

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
FORM 10-K**

(Mark One)

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

For the Fiscal Year Ended December 31, 2023

☐ 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: 001-38327

Cue Biopharma, Inc.

(Exact name of registrant as specified in its charter)

Delaware

47-3324577

(State or other jurisdiction of
incorporation or organization)

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

40 Guest Street Boston, MA

02135

(Address of principal executive offices)

(Zip Code)

(617) 949-2680

(Registrant's telephone number, including area code)

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

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

Securities registered pursuant to Section 12 (g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant, as of the last business day of the registrant's most recently completed second fiscal quarter, was approximately \$154.4 million (based on the closing price of the registrant's common stock on June 30, 2023 of \$3.65 per share).

As of March 25, 2024, the registrant had 48,643,316 shares of Common Stock, \$0.001 par value per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The registrant intends to file a definitive proxy statement pursuant to Regulation 14A within 120 days after the end of the fiscal year ended December 31, 2023. Portions of such proxy statement are incorporated by reference into Part III of this Form 10-K.

CUE BIOPHARMA, INC.
TABLE OF CONTENTS

PART I

Item 1.	<u>Business</u>	4
Item 1A.	<u>Risk Factors</u>	48
Item 1B.	<u>Unresolved Staff Comments</u>	89
Item 1C.	<u>Cybersecurity</u>	89
Item 2.	<u>Properties</u>	90
Item 3.	<u>Legal Proceedings</u>	90
Item 4.	<u>Mine Safety Disclosures</u>	90

PART II

Item 5.	<u>Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities</u>	91
Item 6.	<u>[Reserved]</u>	91
Item 7.	<u>Management’s Discussion and Analysis of Financial Condition and Results of Operations</u>	92
Item 7A.	<u>Quantitative and Qualitative Disclosures About Market Risk</u>	105
Item 8.	<u>Financial Statements and Supplementary Data</u>	105
Item 9.	<u>Changes in and Disagreements with Accountants on Accounting and Financial Disclosure</u>	105
Item 9A.	<u>Controls and Procedures</u>	106
Item 9B.	<u>Other Information</u>	106
Item 9C.	<u>Disclosure Regarding Foreign Jurisdictions that Prevent Inspections</u>	106

PART III

Item 10.	<u>Directors, Executive Officers and Corporate Governance</u>	107
Item 11.	<u>Executive Compensation</u>	107
Item 12.	<u>Security Ownership of Certain Beneficial Owners and Management and Related Stockholders Matters</u>	107
Item 13.	<u>Certain Relationships and Related Transactions, and Director Independence</u>	107
Item 14.	<u>Principal Accountant Fees and Services</u>	107

PART IV

Item 15.	<u>Exhibits and Financial Statement Schedules</u>	109
Item 16.	<u>Form 10-K Summary</u>	112

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA

This Annual Report on Form 10-K contains “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements, which are based on certain assumptions and describe our future plans, strategies and expectations, can generally be identified by the use of forward-looking terms such as “believe,” “expect,” “may,” “will,” “should,” “would,” “could,” “seek,” “intend,” “plan,” “goal,” “project,” “estimate,” “anticipate,” “strategy,” “future,” “likely” or other comparable terms. All statements, other than statements of historical fact, contained in this Annual Report on Form 10-K, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans and objectives of management, are forward-looking statements.

The forward-looking statements in this Annual Report on Form 10-K include, among other things, statements about:

- the initiation, timing, progress and results of our ongoing and planned preclinical studies and clinical trials and our research and development programs;
- our estimates regarding expenses, future revenue, capital requirements and need for additional financing;
- our expectations regarding our ability to fund our projected operating requirements with our existing cash resources and the period in which we expect that such cash resources will enable us to fund such operating requirements;
- our plans to develop our drug product candidates;
- the timing of and our ability to submit applications for, and to obtain and maintain regulatory approvals for, our drug product candidates;
- the potential advantages of our drug product candidates;
- the rate and degree of market acceptance and clinical utility of our drug product candidates, if approved;
- our estimates regarding the potential market opportunity for our drug product candidates;
- our commercialization, marketing and manufacturing capabilities and strategy;
- our intellectual property position;
- our ability to identify additional products, drug product candidates or technologies with significant commercial potential that are consistent with our commercial objectives;
- the impact of government laws and regulations;
- our competitive position;
- developments relating to our competitors and our industry;
- our ability to continue as a going concern; and
- our ability to maintain and establish collaborations or obtain additional funding.

Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based only on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict and many of which are outside of our control. Our actual results and financial condition may differ materially from those indicated in the forward-looking statements. Therefore, you should not rely on any of these forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in the forward-looking statements include the factors discussed below under the heading “Risk Factor Summary,” and the risk factors detailed further in Item 1A., “Risk Factors” of Part I of this Annual Report on Form 10-K.

This report includes statistical and other industry and market data that we obtained from industry publications and research, surveys, and studies conducted by third parties as well as our own estimates. All of the market data used in this report involve a number of assumptions and limitations, and you are cautioned not to give undue weight to such data. Industry publications and third-party research, surveys, and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. Our estimates of the potential market opportunities for our drug product candidates include several key assumptions based on our

industry knowledge, industry publications, third-party research, and other surveys, which may be based on a small sample size and may fail to accurately reflect market opportunities. While we believe that our internal assumptions are reasonable, no independent source has verified such assumptions.

Any forward-looking statement made by us in this Annual Report on Form 10-K is based only on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether written or oral, that may be made from time to time, whether as a result of new information, future developments or otherwise.

Risk Factor Summary

Investment in our securities involves risk. You should carefully consider the following summary of what we believe to be the principal risks facing our business, in addition to the risks described more fully in Item 1A, “Risk Factors” of Part I of this Annual Report on Form 10-K and other information included in this report. The risks and uncertainties described below are not the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us or that we presently deem less significant may also impair our business operations.

If any of the following risks occurs, our business, financial condition and results of operations and future growth prospects could be materially and adversely affected, and the actual outcomes of matters as to which forward-looking statements are made in this report could be materially different from those anticipated in such forward-looking statements.

- We are a clinical-stage biopharmaceutical company, have no history of generating commercial revenue, have a history of operating losses and may never achieve or maintain profitability.
- We currently do not have, and may never develop, any FDA-approved or commercialized products.
- We are substantially dependent on the success of our drug product candidates, only two of which are currently being tested in clinical trials, and significant additional research and development and clinical testing will be required before we can potentially seek regulatory approval for or commercialize any of our drug product candidates.
- We have limited experience in conducting clinical trials and no history of commercializing biologic products, which may make it difficult to evaluate the prospects for our future viability.
- Success in preclinical studies or early clinical trials may not be indicative of results obtained in later trials.
- We plan to continue to seek collaborations or strategic alliances. However, we may not be able to establish such relationships, and relationships we have established may not provide the expected benefits.
- Our collaboration agreement with LG Chem contains exclusivity provisions that restrict our research and development activities.
- We may not be successful in our efforts to identify additional drug product candidates. Due to our limited resources and access to capital, we must prioritize the development of certain drug product candidates; these decisions may prove to be wrong and may adversely affect our business.
- We face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.
- We rely on third parties to conduct our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may not be able to successfully complete development of, obtain regulatory approval for, or commercialize our drug product candidates and our business could be substantially harmed.
- We rely completely on third parties to manufacture our preclinical and clinical drug supplies for our drug product candidates.
- If we or our licensor(s) is unable to protect our or its intellectual property, then our financial condition, results of operations and the value of our technology and potential products could be adversely affected.
- Even if we, or any collaborators we may have, obtain marketing approvals for any of our drug product candidates, the terms of approvals and ongoing regulation of our products could require the substantial expenditure of resources and

may limit how we, or they, manufacture and market our products, which could materially impair our ability to generate revenue.

- We will need substantial additional financing to support our growth and ongoing operations.
- Our recurring losses from operations raise substantial doubt regarding our ability to continue as a going concern.
- We have a loan agreement that requires us to meet certain operating covenants and place restrictions on our operating and financial flexibility.

