proportionate interest of such Proponent in the securities of the Corporation held by any general or limited partnership, or any limited liability company, of which such Proponent is, directly or indirectly, a general partner or managing member; and

(v) "***public announcement***" shall mean disclosure in a press release reported by the Dow Jones News Service, Associated Press, Business Wire, GlobeNewswire or comparable national news service or in a document publicly filed by the Corporation with the Securities and Exchange Commission pursuant to Section 13, 14 or 15(d) of the 1934 Act, or by such other means reasonably designed to inform the public or security holders in general of such information including, without limitation, posting on the Corporation's investor relations website.

Section 6. Special Meetings.

(a) Special meetings of the stockholders of the Corporation may be called, for any purpose as is a proper matter for stockholder action under the DGCL, by (i) the Chairperson of the Board

of Directors, (ii) the Chief Executive Officer or the President, if the Chairperson of the Board of Directors is unavailable, or (iii) the Board of Directors pursuant to a resolution adopted by a majority of the total number of authorized directors (whether or not there exist any vacancies in previously authorized directorships at the time any such resolution is presented to the Board of Directors for adoption). The Board of Directors or any director or officer to whom the Board of Directors has delegated such authority, at any time before or after notice of such meeting has been given to stockholders may postpone, reschedule or cancel any special meeting of stockholders previously scheduled.

(b) The Board of Directors shall determine the date, time and place, if any, of such special meeting. Upon determination of the date, time and place, if any, of the meeting, the Secretary of the Corporation shall cause a notice of meeting to be given to the stockholders entitled to vote, in accordance with the provisions of Section 7. No business may be transacted at such special meeting otherwise than specified in the notice of meeting.

(c) Only such business (including the election of specific individuals to fill vacancies or newly created directorships on the Board of Directors) shall be conducted at a special meeting of stockholders as shall have been brought before the meeting pursuant to the Corporation's notice of meeting. Nominations of persons for election to the Board of Directors to fill any vacancy or unfilled newly created directorship may be made at a special meeting of stockholders at which any proposal to fill any vacancy or unfilled newly created directorship is to be presented to the stockholders (i) by or at the direction of the Board of Directors or a duly authorized committee thereof or (ii) provided that the Board of Directors has determined that directors shall be elected at such meeting, by any stockholder of the Corporation who is a stockholder of record (and with respect to any beneficial owner, if different, on whose behalf such nomination or nominations are made, only if such beneficial owner of shares of the Corporation) at the time of giving notice provided for in this paragraph, who is entitled to vote at the meeting and who delivers written notice to the Secretary of the Corporation setting forth the information required by Section 5(b)(i), 5(b)(iv), 5(c), 5(e), 5(f) and 5(g). The number of nominees a stockholder may nominate for election at the special meeting (or in the case of a stockholder giving the notice on behalf of a beneficial owner, the number of nominees a stockholder may nominate for election at the special meeting on behalf of such beneficial owner) shall not exceed the number of directors to be elected at such special meeting. In the event the Corporation calls a special meeting of stockholders for the purpose of submitting a proposal to stockholders for the election of one or more directors to fill any vacancy or newly created directorship on to the Board of Directors, any such stockholder of record may nominate a person or persons (as the case may be), for election to such position(s) as specified in the Corporation's notice of meeting, if written notice setting forth the information required by Section 5(b)(i) and 5(b)(iv) shall be received by the Secretary of the Corporation at the principal executive offices of the Corporation not earlier than 120 days prior to such special meeting and not later than the close of business on the later of the 90th day prior to such meeting, or the tenth day following the day on which the Corporation first makes a public announcement of the date of the special meeting at which directors are to be elected. The stockholder shall also update and supplement such information as required under Section 5(c). In no event shall an adjournment or a postponement of a special meeting for which notice has been given, or the public announcement thereof has been made, commence a new time period (or extend any time period) for the giving of a stockholder's notice as described above.

(d) A person shall not be eligible for election or re-election as a director at the special meeting unless the person is nominated either in accordance with clause (i) or clause (ii) of Section 6(c). Except as otherwise required by applicable law, the chairperson of the meeting shall have the power and duty to determine whether a nomination was made in accordance with the procedures and requirements set forth in these Bylaws and, if any proposed nomination or business is not in compliance with these Bylaws, or if the Proponent does not act in accordance with the representations required in Section 5(b), to declare that such nomination shall not be presented for stockholder action at the meeting and shall be disregarded (and such nominee disqualified from standing for election or re-election), notwithstanding that such nomination is set forth (as applicable) in the Corporation's proxy statement, notice of meeting or other proxy materials and notwithstanding that proxies or votes in respect of such nomination may have been solicited or received. Notwithstanding the foregoing provisions of this Section 6, unless otherwise required by applicable law, if the stockholder (or a qualified representative of the stockholder (meeting the requirements specified in Section 5(e) does not appear at the special meeting of stockholders of the Corporation to present a nomination, such nomination shall be disregarded (and

such nominee disqualified from standing for election or re-election), notwithstanding that the nomination is set forth in (as applicable) the Corporation's proxy statement, notice of meeting or other proxy materials and notwithstanding that proxies or votes in respect of such vote may have been received by the Corporation.

(e) Notwithstanding the foregoing provisions of Section 5 and this Section 6, a stockholder must also comply with all applicable requirements of the 1934 Act with respect to matters set forth in Section 5 and this Section 6. Nothing in these Bylaws shall be deemed to affect any rights of stockholders to request inclusion of proposals in the Corporation's proxy statement pursuant to Rule 14a-8 under the 1934 Act; *provided, however,* that, to the fullest extent not prohibited by applicable law, any references in these Bylaws to the 1934 Act are not intended to and shall not limit the requirements applicable to proposals and/or nominations for the election to the Board of Directors to be considered pursuant to Section 6(c).

Section 7. Notice of Meetings. Except as otherwise provided by applicable law, notice, given in writing or by electronic transmission, of each meeting of stockholders shall be given not less than ten nor more than 60 days before the date of the meeting to each stockholder entitled to vote at such meeting as of the record date for determining the stockholders entitled to notice of such meeting. Such notice shall specify the place, if any, date and hour, in the case of special meetings, the purpose or purposes of the meeting, the record date for determining stockholders entitled to vote at the meeting, if such record date is different from the record date for determining stockholders entitled to notice of the meeting, and the means of remote communications, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at any such meeting. If mailed, notice is given when deposited in the United States mail, postage prepaid, directed to the stockholder at such stockholder's address as it appears on the records of the Corporation. If delivered by courier service, the notice is given on the earlier of when the notice is received or left at the stockholder's address. If sent via electronic mail, notice is given when directed to such stockholder's electronic mail address in accordance with applicable law unless (a) the stockholder has notified the Corporation in writing or by electronic transmission of an objection to receiving notice by electronic mail or (b) electronic transmission of such notice is prohibited by applicable law. . Notice of any meeting of stockholders (to the extent required) may be waived in writing, signed by the person entitled to notice thereof, or by electronic transmission by such person, either before or after such meeting, and will be waived by any stockholder by his or her attendance thereat in person, by remote communication, if applicable, or by proxy, except when the stockholder attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Any stockholder so waiving notice of such meeting shall be bound by the proceedings of any such meeting in all respects as if due notice thereof had been given.

Section 8. Quorum and Vote Required. At all meetings of stockholders, except where otherwise provided by statute or by the Certificate of Incorporation, or by these Bylaws, the presence, in person, by remote communication, if applicable, or by proxy duly authorized, of the holders of a majority of the voting power of the outstanding shares of stock entitled to vote at the meeting shall constitute a quorum for the transaction of business. In the absence of a quorum, any meeting of stockholders may be adjourned, from time to time, either by the chairperson of the meeting or by vote of the holders of a majority of the voting power of the shares represented thereat and entitled to vote thereon, but no other business shall be transacted at such meeting. The stockholders present at a duly called or convened meeting, at which a quorum is present, may continue to transact business until adjournment, notwithstanding the withdrawal of enough stockholders to leave less than a quorum. Except as otherwise provided by statute or by applicable stock exchange rules, or by the Certificate of Incorporation or these Bylaws, in all matters other than the election of directors, the affirmative vote of the holders of a majority of the voting power of the shares present in person, by remote communication, if applicable, or represented by proxy at the meeting and voting affirmatively or negatively (excluding abstentions and broker non-votes) on such matter shall be the act of the stockholders. Except as otherwise provided by statute, the Certificate of Incorporation or these Bylaws, in which case such different or minimum vote of such applicable statute shall be the applicable vote on the matter, directors shall be elected by a plurality of the votes of the shares present in person, by remote communication, if applicable, or represented by proxy duly authorized at the meeting and entitled to in the election of directors. Where a separate vote by a class or classes or series is required, except where otherwise provided by statute, or by the Certificate of

Incorporation or these Bylaws or any applicable stock exchange rules, holders of a majority of the voting power of the outstanding shares of such class or classes or series, present in person, by remote communication, if applicable, or represented by proxy duly authorized, shall constitute a quorum entitled to take action with respect to that vote on that matter. Except where a different or minimum vote is provided or required for such matter by applicable statute or by the Certificate of Incorporation or these Bylaws or any applicable stock exchange rules or otherwise, in which case such minimum or different vote shall be the applicable vote on such matter, the affirmative vote of holders of a majority (plurality, in the case of the election of directors) of the voting power of the shares of such class or classes or series present in person, by remote communication, if applicable, or represented by proxy at the meeting and voting affirmatively or negatively (excluding abstention and broker non-votes) on such matter shall be the act of such class or classes or series.