PART I

Item 1. Business

Overview

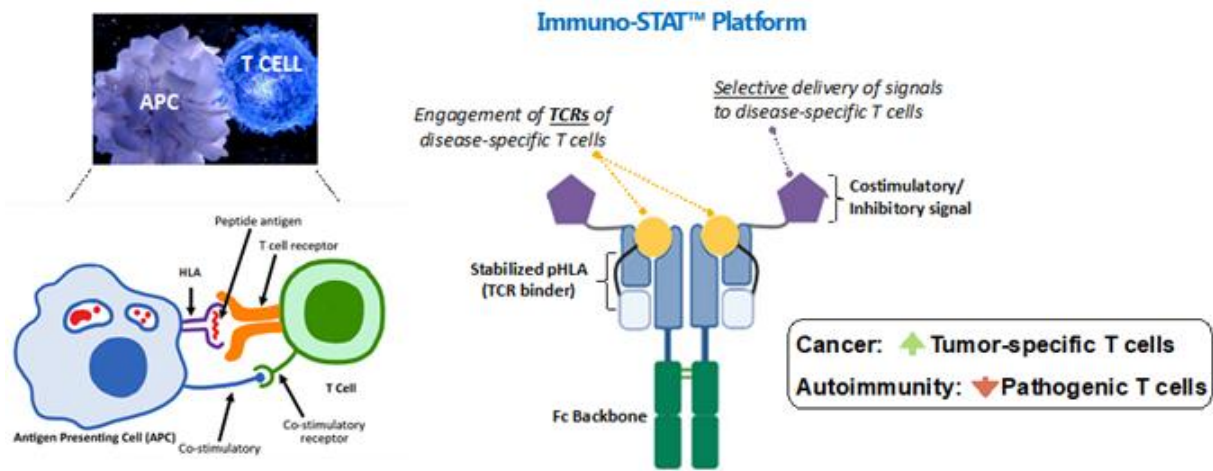
We are a clinical-stage biopharmaceutical company engineering a novel class of injectable therapeutics to selectively engage and modulate targeted, disease relevant T cells directly within the patient’s body. Our vision is to translate nature's signals, or "cues", into protein therapeutics by generating a new class of T cell engagers for selective modulation of disease specific T cells. We believe our proprietary Immuno-STAT™ (*Selective Targeting and Alteration of T Cells*) platform, as described below, will enable us to enhance the potential of the patient’s own immune system to restore health while avoiding the deleterious side effects of broad immune activation, in the case of cancer, and broad immune suppression, in the case of autoimmune disease. Our selective immune modulation approach may be deployed for treating two of the major diseases causing debilitating human suffering and mortality, namely cancer and autoimmune disease. Susceptibility to cancers is likely due to inadequate immunity against aberrant cancer cells, and inversely, autoimmune disease is due to excessive immune activation against self-tissue.

Cancer and autoimmune disease are major areas of disease that affect large populations across the globe and shorten the life expectancy of those afflicted. There are approximately 20 million new cancer diagnoses worldwide each year with approximately 2 million in the United States, or U.S., alone. Of these new cases, approximately 50% will progress to recurrent metastatic disease ultimately resulting in death. In addition, approximately 4% of the world’s population is diagnosed with an autoimmune disease resulting in approximately 24 million cases in the U.S.

Recognizing that T cells, as the heavy artillery of the immune system, are regulated with a highly selective “command and control” instruction process through interactions with the antigen-presenting cells, we have engineered the Immuno-STAT platform to emulate this “command and control” system.

Specificity, or the control in the “command and control” system, is achieved through the T cell receptor, or TCR, binding to a specific, targeted epitope, depicted by the yellow circle in the figure on the right below, along with a “command” co-stimulatory signal, such as interleukin 2, or IL-2, depicted as the purple pentagon in the figure on the right below. These two “cues”, or signals, when engaged concurrently, as is the case with our Immuno-STATs, are able to “dial-in” selective activation of targeted tumor-specific T cells to attack cancer while avoiding potentially harmful broad immune activation of T cells. Conversely, in autoimmunity, our autoimmune drug product candidates are designed to deploy inhibitory signals to selectively dampen autoreactive T cells while avoiding broad immune suppression that can increase susceptibility to other diseases. The figure to the left below depicts the interaction of the antigen presenting cell, or APC, with a specific T-cell as seen in nature.

Immuno-STAT Platform: Emulating Nature’s Selectivity.



Our first two oncology drug product candidates, CUE-101 and CUE-102, are exemplary programs from the IL-2 based CUE-100 series, and are representative of the HLA-A02 allele, which is prevalent in the US and western European territories. Additional HLA alleles have been developed preclinically and would allow for expansion of patient coverage globally. CUE-101 HLA-A02 is engineered for the treatment of human papillomavirus positive, or HPV+, head and neck squamous cell carcinoma, or HNSCC, and by changing the epitope 9-amino acid sequence depicted as the yellow circle in the above illustration, we have CUE-102 HLA-A02, targeting Wilms' Tumor 1 protein, or WT1, an oncofetal antigen known to be over-expressed in more than 20 different cancers. Based upon the clinical observations to date, we believe we have demonstrated that our Immuno-STAT platform can be deployed across a wide spectrum of cancers by selectively activating the patient's own immune system to combat cancer. We have also developed drug product candidates designed to address a broad spectrum of autoimmune disease by dampening or turning down self-reactive T cells that attack a patient's body. We have a strategic collaboration with Ono Pharmaceutical Co., Ltd., or Ono, focused on the development of CUE-401 for the potential treatment of a wide spectrum of autoimmune disease through the induction and expansion of regulatory T cells, or Tregs