Section 9. Adjournment and Notice of Adjourned Meetings. Any meeting of stockholders, whether annual or special, may be adjourned from time to time either by the chairperson of the meeting or by the vote of the holders of a majority of the voting power of the shares present in person, by remote communication, if applicable, or represented by proxy duly authorized at the meeting. When a meeting is adjourned to another time or place, if any, including an adjournment taken to address a technical failure to convene or continue a meeting using remote communication, notice need not be given of the adjourned meeting if the time and place, if any, thereof and the means of remote communication, if any, by which stockholders and proxyholders may be deemed present in person and may vote at such meeting are (i) announced at the meeting at which the adjournment is taken, (ii) displayed, during the time scheduled for the meeting, on the same electronic network used to enable stockholders and proxy holders to participate in the meeting by means of remote communication or (iii) set forth in the notice of meeting given in accordance with Section 7. At the adjourned meeting, the Corporation may transact any business that might have been transacted at the original meeting. If the adjournment is for more than 30 days or if after the adjournment a new record date is fixed for the adjourned meeting, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting. If after the adjournment a new record date for determination of stockholders entitled to vote is fixed for the adjourned meeting, the Board of Directors shall fix as the record date for determining stockholders entitled to notice of such adjourned meeting the same or an earlier date as that fixed for determination of stockholders entitled to vote at the adjourned meeting, and shall give notice of the adjourned meeting to each stockholder of record entitled to vote at such adjourned meeting as of the record date so fixed for notice of such adjourned meeting.

Section 10. Voting Rights. For the purpose of determining those stockholders entitled to vote at any meeting of the stockholders or adjournment thereof, except as otherwise provided by applicable law, only persons in whose names shares stand on the stock records of the Corporation on the record date shall be entitled to vote at any meeting of stockholders. Every person entitled to vote shall have the right to do so either in person, by remote communication, if applicable, or by an agent or agents authorized by a proxy granted in accordance with the DGCL. An agent so appointed need not be a stockholder. No proxy shall be voted after three years from its date of creation unless the proxy provides for a longer period. A proxy shall be irrevocable if it states that it is irrevocable and if, and only as long as, it is coupled with an interest sufficient in law to support an irrevocable power. A stockholder may revoke any proxy which is not irrevocable by attending the meeting and voting in person or by delivering to the Secretary of the Corporation a revocation of the proxy or a new proxy bearing a later date. Voting at meetings of stockholders need not be by written ballot. Any stockholder directly or indirectly soliciting proxies from other stockholders must use a proxy card color other than white, which shall be reserved for the exclusive use by the Board of Directors.

Section 11. Joint Owners of Stock. If shares or other securities having voting power stand of record in the names of two or more persons, whether fiduciaries, members of a partnership, joint tenants, tenants in common, tenants by the entirety, or otherwise, or if two or more persons have the same fiduciary relationship respecting the same shares, unless the Secretary of the Corporation is given written notice to the contrary and is furnished with a copy of the instrument or order appointing them or creating the relationship wherein it is so provided, their acts with respect to voting shall have the following effect: (a) if only one votes, his or her act binds all; (b) if more than one votes, the act of the majority so voting binds all; (c) if more than one votes, but the vote is evenly split on any particular matter, each faction may vote the securities in question proportionally, or may apply to the Delaware Court of Chancery for relief

as provided in Section 217(b) of the DGCL. If the instrument filed with the Secretary of the Corporation shows that any such tenancy is held in unequal interests, a majority or even-split for the purpose of subsection (c) shall be a majority or even-split in interest.

Section 12. List of Stockholders

The Corporation shall prepare, at least ten days before every meeting of stockholders, a complete list of the stockholders entitled to vote at said meeting, arranged in alphabetical order, showing the address of each stockholder and the number and class of shares registered in the name of each stockholder; provided, however, if the record date for determining the stockholders entitled to vote is less than ten days before the meeting date, the list shall reflect all of the stockholders entitled to vote as of the tenth day before the meeting date. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting, (a) on a reasonably accessible electronic network, provided that the information required to gain access to such list is provided with the notice of the meeting, or (b) during ordinary business hours, at the principal place of business of the Corporation. In the event that the Corporation determines to make the list available on an electronic network, the Corporation may take reasonable steps to ensure that such information is available only to stockholders of the Corporation.

Section 13. Action without Meeting. No action shall be taken by the stockholders of the Corporation except at an annual or special meeting of stockholders duly called in accordance with these Bylaws, and no action shall be taken by the stockholders by consent.

Section 14. Remote Communication; Delivery to the Corporation.

(a) For the purposes of these Bylaws, if authorized by the Board of Directors in its sole discretion, and subject to such guidelines and procedures as the Board of Directors may adopt, stockholders and proxyholders may, by means of remote communication:

(i) participate in a meeting of stockholders; and

(ii) be deemed present in person and vote at a meeting of stockholders whether such meeting is to be held at a designated place or solely by means of remote communication, provided that (i) the corporation shall implement reasonable measures to verify that each person deemed present and permitted to vote at the meeting by means of remote communication is a stockholder or proxyholder, (ii) the corporation shall implement reasonable measures to provide such stockholders and proxyholders a reasonable opportunity to participate in the meeting and to vote on matters submitted to the stockholders, including an opportunity to read or hear the proceedings of the meeting substantially concurrently with such proceedings, and (iii) if any stockholder or proxyholder votes or takes other action at the meeting by means of remote communication, a record of such vote or other action shall be maintained by the corporation.

Whenever this Article III requires one or more persons (including a record or beneficial owner of stock) to deliver a document or information to the corporation or any officer, employee or agent thereof (including any notice, request, questionnaire, revocation, representation or other document or agreement), such document or information shall be in writing exclusively (and not in an electronic transmission) and shall be delivered exclusively by hand (including, without limitation, overnight courier service) or by certified or registered mail, return receipt requested and the corporation shall not be required to accept delivery of any document not in such written form or so delivered. For the avoidance of doubt, with respect to any notice from any stockholder of record or beneficial owner of the corporation's capital stock under the Certificate of Incorporation, these Bylaws or the DGCL, to the fullest extent permitted by law, the corporation expressly opts out of Section 116 of the DGCL.

Section 15. Organization.

(a) At every meeting of stockholders, the Chairperson of the Board of Directors, or, if a Chairperson has not been appointed, is absent or refuses to act, the Chief Executive Officer, or if no Chief Executive Officer is then serving or the Chief Executive Officer is absent or refuses to act, the President, or, if the President is absent or refuses to act, a chairperson of the meeting designated by the

Board of Directors, or, if the Board of Directors does not designate such chairperson, a chairperson of the meeting chosen by a majority of the voting power of the stockholders entitled to vote, present in person or by proxy duly authorized, shall act as chairperson of the meeting of stockholders. The Chairperson of the Board of Directors may appoint the Chief Executive Officer as chairperson of the meeting. The Secretary of the Corporation, or, in his or her absence, an Assistant Secretary of the Corporation or other officer or other person directed to do so by the chairperson of the meeting, shall act as secretary of the meeting.

(b) The Board of Directors shall be entitled to make such rules or regulations for the conduct of meetings of stockholders as it shall deem necessary, appropriate or convenient. Subject to such rules and regulations of the Board of Directors, if any, the chairperson of the meeting shall have the right and authority to convene and (for any or no reason) to recess and/or adjourn the meeting, to prescribe such rules, regulations and procedures and to do all such acts as, in the judgment of such chairperson, are necessary, appropriate or convenient for the proper conduct of the meeting, including, without limitation, establishing an agenda or order of business for the meeting, rules and procedures for maintaining order at the meeting and the safety of those present, limitations on participation in such meeting to stockholders of record of the Corporation and their duly authorized and constituted proxies and such other persons as the chairperson shall permit, restrictions on entry to the meeting after the time fixed for the commencement thereof, limitations on the time allotted to questions or comments by participants and regulation of the opening and closing of the polls for balloting on matters that are to be voted on by ballot. The date and time of the opening and closing of the polls for each matter upon which the stockholders will vote at the meeting shall be announced at the meeting. Unless and to the extent determined by the Board of Directors or the chairperson of the meeting, meetings of stockholders shall not be required to be held in accordance with rules of parliamentary procedure.

(c) The Corporation may and shall, if required by applicable law, in advance of any meeting of stockholders, appoint one or more inspectors to act at the meeting and make a written report thereof. The Corporation may designate one or more persons as alternate inspectors to replace any inspector who fails to act. If no inspector or alternate is able to act at a meeting of stockholders, the chairperson of the meeting shall appoint one or more inspectors to act at the meeting. Each inspector, before entering upon the discharge of the duties of inspector, shall take and sign an oath faithfully to execute the duties of inspector with strict impartiality and according to the best of such inspector's ability. The inspectors shall: (i) ascertain the number of shares outstanding and the voting power of each; (ii) determine the shares represented at a meeting and the validity of proxies and ballots; (iii) count all votes and ballots; (iv) determine and retain for a reasonable period a record of the disposition of any challenges made to any determination by the inspectors; and (v) certify their determination of the number of shares represented at the meeting, and their count of all votes and ballots. The inspectors may appoint or retain other persons or entities to assist the inspectors in the performance of the duties of the inspectors. In determining the validity and counting of proxies and ballots, the inspectors shall be limited to an examination of the proxies, any envelopes submitted with those proxies, any information provided in accordance with Sections 211(e) or 212(c)(2) of the DGCL, or any information provided pursuant to Sections 211(a)(2)b.(i) or (iii) of the DGCL, ballots and the regular books and records of the Corporation, except that the inspectors may consider other reliable information for the limited purpose of reconciling proxies and ballots submitted by or on behalf of banks, brokers, their nominees or similar persons which represent more votes than the holder of a proxy is authorized by the record owner to cast, or more votes than the stockholder holds of record. If the inspectors consider other reliable information for the limited purpose permitted herein, the inspectors at the time they make their certification pursuant to Section 231(b)(5) of the DGCL shall specify the precise information considered by them including the person or persons from whom they obtained the information, when the information was obtained, the means by which the information was obtained and the basis for the inspectors' belief that such information is accurate and reliable.

ARTICLE IV

DIRECTORS

Section 16. Number and Term of Office. The authorized number of directors of the Corporation shall be fixed in accordance with the Certificate of Incorporation. Directors need not be

stockholders unless so required by the Certificate of Incorporation. The terms of the directors shall be as set forth in the Certificate of Incorporation.

Section 17. Powers. The business and affairs of the Corporation shall be managed by or under the direction of the Board of Directors, except as may be otherwise provided by statute or by the Certificate of Incorporation or the DGCL.

Section 18. Vacancies; Newly Created Directorships. Vacancies and newly created directorships on the Board of Directors shall be filled as set forth in the Certificate of Incorporation, except as otherwise required by applicable law.

Section 19. Resignation. Any director may resign at any time by delivering his or her notice in writing or by electronic transmission to the Board of Directors or the Secretary of the Corporation. Such resignation shall take effect at the time of delivery of the notice or at any later time specified therein. Acceptance of such resignation shall not be necessary to make it effective. When one or more directors shall resign from the Board of Directors, effective at a future date, a majority of the directors then in office, including those who have so resigned, shall have power to fill such vacancy or vacancies, the vote thereon to take effect when such resignation or resignations shall become effective, and each director so chosen shall hold office for the unexpired portion of the term of the director whose place shall be vacated and until his or her successor shall have been duly elected and qualified or until his or her earlier death, resignation or removal.

Section 20. Removal. Directors shall be removed from the Board of Directors as set forth in the Certificate of Incorporation.

Section 21. Meetings.

(a) Regular Meetings. Unless otherwise restricted by the Certificate of Incorporation, regular meetings of the Board of Directors may be held at any time or date and at any place within or without the State of Delaware that has been designated by the Board of Directors and publicized among all directors, either orally or in writing, by telephone, including a voice-messaging system or other system designed to record and communicate messages, or by electronic mail or other electronic means. No further notice shall be required for regular meetings of the Board of Directors.

(b) Special Meetings. Unless otherwise restricted by the Certificate of Incorporation, special meetings of the Board of Directors may be held at any time and place within or without the State of Delaware as designated and called by the Chairperson of the Board of Directors, the Chief Executive Officer or a majority of the authorized number of directors.

(c) Meetings by Electronic Communications Equipment. Any member of the Board of Directors, or of any committee thereof, may participate in a meeting by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and participation in a meeting by such means shall constitute presence in person at such meeting.

(d) Notice of Special Meetings. Notice of the time and place, if any, of all special meetings of the Board of Directors shall be transmitted orally or in writing, by telephone, including a voice messaging system or other system or technology designed to record and communicate messages, or by electronic mail or other electronic means, during normal business hours, at least 24 hours before the meeting. If notice is sent by U.S. mail, it shall be sent by first class mail, postage prepaid, at least three days before the date of the meeting.

(e) Waiver of Notice. Notice of any meeting of the Board of Directors may be waived in writing, or by electronic transmission, at any time before or after the meeting and will be waived by any director by attendance thereat, except when the director attends the meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. The transaction of all business at any meeting of the Board of

Directors, or any committee thereof, however called or noticed, or wherever held, shall be as valid as though it had been transacted at a meeting duly held after regular call and notice, if a quorum be present and if, either before or after the meeting, each of the directors not present who did not receive notice shall sign a written waiver of notice or shall waive notice by electronic transmission. All such waivers shall be filed with the corporate records or made a part of the minutes of the meeting.

Section 22. Quorum and Voting.

(a) Unless the Certificate of Incorporation requires a greater number, and except with respect to questions related to indemnification arising under Section 45 for which a quorum shall be 1/3 of the authorized number of directors fixed from time to time by the Board of Directors in accordance with the Certificate of Incorporation, a quorum of the Board of Directors shall consist of a majority of the total number of directors then serving on the Board of Directors or, if greater, one third of the authorized number of directors fixed from time to time by the Board of Directors in accordance with the Certificate of Incorporation. At any meeting whether a quorum be present or otherwise, a majority of the directors present may adjourn from time to time, without notice other than by announcement at the meeting.

(b) At each meeting of the Board of Directors at which a quorum is present, all questions and business shall be determined by the affirmative vote of a majority of the directors present, unless a different vote be required by applicable law, the Certificate of Incorporation or these Bylaws.

Section 23. Action without Meeting. Unless otherwise restricted by the Certificate of Incorporation or these Bylaws, any action required or permitted to be taken at any meeting of the Board of Directors or of any committee thereof may be taken without a meeting, if all members of the Board of Directors or committee, as the case may be, consent thereto in writing or by electronic transmission. After an action is taken, such consent or consents shall be filed with the minutes of proceedings of the Board of Directors or committee. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form.

Section 24. Fees and Compensation. Directors shall be entitled to such compensation for their services on the Board of Directors or any committee thereof as may be approved by the Board of Directors, or a committee thereof to which the Board of Directors has delegated such responsibility and authority, including, if so approved, by resolution of the Board of Directors, or a committee thereof to which the Board of Directors has delegated such responsibility and authority, including, without limitation, a fixed sum and reimbursement of expenses, if any, for attendance at each regular or special meeting of the Board of Directors and at any meeting of a committee of the Board of Directors, as well as reimbursement for other reasonable expenses incurred with respect to duties as a member of the Board of Directors or any committee thereof. Nothing herein contained shall be construed to preclude any director from serving the Corporation in any other capacity as an officer, agent, employee, or otherwise and receiving compensation therefor.

Section 25. Committees.

(a) Executive Committee. The Board of Directors may appoint an executive committee (the "***Executive Committee***") to consist of one or more members of the Board of Directors. The Executive Committee, to the extent permitted by applicable law and provided in the resolution of the Board of Directors shall have and may exercise all the powers and authority of the Board of Directors in the management of the business and affairs of the Corporation, and may authorize the seal of the Corporation to be affixed to all papers that may require it; but no such committee shall have the power or authority in reference to (i) approving or adopting, or recommending to the stockholders, any action or matter (other than the election or removal of directors) expressly required by the DGCL to be submitted to stockholders for approval, or (ii) adopting, amending or repealing any Bylaw of the Corporation.

(b) Other Committees. The Board of Directors may, from time to time, appoint such other committees as may be permitted by applicable law. Such other committees appointed by the Board of Directors shall consist of one or more members of the Board of Directors and shall have such powers and perform such duties as may be prescribed by the resolution or resolutions creating such

committees, but in no event shall any such committee have the powers denied to the Executive Committee in these Bylaws.

(c) Term. The Board of Directors, subject to any requirements of any outstanding series of preferred stock and the provisions of subsections (a) or (b) of this Section 25, may at any time increase or decrease the number of members of a committee or terminate the existence of a committee. The membership of a committee member shall terminate on the earliest of the date of his or her death, removal or voluntary resignation from the committee or from the Board of Directors. The Board of Directors may at any time for any reason remove any individual committee member and the Board of Directors may fill any committee vacancy created by death, resignation, removal or increase in the number of members of the committee. The Board of Directors may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee, and, in addition, in the absence or disqualification of any member of a committee, the member or members thereof present at any meeting and not disqualified from voting, whether or not such member or members constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in the place of any such absent or disqualified member.

(d) Meetings. Unless the Board of Directors shall otherwise provide, regular meetings of the Executive Committee or any other committee appointed pursuant to this Section 25 shall be held at such times and places, if any, as are determined by the Board of Directors, or by any such committee, and when notice thereof has been given to each member of such committee, no further notice of such regular meetings need be given thereafter. Unless the Board of Directors shall otherwise provide, special meetings of any such committee may be held at such place, if any, that has been determined from time to time by such committee, and may be called by any director who is a member of such committee, upon notice to the members of such committee of the time and place, if any, of such special meeting given in the manner provided for the giving of notice to members of the Board of Directors of the time and place, if any, of special meetings of the Board of Directors. Notice of any meeting of any committee may be waived in writing or by electronic transmission at any time before or after the meeting and will be waived by any director by attendance thereat, except when the director attends such meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Unless otherwise provided by the Board of Directors in the resolutions authorizing the creation of the committee, a majority of the authorized number of members of any such committee shall constitute a quorum for the transaction of business, and the act of a majority of those present at any meeting of the committee at which a quorum is present shall be the act of such committee.

Section 26. Duties of Chairperson of the Board of Directors and Lead Independent Director.

(a) The Chairperson of the Board of Directors, shall preside at all meetings of the stockholders and the Board of Directors. The Chairperson of the Board of Directors shall perform such other duties commonly incident to the position and shall also perform such other duties and have such other powers, as the Board of Directors shall designate from time to time.

(b) The Chairperson of the Board of Directors, or if the Chairperson is not an independent director, one of the independent directors, may be designated by the Board of Directors as lead independent director to serve until replaced by the Board of Directors ("***Lead Independent Directo***r"). The Lead Independent Director will preside over meetings of the independent directors and perform such other duties as may be established or delegated by the Board of Directors and perform such other duties as may be established or delegated by the Chairperson of the Board of Directors.

Section 27. Organization. At every meeting of the directors, the Chairperson of the Board of Directors, or, if a Chairperson has not been appointed or is absent, the Lead Independent Director, or if the Lead Independent Director has not been appointed or is absent, the Chief Executive Officer (if a director), or, if a Chief Executive Officer is absent, the President (if a director), or if the President is absent, the most senior Vice President (if a director), or, in the absence of any such person, a chairperson of the meeting chosen by a majority of the directors present, shall preside over the meeting. The Secretary of the Corporation, or in his or her absence, any Assistant Secretary of the Corporation or other officer,

director or other person directed to do so by the person presiding over the meeting, shall act as secretary of the meeting.

ARTICLE V

OFFICERS

Section 28. Officers Designated. The officers of the Corporation shall include, if and when designated by the Board of Directors, the Chairperson of the Board of Directors, the Chief Executive Officer, the President, one or more Vice Presidents, the Secretary, the Chief Financial Officer and the Treasurer. The Board of Directors may also appoint one or more Assistant Secretaries and Assistant Treasurers and such other officers and agents with such powers and duties as it shall deem appropriate or necessary. The Board of Directors may assign such additional titles to one or more of the officers as it shall deem appropriate. Any one person may hold any number of offices of the Corporation at any one time unless specifically prohibited therefrom by applicable law, the Certificate of Incorporation or these Bylaws. The salaries and other compensation of the officers of the Corporation shall be fixed by or in the manner designated by the Board of Directors or by a committee thereof to which the Board of Directors has delegated such responsibility.