Immuno-STAT Platform for Oncology: IL-2 based CUE-100 Series - Enhancing the Body's Capacity to Fight Cancer

Realizing the potential promise of cancer immunotherapy requires effective and well-tolerated activation and enhancement of the body's intrinsic cancer-fighting capacity. Due to the extremely small fraction of a patient's entire T cell repertoire that is specific to that patient's cancer, which is estimated to be less than 0.1% of the patient's total T cell population, we believe that non-specific modulation of all T cells with therapies such as recombinant IL-2 (or variants thereof), checkpoint inhibitors, or CPIs, and bi-specific T cell engagers, will continue to provide sub-optimal outcomes for the majority of patients, unless these modalities can be targeted towards tumor-specific T cells.

By selectively targeting, activating and expanding tumor-specific T cells, we believe our IL-2-based CUE-100 series could solve the foundational problem of how to selectively activate and amplify only those tumor-specific T cells without broadly activating the vast majority of tumor-irrelevant cells, thus potentially achieving well-tolerated and therapeutically effective therapies. This strategy allows for the generation of a therapeutic index for immune activation signals, such as IL-2, by selectively targeting disease-relevant T cells over the vast majority of tumor-irrelevant T cells.

We believe that our Immuno-STAT and derivative drug product candidates may offer important clinical advantages over competing immunotherapy approaches, including:

- Ability to selectively target disease specific T cells and control the quantity and properties of the co-stimulatory signal, in contrast to global activation through systemic, non-selective signaling that is common to therapies such as rIL-2 and bi-specific antibodies and is associated with poor tolerability;
- "Off-the-Shelf" and ready to use biologics that specifically target and selectively modulate disease relevant T cells;
- Utilization of industry standard development and production process that support a cost-of-goods and supply chain similar to monoclonal antibodies, providing for timely and efficient drug supply;
- Standard delivery format (intravenous or subcutaneous) with a convenient dosing schedule (weekly to monthly) that can be administered by specialists and community-based physicians;
- Administration directly into the patient's body without involving extraction and ex-vivo manipulation of T cells (e.g., cell therapy) or rigorous pre- and post- therapy conditioning of the patient; and
- Access to a broad set of disease targets and patient populations with high unmet medical need.

Immuno-therapy Challenges: Exemplified by the Non-selective Nature of IL-2

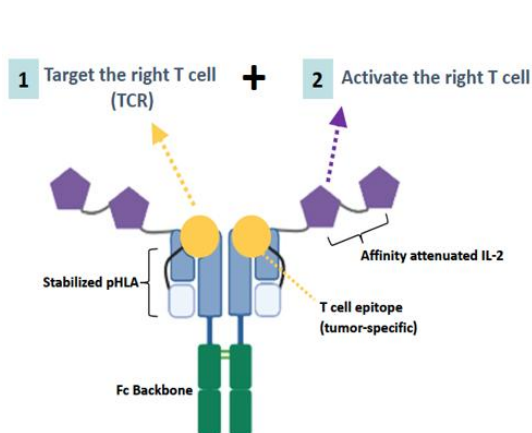
The challenges of effective and well tolerated immunotherapy, exemplified by current IL-2 therapies, center around a lack of selectivity and indiscriminate immune activation, resulting in poor tolerability and limited therapeutic dosing ranges. The primary challenge with wild-type IL-2 for example, as well as the different IL-2 variants in development, is that these molecules will indiscriminately engage the vast majority of the patient's T cells, most of which do not recognize a tumor as foreign and thus have no demonstrable effect on the patient's cancer.

To realize the full potential of co-stimulatory molecules, such as IL-2, for cancer therapy, we engineered Immuno-STATs to take advantage of the specificity of the TCR allowing for selective activation and expansion of disease-relevant T cells with the concurrent engagement of a co-stimulatory molecule. The CUE-100 series Immuno-STATs are designed to selectively deliver modified IL-2 to tumor-specific T cells while avoiding the systemic activation of all other non-target T

cells. Our IL-2 variant is affinity-attenuated, or modified to reduce the binding force, such that it selectively cooperates with signals from the TCRs of tumor-specific T cells that bind to the peptide human leukocyte antigen, or pHLA, component of the Immuno-STAT. If the TCR is not engaged, as would be the case with the majority of non-tumor-specific T cells, then the signal from the reduced-affinity IL-2 variant by itself is insufficient to fully activate the non-tumor-specific T cells. Through the concurrent signaling from the pHLA/TCR complex (signal 1 in the graphic below) and IL-2 co-stimulatory signaling (signal 2 in the graphic below), we believe the CUE-100 series Immuno-STATs enable the selective activation and amplification of cancer-relevant T cells. In addition, we believe the modularity of the CUE-100 series will allow us to generate diverse therapeutic molecules containing different tumor antigens to target many types of cancer.