Section 29. Tenure and Duties of Officers.

(a) General. All officers shall hold office at the pleasure of the Board of Directors and until their successors shall have been duly elected and qualified, subject to such officer's earlier death, resignation or removal. If the office of any officer becomes vacant for any reason, the vacancy may be filled by the Board of Directors or by a committee thereof to which the Board of Directors has delegated such responsibility or, if so authorized by the Board of Directors, by the Chief Executive Officer or another officer of the Corporation.

(b) Duties of Chief Executive Officer. The Chief Executive Officer shall be the chief executive officer of the Corporation and shall, subject to the supervision, direction and control of the Board of Directors, shall have the general powers and duties of supervision, direction, management, and control of the business and officers of the Corporation as are customarily associated with the position of Chief Executive Officer. To the extent that a Chief Executive Officer has been appointed and no President has been appointed, all references in these Bylaws to the President shall be deemed references to the Chief Executive Officer. The Chief Executive Officer shall perform other duties customarily associated with the office and shall also perform such other duties and have such other powers, as the Board of Directors shall designate from time to time.

(c) Duties of President. Unless another officer has been appointed Chief Executive Officer of the Corporation, the President shall be the chief executive officer of the Corporation and shall, subject to the supervision, direction and control of the Board of Directors, shall have the general powers and duties of supervision, direction, management and control of the business and officers of the Corporation as are customarily associated with the position of President. The President shall perform other duties customarily associated with the office and shall also perform such other duties and have such other powers, as the Board of Directors (or the Chief Executive Officer, if the Chief Executive Officer and President are not the same person) shall designate from time to time.

(d) Duties of Vice Presidents. A Vice President may assume and perform the duties of the President in the absence or disability of the President or whenever the office of President is vacant, unless the duties of the President are being filled by the Chief Executive Officer. A Vice President shall perform other duties customarily associated with the office and shall also perform such other duties and have such other powers as the Board of Directors or the Chief Executive Officer, or, if the Chief Executive Officer has not been appointed or is absent, the President shall designate from time to time.

(e) Duties of Secretary and Assistant Secretary. The Secretary of the Corporation shall attend all meetings of the stockholders and of the Board of Directors and shall record all acts, votes and proceedings thereof in the minute books of the Corporation. The Secretary of the Corporation shall give notice in conformity with these Bylaws of all meetings of the stockholders and of all meetings of the

Board of Directors and any committee thereof requiring notice. The Secretary of the Corporation shall perform all other duties provided for in these Bylaws and other duties customarily associated with the office and shall also perform such other duties and have such other powers, as the Board of Directors or the Chief Executive Officer, or if no Chief Executive Officer is then serving, the President shall designate from time to time. The Chief Executive Officer, or if no Chief Executive Officer is then serving, the President may direct any Assistant Secretary of the Corporation or other officer to assume and perform the duties of the Secretary in the absence or disability of the Secretary, and each Assistant Secretary of the Corporation shall perform other duties customarily associated with the office and shall also perform such other duties and have such other powers as the Board of Directors or the Chief Executive Officer, or if no Chief Executive Officer is then serving, the President shall designate from time to time.

(f) Duties of Chief Financial Officer. The Chief Financial Officer shall keep or cause to be kept the books of account of the Corporation in a thorough and proper manner and shall render statements of the financial affairs of the Corporation in such form and as often as required by the Board of Directors, the Chief Executive Officer, or the President. The Chief Financial Officer, subject to the order of the Board of Directors, shall have the custody of all funds and securities of the Corporation. The Chief Financial Officer shall perform other duties customarily associated with the office and shall also perform such other duties and have such other powers as the Board of Directors or the Chief Executive Officer, or if no Chief Executive Officer is then serving, the President shall designate from time to time. To the extent that a Chief Financial Officer has been appointed and no Treasurer has been appointed, all references in these Bylaws to the Treasurer shall be deemed references to the Chief Financial Officer.

(g) Duties of Treasurer and Assistant Treasurer. Unless another officer has been appointed Chief Financial Officer of the Corporation, the Treasurer shall be the chief financial officer of the Corporation. The Treasurer shall perform other duties customarily associated with the office and shall also perform such other duties and have such other powers as the Board of Directors or the Chief Executive Officer, or if no Chief Executive Officer is then serving, the President shall designate from time to time. The Chief Executive Officer, or if no Chief Executive Officer is then serving, the President, may direct any Assistant Treasurer or other officer to assume and perform the duties of the Treasurer in the absence of disability of the Treasurer, and each Assistant Treasurer shall perform other duties customarily associated with the office and shall also perform such other duties and have such other powers as the Board of Directors or the Chief Executive Officer, or if no Chief Executive Officer is then serving, the President shall designate from time to time.

Section 30. Delegation of Authority. The Board of Directors may from time to time delegate the powers or duties of any officer to any other officer or agent, notwithstanding any provision hereof.

Section 31. Resignations. Any officer may resign at any time by giving notice in writing or by electronic transmission to the Board of Directors, the Chairperson of the Board of Directors, the Chief Executive Officer, the President or the Secretary of the Corporation. Any such resignation shall be effective when received by the person or persons to whom such notice is given, unless a later time is specified therein, in which event the resignation shall become effective at such later time. Unless otherwise specified in such notice, the acceptance of any such resignation shall not be necessary to make it effective. Any resignation shall be without prejudice to the rights, if any, of the Corporation under any contract with the resigning officer.

Section 32. Removal. Any officer may be removed from office at any time, either with or without cause, by the Board of Directors, or by any duly authorized committee thereof or any superior officer upon whom such power of removal may have been conferred by the Board of Directors.

ARTICLE VI

EXECUTION OF CORPORATE INSTRUMENTS AND VOTING OF SECURITIES OWNED BY THE CORPORATION

Section 33. Execution of Corporate Instruments. The Board of Directors may, in its discretion, determine the method and designate the signatory officer or officers, or other person or

persons, to execute, sign or endorse on behalf of the Corporation any corporate instrument or document, or to sign on behalf of the Corporation the corporate name without limitation, or to enter into contracts on behalf of the Corporation, except where otherwise provided by applicable law or these Bylaws, and such execution or signature shall be binding upon the Corporation.

All checks and drafts drawn on banks or other depositaries on funds to the credit of the Corporation or in special accounts of the Corporation shall be signed by such person or persons as the Board of Directors shall from time to time authorize so to do.

Unless otherwise specifically determined by the Board of Directors or otherwise required by applicable law, the execution, signing or endorsement of any corporate instrument or document by or on behalf of the Corporation may be effected manually, by facsimile or (to the extent permitted by applicable law and subject to such policies and procedures as the corporation may have in effect from time to time) by electronic signature.

Unless authorized or ratified by the Board of Directors or within the agency power of an officer, no officer, agent or employee shall have any power or authority to bind the Corporation by any contract or engagement or to pledge its credit or to render it liable for any purpose or for any amount.

Section 34. Voting of Securities Owned by the Corporation. All stock and other securities of or interests in other corporations or entities owned or held by the Corporation for itself, or for other parties in any capacity, shall be voted, and all proxies with respect thereto shall be executed, by the person authorized so to do by resolution of the Board of Directors, or, in the absence of such authorization, by the Chairperson of the Board of Directors, the Chief Executive Officer, the President, or any Vice President.

ARTICLE VII

SHARES OF STOCK

Section 35. Form and Execution of Certificates. The shares of the Corporation shall be represented by certificates, or shall be uncertificated if so provided by resolution or resolutions of the Board of Directors. Certificates for the shares of stock, if any, shall be in such form as is consistent with the Certificate of Incorporation and applicable law. Every holder of stock in the Corporation represented by certificates shall be entitled to have a certificate signed by or in the name of the Corporation by any two authorized officers of the Corporation (it being understood that each of the Chairperson of the Board of Directors, the Chief Executive Officer, the President, any Vice President, the Treasurer, any Assistant Treasurer, the Secretary and any Assistant Secretary shall be an authorized officer for such purposes), certifying the number, and the class or series, of shares owned by such holder in the Corporation. Any or all of the signatures on the certificate may be facsimiles. In case any officer, transfer agent, or registrar who has signed or whose facsimile signature has been placed upon a certificate shall have ceased to be such officer, transfer agent, or registrar before such certificate is issued, it may be issued with the same effect as if he were such officer, transfer agent, or registrar at the date of issue.

Section 36. Lost Certificates. A new certificate or certificates or uncertificated shares shall be issued in place of any certificate or certificates theretofore issued by the Corporation alleged to have been lost, stolen, or destroyed, upon the making of an affidavit of that fact by the person claiming the certificate of stock to be lost, stolen, or destroyed. The Corporation may require, as a condition precedent to the issuance of a new certificate or certificates or uncertificated shares, the owner of such lost, stolen, or destroyed certificate or certificates, or the owner’s legal representative, to agree to indemnify the Corporation in such manner as it shall require or to give the Corporation a surety bond in such form and amount as it may direct as indemnity against any claim that may be made against the Corporation with respect to the certificate alleged to have been lost, stolen, or destroyed of the issuance of a new certificate or certificates.

Section 37. Transfers.

(a) Transfers of record of shares of stock of the Corporation shall be made only upon its books by the holders thereof, in person or by attorney duly authorized, and, in the case of stock represented by certificate, upon the surrender of a properly endorsed certificate or certificates for a like number of shares.

(b) The Corporation shall have power to enter into and perform any agreement with any number of stockholders of any one or more classes or series of stock of the Corporation to restrict the transfer of shares of stock of the Corporation of any one or more classes or series owned by such stockholders in any manner not prohibited by the DGCL.

Section 38. Fixing Record Dates.

(a) In order that the Corporation may determine the stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment thereof, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which record date shall, subject to applicable law, not be more than 60 nor less than 10 days before the date of such meeting. If the Board of Directors so fixes a record date for determining the stockholders entitled to notice of any meeting of stockholders, such date shall also be the record date for determining the stockholders entitled to vote at such meeting, unless the Board of Directors determines, at the time it fixes the record date for determining the stockholders entitled to notice of such meeting, that a later date on or before the date of the meeting shall be the record date for determining the stockholders entitled to vote at such meeting. If no record date is fixed by the Board of Directors, the record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day immediately preceding the day on which notice is given, or if notice is waived, at the close of business on the day immediately preceding the day on which the meeting is held. A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for determining the stockholders entitled to vote at the adjourned meeting, and in such case shall also fix as the record date for stockholders entitled to notice of such adjourned meeting the same or an earlier date as that fixed for determining the stockholders entitled to vote in accordance with the provisions of this Section 38(a).

(b) In order that the Corporation may determine the stockholders entitled to receive payment of any dividend or other distribution or allotment of any rights or the stockholders entitled to exercise any rights in respect of any change, conversion or exchange of stock, or for the purpose of any other lawful action, the Board of Directors may fix, in advance, a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted, and which record date shall be not more than 60 days prior to such action. If no record date is fixed, the record date for determining stockholders for any such purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating thereto.

Section 39. Registered Stockholders. The Corporation shall be entitled to recognize the exclusive right of a person registered on its books as the owner of shares to receive dividends, and to vote as such owner, and shall not be bound to recognize any equitable or other claim to or interest in such share or shares on the part of any other person whether or not it shall have express or other notice thereof, except as otherwise provided by the laws of Delaware.

Section 40. Additional Powers of the Board. In addition to, and without limiting, the powers set forth in these Bylaws, the Board of Directors shall have power and authority to make all such rules and regulations as it shall deem expedient concerning the issue, transfer, and registration of certificates for shares of stock of the Corporation, including the use of uncertificated shares of stock, subject to the provisions of the DGCL, other applicable law, the Certificate of Incorporation and these Bylaws. The Board of Directors may appoint and remove transfer agents and registrars of transfers, and may require all stock certificates to bear the signature of any such transfer agent and/or any such registrar of transfers.

ARTICLE VIII

OTHER SECURITIES OF THE CORPORATION

Section 41. Execution of Other Securities. All bonds, debentures and other corporate securities of the Corporation, other than stock certificates (covered in Section 35), may be signed by the Chairperson of the Board of Directors, the Chief Executive Officer, the President or any Vice President, or such other person as may be authorized by the Board of Directors; *provided, however,* that where any such bond, debenture or other corporate security shall be authenticated by the manual signature, or where permissible electronic signature, of a trustee under an indenture pursuant to which such bond, debenture or other corporate security shall be issued, the signatures of the persons signing and attesting the corporate seal on such bond, debenture or other corporate security may be the imprinted facsimile of the signatures of such persons. Interest coupons appertaining to any such bond, debenture or other corporate security, authenticated by a trustee as aforesaid, shall be signed by the Treasurer or an Assistant Treasurer of the Corporation or such other person as may be authorized by the Board of Directors, or bear imprinted thereon the facsimile signature of such person. In case any officer who shall have signed or attested any bond, debenture or other corporate security, or whose facsimile signature shall appear thereon or on any such interest coupon, shall have ceased to be such officer before the bond, debenture or other corporate security so signed or attested shall have been delivered, such bond, debenture or other corporate security nevertheless may be adopted by the Corporation and issued and delivered as though the person who signed the same or whose facsimile signature shall have been used thereon had not ceased to be such officer of the Corporation.

ARTICLE IX

DIVIDENDS

Section 42. Declaration of Dividends. Dividends upon the capital stock of the Corporation, subject to the provisions of the Certificate of Incorporation and applicable law, if any, may be declared by the Board of Directors. Dividends may be paid in cash, in property, or in shares of capital stock or other securities of the Corporation, subject to the provisions of the Certificate of Incorporation and applicable law.

Section 43. Dividend Reserve. Before payment of any dividend, there may be set aside out of any funds of the Corporation available for dividends such sum or sums as the Board of Directors from time to time, in its absolute discretion, determines proper as a reserve or reserves to meet contingencies, or for equalizing dividends, or for repairing or maintaining any property of the Corporation, or for such other purpose or purposes as the Board of Directors shall determine to be conducive to the interests of the Corporation, and the Board of Directors may modify or abolish any such reserve in the manner in which it was created.

ARTICLE X

FISCAL YEAR

Section 44. Fiscal Year. The fiscal year of the Corporation shall be fixed by resolution of the Board of Directors.

ARTICLE XI

INDEMNIFICATION

Section 45. Indemnification of Directors, Executive Officers, Other Officers, Employees and Agents.

(a) Directors and Executive Officers. To the fullest extent and in any manner permitted under the DGCL and any other applicable law, the Corporation shall indemnify any person who

is made or threatened to be made a party to or is otherwise involved (as a witness or otherwise) in any Proceeding by reason of the fact that such person is or was a director or executive officer, or while serving as a director or executive officer of the Corporation, is or was serving at the request of the Corporation as a director, officer, employee, or agent of Another Enterprise, against Expenses (including attorneys' fees) reasonably incurred by him or her in connection with such Proceeding; *provided, however,* that the Corporation shall not be required to indemnify any director or executive officer in connection with any Proceeding (or part thereof) initiated by such person unless (i) such indemnification is expressly required to be made by applicable law, (ii) the Proceeding was authorized in the specific case by the Board of Directors of the Corporation, (iii) such indemnification is approved by the Board of Directors of the Corporation, in its sole discretion, pursuant to the powers vested in it under the DGCL or any other applicable law or (iv) such indemnification is required to be made under subsection (d) of this Section 45 (collectively, "***Covered Indemnitee Initiated Proceedings***").

(b) Other Officers, Employees and Agents. The Corporation shall have power to indemnify (including the power to advance expenses in a manner consistent with subsection (c) of this Section 45) its other officers, employees and agents as set forth in the DGCL or any other applicable law. The Board of Directors shall have the power to delegate the determination of whether indemnification shall be given to any such person except executive officers to such officers or other persons as the Board of Directors shall determine.

(c) Expenses. The Corporation shall, to the fullest extent and in any manner permitted under the DGCL and any other applicable law, advance to any director or executive officer who was or is a party or is threatened to be made a party to any Proceeding prior to the final disposition of the Proceeding, promptly following request therefor, all expenses (including attorneys' fees) incurred by any director or executive officer in defending any Proceeding provided, however, that if the DGCL requires, an advancement of expenses incurred by a director or executive officer in his or her capacity as a director or executive officer (and not in any other capacity in which service was or is rendered by such person, including, without limitation, service to an employee benefit plan) shall be made only upon delivery to the Corporation of an undertaking (hereinafter, an "undertaking"), by or on behalf of such person, to repay all amounts so advanced if it shall ultimately be determined by final judicial decision from which there is no further right to appeal (hereinafter a "final adjudication") that such person is not entitled to be indemnified for such expenses under this Section 45 or otherwise.

Notwithstanding the foregoing, unless otherwise determined pursuant to paragraph (d) of this Section 45, no advance shall be made by the Corporation to an executive officer of the Corporation (except by reason of the fact that such executive officer is or was a director of the Corporation in which event this paragraph shall not apply) in any Proceeding, if a determination is reasonably made (i) by a majority vote of directors who were not parties to the Proceeding, even if not a quorum, or (ii) by a committee of such directors designated by a majority vote of such directors, even though less than a quorum, or (iii) if there are no such directors, or such directors so direct, by independent legal counsel in a written opinion, that the facts known to the decision-making party at the time such determination is made demonstrate clearly and convincingly that such person acted in bad faith or in a manner that such person did not believe to be in or not opposed to the best interests of the Corporation.

(d) Enforcement. Without the necessity of entering into an express contract, all rights to indemnification and advances to directors and executive officers under this Section 45 shall be deemed to be contractual rights, shall vest when the person becomes a director or executive officer of the Corporation, shall continue as vested contract rights even if such person ceases to be a director or executive officer of the Corporation, and shall be effective to the same extent and as if provided for in a contract between the Corporation and the director or executive officer. Any right to indemnification or advances granted by this Section 45 to a current or former director or executive officer shall be enforceable by or on behalf of the person holding such right in any court of competent jurisdiction if (i) the claim for indemnification or advances is denied, in whole or in part, or (ii) no disposition of such claim is made within 90 days of request therefor. To the fullest extent permitted by applicable law, the claimant in such enforcement action, if successful in whole or in part, shall be entitled to be paid also the expense of prosecuting the claim. In connection with any claim for indemnification, the Corporation shall be entitled to raise as a defense to any such action that the claimant has not met the standards of conduct that make it permissible under the DGCL or any other applicable law for the Corporation to indemnify the

claimant for the amount claimed. In connection with any claim by an executive officer of the Corporation (except in any Proceeding, by reason of the fact that such executive officer is or was a director of the Corporation) for advances, the Corporation shall be entitled to raise a defense as to any such action clear and convincing evidence that such person acted in bad faith or in a manner that such person did not believe to be in or not opposed to the best interests of the Corporation, or with respect to any criminal Proceeding that such person acted without reasonable cause to believe that his or her conduct was lawful. Neither the failure of the Corporation (including its Board of Directors, independent legal counsel or its stockholders) to have made a determination prior to the commencement of such action that indemnification of the claimant is proper in the circumstances because he or she has met the applicable standard of conduct set forth in the DGCL or any other applicable law, nor an actual determination by the Corporation (including its Board of Directors, independent legal counsel or its stockholders) that the claimant has not met such applicable standard of conduct, shall be a defense to the action or create a presumption that claimant has not met the applicable standard of conduct. In any suit brought by a current or former director or executive officer to enforce a right to indemnification or to an advancement of expenses hereunder, or brought by the Corporation to recover an advancement of expenses pursuant to the terms of an undertaking, the burden of proving that the director or executive officer is not entitled to be indemnified, or to such advancement of expenses, under this Section 45 or otherwise shall be on the Corporation.

(e) Non-Exclusivity of Rights. The rights conferred on any person by this Section 45 shall not be exclusive of any other right that such person may have or hereafter acquire under any applicable statute, provision of the Certificate of Incorporation, Bylaws, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in his or her official capacity and as to action in another capacity while holding office. The Corporation is specifically authorized to enter into individual contracts with any or all of its directors, officers, employees or agents respecting indemnification and advances, to the fullest extent not prohibited by the DGCL, or by any other applicable law.

(f) Survival of Rights. The rights conferred on any person by this Section 45 shall continue as to a person who has ceased to be a director or executive officer and shall inure to the benefit of the heirs, executors and administrators of such a person.

(g) Insurance. To the fullest extent permitted by the DGCL or any other applicable law, the Corporation, upon approval by the Board of Directors, may purchase and maintain insurance on behalf of any person required or permitted to be indemnified pursuant to this Section 45.

(h) Amendments. Any repeal or modification of this Section 45 shall only be prospective and shall not affect the rights under this Section 45 in effect at the time of the alleged occurrence of any action or omission to act that is the cause of any Proceeding against any agent of the Corporation.

(i) Saving Clause. If this Article XI or any portion hereof shall be invalidated on any ground by any court of competent jurisdiction, then the Corporation shall nevertheless indemnify and advance expenses to each director and executive officer to the fullest extent not prohibited by any applicable portion of this Article XI that shall not have been invalidated, or by any other applicable law. If this Article XI shall be invalid due to the application of the indemnification and advancement provisions of another jurisdiction, then the Corporation shall indemnify and advance expenses to each director and executive officer to the fullest extent not prohibited under the applicable law of such jurisdiction.

(j) Certain Definitions and Construction of Terms. For the purposes of Article XI of the Bylaws, the following definitions and rules of construction shall apply:

(i) The term "***Another Enterprise***" shall mean any corporation, partnership, joint venture, trust or other enterprise, including any employee benefit plan.

(ii) The term the "***Corporation***" shall include, in addition to the resulting Corporation, any constituent Corporation (including any constituent of a constituent) absorbed in a consolidation or merger that, if its separate existence had continued, would have had power and authority to indemnify its directors, officers, and employees or agents, so that any person who is or was a director,

officer, employee or agent of such constituent Corporation, or is or was serving at the request of such constituent Corporation as a director, officer, employee or agent of another Corporation, partnership, joint venture, trust or other enterprise, shall stand in the same position under the provisions of this Section 45 with respect to the resulting or surviving Corporation as he would have with respect to such constituent Corporation if its separate existence had continued.

(iii) References to a "***director***," "***executive officer***," "***officer***," "***employee***," or "***agent***" of the Corporation shall include, without limitation, situations where such person is serving at the request of the Corporation as, respectively, a director, executive officer, officer, employee, trustee or agent of Another Enterprise.

(iv) The term "***executive officer***" shall mean those persons designated by the Corporation as (a) executive officers for purposes of the disclosures required in the Corporation's proxy and periodic reports or (b) officers for purposes of Section 16 of the 1934 Act.

(v) The term "***expenses***" shall be broadly construed and shall include, without limitation, court costs, attorneys' fees, witness fees, fines, amounts paid in settlement or judgment and any other costs and expenses of any nature or kind incurred in connection with any Proceeding.

(vi) References to "***fines***" shall include any excise taxes assessed on a person with respect to an employee benefit plan; The term "***Proceeding***" shall mean any threatened, pending, or completed action, suit, or proceeding, whether civil, criminal, administrative, or investigative, to which a person is made or threatened to be made a party to or is otherwise involved in (as a witness or otherwise) by reason of the fact that such person is or was a director or executive officer of the Corporation, or while serving as a director or executive officer of the Corporation, is or was serving at the request of the corporation as a director, officer, employee or agent of Another Enterprise. The term Proceeding shall be broadly construed and shall include, without limitation, the investigation, preparation, prosecution, defense, settlement, arbitration and appeal of, and the giving of testimony in, any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative.

(vii) References to "***serving at the request of the Corporation***" shall include any service as a director, officer, employee or agent of the Corporation that imposes duties on, or involves services by, such director, officer, employee, or agent with respect to an employee benefit plan, its participants, or beneficiaries; and a person who acted in good faith and in a manner such person reasonably believed to be in the interest of the participants and beneficiaries of an employee benefit plan shall be deemed to have acted in a manner "***not opposed to the best interests of the Corporation***" as referred to in this Section 45.

ARTICLE XII

NOTICES

Section 46. Notices.

(a) Notice to Stockholders. Notice to stockholders of stockholder meetings shall be given as provided in Section 7. Without limiting the manner by which notice may otherwise be given effectively to stockholders under any agreement or contract with such stockholder, and except as otherwise required by applicable law, notice to stockholders for purposes other than stockholder meetings may be sent by U.S. mail or nationally recognized overnight courier, or by electronic mail or other electronic means in accordance with Section 232 of the DGCL.

(b) Notice to Directors. Any notice required to be given to any director may be given by the method stated in subsection (a), or otherwise provided in these Bylaws (including by any of the means specified in Section 21(d)), or by overnight delivery services. Any notice sent by overnight delivery services or by U.S. mail shall be sent to such address as such director shall have filed in writing with the Secretary of the Corporation, or, in the absence of such filing, to the last known post office address of such director.

(c) Affidavit of Mailing. An affidavit of mailing, executed by a duly authorized and competent employee of the Corporation or its transfer agent appointed with respect to the class of stock affected, or other agent, specifying the name and address or the names and addresses of the stockholder or stockholders, or director or directors, to whom any such notice or notices was or were given, and the time and method of giving the same, shall in the absence of fraud, be prima facie evidence of the facts therein contained.

(d) Methods of Notice. It shall not be necessary that the same method of giving notice be employed in respect of all recipients of notice, but one permissible method may be employed in respect of any one or more, and any other permissible method or methods may be employed in respect of any other or others.

(e) Notice to Person with Whom Communication is Unlawful. Whenever notice is required to be given, under applicable law or any provision of the Certificate of Incorporation or Bylaws of the Corporation, to any person with whom communication is unlawful, the giving of such notice to such person shall not be required and there shall be no duty to apply to any governmental authority or agency for a license or permit to give such notice to such person. Any action or meeting that shall be taken or held without notice to any such person with whom communication is unlawful shall have the same force and effect as if such notice had been duly given. In the event that the action taken by the Corporation is such as to require the filing of a certificate under any provision of the DGCL, the certificate shall state, if such is the fact and if notice is required, that notice was given to all persons entitled to receive notice except such persons with whom communication is unlawful.

(f) Notice to Stockholders Sharing an Address. Except as otherwise prohibited under the DGCL, any notice given under the provisions of the DGCL, the Certificate of Incorporation or these Bylaws shall be effective if given by a single written notice to stockholders who share an address if consented to by the stockholders at that address to whom such notice is given. Such consent shall have been deemed to have been given if such stockholder fails to object in writing to the Corporation within 60 days of having been given notice by the Corporation of its intention to send the single notice. Any consent shall be revocable by the stockholder by written notice to the Corporation.

(g) Waiver. Whenever notice is required to be given under any provision of the DGCL, the Certificate of Incorporation or these Bylaws, a written waiver, signed by the person entitled to notice, or a waiver by electronic transmission by the person entitled to notice, whether before or after the time stated therein, shall be deemed equivalent to notice. Attendance of a person at a meeting shall constitute a waiver of notice of such meeting, except when the person attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the stockholders, directors or members of a committee of directors need be specified in any written waiver of notice or any waiver by electronic transmission unless so required by the Certificate of Incorporation or these Bylaws.

ARTICLE XIII

AMENDMENTS

Section 47. Amendments. The Board of Directors is expressly empowered to adopt, amend or repeal the Bylaws. Any adoption, amendment or repeal of the Bylaws by the Board of Directors shall require the approval of a majority of the authorized number of directors. The stockholders also shall have power to adopt, amend or repeal the Bylaws; provided, however, that, in addition to any vote of the holders of any class or series of stock of the Corporation required by applicable law or by the Certificate of Incorporation, such action by stockholders shall require the affirmative vote of the holders of at least 66-2/3% of the voting power of all of the then-outstanding shares of the capital stock of the Corporation entitled to vote in the election of directors, voting together as a single class.

ARTICLE XIV

LOANS TO OFFICERS

Section 48. Loans to Officers. Except as otherwise prohibited by applicable law, the Corporation may lend money to, or guarantee any obligation of, or otherwise assist any officer or other employee of the Corporation or of its subsidiaries, including any officer or employee who is a director of the Corporation or its subsidiaries, whenever, in the judgment of the Board of Directors, such loan, guarantee or assistance may reasonably be expected to benefit the Corporation. The loan, guarantee or other assistance may be with or without interest and may be unsecured, or secured in such manner as the Board of Directors shall approve, including, without limitation, a pledge of shares of stock of the Corporation. Nothing in these Bylaws shall be deemed to deny, limit or restrict the powers of guaranty or warranty of the Corporation at common law or under any statute.

CERTIFICATION OF AMENDED AND RESTATED BYLAWS
OF
LYELL IMMUNOPHARMA, INC.

a Delaware Corporation

I, Matthew Lang, certify that I am Secretary of Lyell Immunopharma, Inc., a Delaware corporation (the "**Corporation**"), that I am duly authorized to make and deliver this certification, and that the attached Amended and Restated Bylaws are a true and complete copy of the Amended and Restated Bylaws of the Corporation in effect as of the date of this certificate.

Dated: November 3, 2023

/s/ Matthew Lang

Matthew Lang, Secretary

May 12, 2023

Matthew Lang Electronic delivery

Re: Offer of Employment by Lyell Immunopharma, Inc.

Dear Matt,

I am very pleased to confirm our offer to you of employment as Chief Business Officer of Lyell Immunopharma, Inc. (the "**Company**"). The opportunity to work with you to build one of the world's great companies whose goal is nothing less than to develop curative therapies for solid tumors is one I am thrilled to have and know that your contributions will help ensure that we will achieve our ambitions.

Your proposed start date as Chief Business Officer is July 1, 2023 (the "**Effective Date**"). You will be based out of our South San Francisco office.

As Lyell's Chief Business Officer, you will perform duties as are commensurate and consistent with your position. Your position will be officer level and you will be entitled to defense, indemnity and D&O insurance coverage to the same extent and at the same level as other officers in the Company. In your role as Chief Business Officer you will report to Lynn Seely, President & CEO. The terms of this offer letter (the "**Offer Letter**") and the benefits currently provided by the Company are as follows:

1. **Cash Compensation**.

(1) **Salary**. As of the Effective Date, your salary will be five hundred thousand dollars ($500,000) annually, less payroll deductions and withholdings. It will be paid on the Company's regular payroll schedule, and will be subject to annual review by the Board.

(2) **Target Annual Bonus**. In addition, you will be eligible to earn an annual incentive bonus of up to fifty percent (50%) of your base salary for the fiscal year of the Company (which runs from January 1st to December 31st during which you commence employment, based on the achievement of performance objectives to be determined by the Company's Board of Directors (the "Board") in the Board's sole discretion. Any bonus for the fiscal year in which your employment begins will be prorated, based on the number of days you are employed by the Company during that fiscal year. Thereafter, you will be eligible to receive an annual bonus in such amount and upon such terms as shall be determined by the Board or the Compensation Committee of the Board (the "**Committee**"). If your base salary changes during the fiscal year, any bonus earned will be calculated based on the number of days spent

employed at each salary level. Any bonus for a fiscal year will be paid within 3 months after the close of that fiscal year, and if your employment is terminated either by you without Good Reason or by the Company for Cause (each as defined herein) prior to the bonus being paid, you will not have earned the bonus and no partial or prorated bonus will be paid. The determinations of the Board with respect to your bonus will be final and binding.

(3) **Sign-on Bonus Advance.** The Company will pay you a signing bonus of four hundred thousand dollars ($400,000), less applicable tax and other withholding within thirty (30) days after your start date (the "Sign-On Payment"). You will earn 100% of the Sign-On Payment if you remain continuously employed with the Company through the first anniversary of your Start Date. If you resign your employment with the Company (except for Good Reason) or the Company terminates your employment without Cause, you agree to repay, within thirty (30) days of your last day of employment with the Company, the unearned portion of the Sign- On Payment paid to you by the Company in advance of becoming earned.

2. **Benefits**. In addition, you will be eligible to participate in regular health insurance, bonus and other employee benefit plans established by the Company for its senior executives from time to time pursuant to the terms of those plans.

3. **Equity**. We will recommend to the Board of Directors of the Company that you be granted an option to purchase up to 2,250,000 shares of Common Stock of the Company (the "Option"). The Option will be granted under the Company's 2021 Equity Incentive Plan, as amended (the "Plan") and associated form of stock option agreement and will have an exercise price equal to the fair market value of the Company's Common Stock, as determined by the Board on the date the Board approves such grant. The Option will be subject to the terms and conditions of the Plan and your grant agreement. The Option will vest at the rate of twenty five percent (25%) of the shares at the end of your first year with the Company, and an additional 1/48 of the total shares subject to the Option per month thereafter, so long as you remain employed by the Company.

In the event your employment is terminated by the Company without Cause or by you for Good Reason (as defined below) you will receive an additional twelve (12) months of vesting credit for any then outstanding equity awards and the post-termination exercise period of your then outstanding vested stock options shall end on the earliest of the twelve (12) month anniversary of your termination of employment, the expiration date of any such option's term or a Change in Control (as defined in the Severance Plan, as defined below). In addition, if either (a) in a Change in Control your then outstanding equity awards are not assumed, substituted or replaced with awards of similar or equal value or (b) your employment is terminated by the Company without Cause or by you for Good Reason during the period beginning on the date that is three (3) months prior to the effective date of a Change in Control and ending on the date that is twenty-four (24) months following the effective date of such Change in Control, then 100% of any then outstanding equity awards shall become fully vested.

4. **Severance**. As Chief Business Officer, you will participate in the Lyell Immunopharma, Inc. Officer Severance Plan (the "**Severance Plan**") in accordance with its terms as a Tier I Employee (as defined in the Severance Plan), and on or before the Effective Date the Severance Plan will be amended to the extent necessary to provide for such participation. Notwithstanding your participation in the Severance Plan, the terms and definitions in this Offer Letter related to severance and/or accelerated vesting benefits shall supersede (without duplication) the corresponding terms and definitions provided in the Severance Plan.

In the event your employment is terminated by the Company without Cause or by you for Good Reason (each as defined herein) the Company will pay you a lump-sum payment equal to the sum of (i) twelve (12) months of your base salary and (ii) 1 times your annual bonus paid at target level (the "Cash Severance Payments"). In addition, provided that you are eligible for and timely elect group health plan continuation coverage under COBRA, the Company will pay the premiums for you and your dependents to continue group medical, vision and dental coverage under COBRA directly to the insurer or COBRA administrator, as applicable, consistent with terms set forth in the Severance Plan.

"Cause" means (a) you are indicted for, convicted of, or plead guilty or nolo contendre to a felony or crime involving moral turpitude; (b) you engage in conduct that constitutes willful gross negligence or willful misconduct in carrying out your duties; (c) you breach any covenant or any material provision of any agreement with the Company, including, among other things, a willful and material breach of written Company policy; (d) you materially violate a federal law or state law that the Board reasonably determines has had, or is reasonably likely to have, a material detrimental effect on the Company's reputation or business; or (e) you commit an act of fraud or dishonesty in the performance of your job duties; provided, however, in the case of (b) or (c) above, if any such conduct or breach is curable, you fail to cure such conduct or breach to the reasonable satisfaction of the Board within fifteen (15) days following the date the Company delivers written notice of such conduct or breach to you.

"Good Reason" means that without your express, written consent, (a) you have incurred a material reduction in authority, duties or responsibilities at the Company or a successor employer (with respect to a termination in connection with a Change in Control, relative to the your authority, title, duties or responsibilities immediately prior to the Change in Control); (b) you have suffered a material breach of this Agreement or any other material agreement by the Company or a successor employer; (c) you have been required to relocate or travel more than thirty-five (35) miles from your then current place of employment in order to continue to perform the duties and responsibilities of the your position (not including customary travel as may be required by the nature of your position); or (d) you have been directed by the Board to knowingly and intentionally violate any material state, federal or foreign law, rule or regulation applicable to the Company. Termination of employment by you will not be for Good Reason unless (1) you notify the Company in writing within thirty (30) days of the initial existence of such condition (which notice specifically identifies such condition), (2) the Company fails to remedy such condition within thirty (30) days after the date on which it receives such notice (the "Remedial Period"), and (3) you actually terminate employment immediately after the expiration of the Remedial Period and before the Company remedies such condition. If you terminate employment before the expiration of the Remedial Period or after the Company remedies the

condition (even if after the end of the Remedial Period), then the termination will not be considered to be for Good Reason.

In order to receive the Cash Severance Benefits or the equity acceleration described in Section 4, you must first execute a release in favor of the Company in substantially the same form as set forth in the Severance Plan and the Release must become effective and irrevocable within sixty
(60) days following your termination date (such date the Release becomes effective and irrevocable, the “Release Effective Date”).

5. **Confidentiality**. As an employee of the Company, you will have access to certain confidential information of the Company and you may, during the course of your employment, develop certain information or inventions that will be the property of the Company. To protect the interests of the Company, you will need to sign the Company's standard "Employee Invention Assignment and Confidentiality Agreement" as a condition of your employment. We wish to impress upon you that we do not want you to, and we hereby direct you not to, bring with you any additional confidential or proprietary material of any former employer or to violate any other obligations you may have to any former employer. During the period that you render services to the Company, you otherwise agree to not engage in any other employment, business or activity that is in any way competitive with the business or proposed business of the Company. You will disclose to the Company in writing any other gainful employment, business or activity that you are currently associated with or participate in that competes with the Company. You will not assist any other person or organization in competing with the Company or in preparing to engage in competition with the business or proposed business of the Company.

6. **No Breach of Obligations to Prior Employers**. You represent that your employment with the Company will not violate any agreement currently in place between yourself and current or past employers.

7. **At Will Employment**. While we look forward to a long and profitable relationship, should you decide to accept this offer, you will be an at-will employee of the Company, which means the employment relationship can be terminated by either of us for any reason, at any time, with or without prior notice and with or without cause. Any statements or representations to the contrary (and, indeed, any statements contradicting any provision in this letter) should be regarded by you as ineffective. Further, your participation in any stock option or benefit program is not to be regarded as assuring you of continuing employment for any particular period of time. Any modification or change in your at will employment status may only occur by way of a written employment agreement signed by you and duly-authorized member of the Board (other than yourself).

8. **Arbitration**. To ensure the rapid and economical resolution of disputes that may arise in connection with your employment with the Company, you and the Company agree that any and all disputes, claims, or causes of action, in law or equity, including but not limited to statutory claims, arising from or relating to the enforcement, breach, performance, or interpretation of this letter Agreement, your employment with the Company, or the termination of your employment, shall be resolved pursuant to the Federal Arbitration Act, 9 U.S.C. § 1-16, to the fullest extent permitted by law, by final, binding and confidential arbitration conducted by

JAMS or its successor, under JAMS' then applicable rules and procedures for employment disputes before a single arbitrator (available upon request and also currently available at http://www.jamsadr.com/mles-employment-arbitration/). You acknowledge that by agreeing to this arbitration procedure, both you and the Company waive the right to resolve any such dispute through a trial by jury or judge or administrative proceeding. In addition, all claims, disputes, or causes of action under this section, whether by you or the Company, must be brought in an individual capacity, and shall not be brought as a plaintiff (or claimant) or class member in any purported class or representative proceeding, nor joined or consolidated with the claims of any other person or entity. The arbitrator may not consolidate the claims of more than one person or entity, and may not preside over any form of representative or class proceeding. To the extent that the preceding sentences regarding class claims or proceedings are found to violate applicable law or are otherwise found unenforceable, any claim(s) alleged or brought on behalf of a class shall proceed in a court of law rather than by arbitration. This paragraph shall not apply to any action or claim that cannot be subject to mandatory arbitration as a matter of law, including, without limitation, claims brought pursuant to the California Private Attorneys General Act of 2004, as amended, the California Fair Employment and Housing Act, as amended, and the California Labor Code, as amended, to the extent such claims are not permitted by applicable law(s) to be submitted to mandatory arbitration and the applicable law(s) are not preempted by the Federal Arbitration Act or otherwise invalid (collectively, the "Excluded Claims"). In the event you intend to bring multiple claims, including one of the Excluded Claims listed above, the Excluded Claims may be filed with a court, while any other claims will remain subject to mandatory arbitration. You will have the right to be represented by legal counsel at any arbitration proceeding. Questions of whether a claim is subject to arbitration under this agreement shall be decided by the arbitrator. Likewise, procedural questions which grow out of the dispute and bear on the final disposition are also matters for the arbitrator. The arbitrator shall: (a) have the authority to compel adequate discovery for the resolution of the dispute and to award such relief as would otherwise be permitted by law; and (b) issue a written statement signed by the arbitrator regarding the disposition of each claim and the relief, if any, awarded as to each claim, the reasons for the award, and the arbitrator's essential findings and conclusions on which the award is based. The arbitrator shall be authorized to award all relief that you or the Company would be entitled to seek in a court of law. The Company shall pay all JAMS arbitration fees in excess of the administrative fees that you would be required to pay if the dispute were decided in a court of law. Nothing in this letter agreement is intended to prevent either you or the Company from obtaining injunctive relief in court to prevent irreparable harm pending the conclusion of any such arbitration. Any awards or orders in such arbitrations may be entered and enforced as judgments in the federal and state courts of any competent jurisdiction.

9. **Choice of Law**. All questions concerning the construction, validity and interpretation of this Offer Letter will be governed by the laws of the State of California.

10. **Background Check.** This offer is contingent upon a satisfactory verification of criminal, education, driving and/or employment background. This offer can be rescinded based upon data received in the verification.

11. **Entire Agreement**. This Offer Letter, once accepted, constitutes the entire agreement between you and the Company with respect to the subject matter hereof and

supersedes all prior offers, negotiations and agreements, if any, whether written or oral, relating to such subject matter as of the Effective Date. You acknowledge that neither the Company nor its agents have made any promise, representation or warranty whatsoever, either express or implied, written or oral, which is not contained in this agreement for the purpose of inducing you to execute the agreement, and you acknowledge that you have executed this agreement in reliance only upon such promises, representations and warranties as are contained herein.

12. **Acceptance**. If you decide to accept the terms of this Offer Letter, and I hope you will, please sign the enclosed copy of this letter in the space indicated and return it to me. Your signature will acknowledge that you have read and understood and agreed to the terms and conditions of this offer letter and the attached documents, if any. Should you have anything else that you wish to discuss, please do not hesitate to call me.

We look forward to the opportunity to welcome you to the Company.

Very truly yours,

/s/ Lynn Seely

Lynn Seely President & CEO

I have read and understood this Offer Letter and hereby acknowledge, accept and agree to the terms as set forth above and further acknowledge that no other commitments were made to me as part of my employment offer except as specifically set forth herein.

Date signed: May 12, 2023

/s/ Matthew Lang

Matthew Lang

Exhibit 10.2

Lyell Immunopharma, Inc.
Non-Employee Director Compensation Policy
Adopted and Effective: November 11, 2019
Last Amended and Restated: September 6, 2023

Each member of the Board of Directors (the "***Board***") of Lyell Immunopharma, Inc. (the "***Company***") who is a non-employee director of the Company (each such member, an "***Eligible Director***") will receive the compensation described in this Non-Employee Director Compensation Policy (this "***Policy***") for his or her Board service. Unless otherwise defined herein, capitalized terms used in this Policy will have the meaning given to such terms in the Company's 2021 Equity Incentive Plan or if such plan is no longer in use, the meaning given to such terms or any similar terms in the primary successor to such plan (in either case, the "***Plan***").

This Policy is amended and restated effective upon September 6, 2023 (the "***Effective Date***").

Annual Cash Compensation

Each Eligible Director will receive the cash compensation described below. The annual cash compensation amount set forth below is payable in equal quarterly installments, payable in arrears on the last day of each fiscal quarter in which the service occurred. If an Eligible Director joins the Board at a time other than effective as of the first day of a fiscal quarter, each annual retainer set forth below will be pro-rated based on days served in the applicable fiscal year, with the pro-rated amount paid for the first fiscal quarter in which the Eligible Director provides the service, and regular full quarterly payments thereafter. All annual cash retainer fees are vested upon payment.

1. Annual Board Service Retainer:

    a. All Eligible Directors other than Lead Director/Chair: $50,000
    b. Lead Director/Chair: $80,000

2. Annual Committee Service Retainer (Chair):

    a. Chair of the Audit Committee: $15,000
    b. Chair of the Compensation Committee: $12,000
    c. Chair of the Nominating and Corporate Governance Committee: $10,000

3. Annual Committee Service Retainer (Non-Chair):

    a. Audit Committee: $7,500
    b. Compensation Committee: $6,000
    c. Nominating and Corporate Governance Committee: $5,000

Equity Compensation

Each Eligible Director will be eligible to receive the equity compensation set forth below. The equity compensation below will be granted under the Plan and the Company's standard form of Option Agreement most recently approved by the Board or the Compensation Committee. All Options granted under this Policy will be Nonstatutory Stock Options, with a maximum term of ten years from the date of grant and an exercise price per share equal to 100% of the Fair Market Value of the underlying Common Stock on the date of grant.

1. Appointment Grant. Without any further action of the Board, each person who is elected or appointed for the first time to be an Eligible Director will automatically, upon the date of his or her initial election or appointment to be an Eligible Director, be granted the lesser of (i) a Nonstatutory Stock Option to purchase shares of Common Stock calculated to have a Black-Scholes value of $500,000 on the date of grant, rounded to the nearest whole number; and (ii) a Nonstatutory Stock Option to purchase 260,000 shares of Common Stock (an "***Appointment Grant"***). Each Appointment Grant will vest as to one thirty-sixth (1/36th) of the shares of Common Stock subject to the Appointment Grant on a monthly basis following the Appointment Grant's grant date on the same day of the month as such grant date (or on the last day of the month, if there is no corresponding day in such month), subject to the Eligible Director remaining in Continuous Service through the applicable vesting date.

2. Annual Grant. Without any further action of the Board, at the close of business on the date of each annual meeting of stockholders of the Company (each, an "***Annual Meeting***"), each person who is then an Eligible Director will automatically be granted the lesser of (i) a Nonstatutory Stock Option to purchase shares of Common Stock calculated to have a Black-Scholes value of $300,000 on the date of grant, rounded to the nearest whole number; and

(ii) a Nonstatutory Stock Option to purchase 130,000 shares of Common Stock (an "***Annual Grant***"). Each Annual Grant will vest as to all of the shares of Common Stock subject to the Annual Grant on the earlier of (a) the date of the next Annual Meeting that occurs following the grant date of the Annual Grant (or the date immediately prior to such date if the Eligible Director's service as a director ends at such Annual Meeting due to the director's failure to be re-elected or the director not standing for re-election); or (b) the first anniversary of the grant date of the Annual Grant, subject to the Eligible Director remaining in Continuous Service through the vesting date.

Change in Control

Notwithstanding anything to the contrary in this Policy, in the event of a Change in Control, each Eligible Director will fully vest in his or her then-outstanding Company equity awards as of immediately prior to the Change in Control, including, without limitation, any equity awards granted under this Policy, provided that the Eligible Director continues to be an Eligible Director through immediately prior to the date of such Change in Control.

Eligible Director Compensation Limit

Notwithstanding anything to the contrary in this Policy, the cash compensation and equity compensation that each Eligible Director is eligible to receive under this Policy shall be subject to the limits set forth in Section 3(d) of the Plan.

Ability to Decline Compensation

An Eligible Director may decline all or any portion of his or her compensation under this Policy by giving notice to the Company prior to the date cash is to be paid or equity awards are to be granted, as the case may be.

Expenses

The Company will reimburse Eligible Directors for ordinary, necessary and reasonable out-of-pocket travel expenses to cover in-person attendance at and participation in Board and committee meetings; *provided*, that the Eligible Director timely submits to the Company appropriate documentation substantiating such expenses in accordance with the Company's travel and expense policy, as in effect from time to time.

Amendment

This Policy may be amended at any time in the sole discretion of the Board or the Compensation Committee.

Exhibit 31.1

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, Lynn Seely, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Lyell Immunopharma, 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.

By:

Date: November 7, 2023 /s/ LYNN SEELY

Lynn Seely, M.D.

President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

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, Charles Newton, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Lyell Immunopharma, 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 7, 2023

By: /s/ CHARLES NEWTON

Charles Newton

Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

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

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), each of the undersigned hereby certifies in her or his capacity as an officer of Lyell Immunopharma, Inc, Inc. (the "Company"), that, to the best of her or his knowledge:

(1) The Company's Quarterly Report on Form 10-Q for the period ended September 30, 2023, to which this Certification is attached as Exhibit 32.1 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; 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 7, 2023

By: /s/ LYNN SEELY

Lynn Seely, M.D.

President and Chief Executive Officer
(Principal Executive Officer)

Date: November 7, 2023

By: /s/ CHARLES NEWTON

Charles Newton

Chief Financial Officer
(Principal Financial and Accounting Officer)