The CUE-100 series is an oncology focused series based on IL-2 as a co-stimulatory moiety, and it is our belief that we have established foundational data supporting the premise that the CUE-100 series drug product candidates have the potential to solve the major challenge of therapeutically deploying IL-2 through the selective targeting of tumor-specific T cells. As such, we also believe the CUE-100 series holds the potential of therapeutically being a best-in-class approach due to its favorable tolerability profile, as we have not observed capillary leak syndrome nor significant cytokine release syndrome to date. We believe the clinical data from our CUE-101 and CUE-102 ongoing trials support the premise that we have generated a clinically active and well-tolerated therapeutic capable of selectively delivering IL-2 to the relevant T cell population and have identified a range of doses achieving clinical benefit with favorable tolerability. We have demonstrated clinical validation and proof of concept through the treatment of over 100 patients, both as monotherapy and in combination with standard of care, or SoC, CPI therapy, such as Merck Sharp & Dohme Corp.'s, or Merck's, anti-PD-1 therapy KEYTRUDA®. We have evidence of monotherapy activity in our ongoing clinical trial in late-stage cancer patients who received CUE-101 every three weeks, with some of those patients having received CUE-101 for up to 24 months. In addition, to date in our ongoing clinical trial, CUE-101 in combination with KEYTRUDA has demonstrated an overall response rate, or ORR, and median progression free survival, or mPFS, that compares favorably to historical data.

CUE-100 Series: IL-2 Based T Cell Engagers



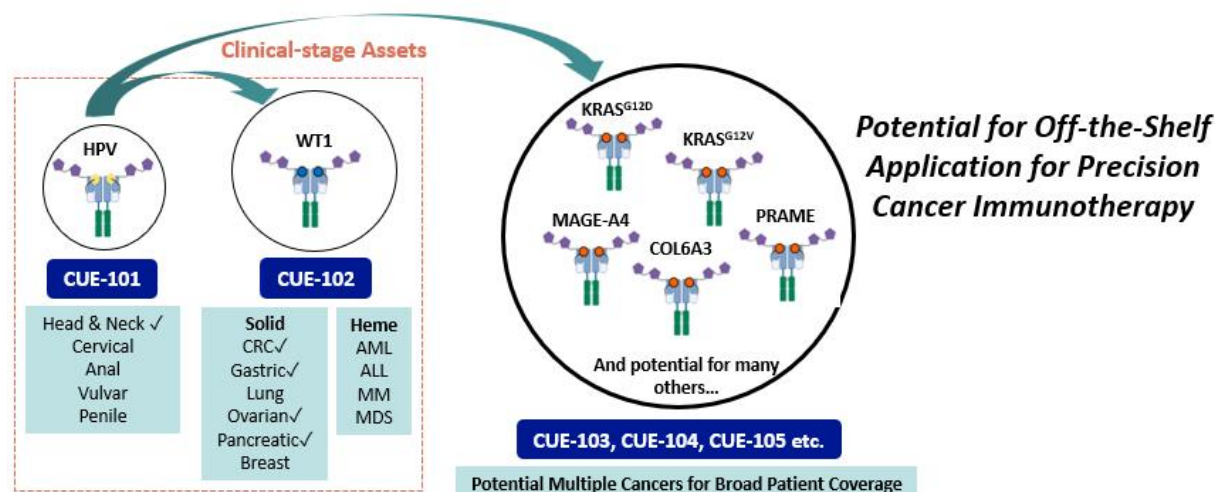
- ✓ **Generation of a Therapeutic Index for IL-2**
 - Selective targeting of IL-2 to tumor-specific T cells
- ✓ **Clinical Validation and PoC (>100 Patients Treated)**
 - Monotherapy activity in late-stage cancer patients
 - Potential doubling of ORR and mPFS in combination with CPI
- ✓ **Favorable Tolerability Profile**
 - No capillary leak syndrome
 - No clinically significant cytokine release syndrome
 - Dosing every 3 weeks with some up to 24 months on treatment
- ✓ **Strong Metrics of Manufacturability**
 - Antibody-based modular design, expression, CMC and COGS
 - Highly stable (DP stability >36 months)
- ✓ **Flexible Platform with Potential Regulatory Advantages**
 - Potential for accelerated development of pipeline candidates
 - Opportunity to target many different cancers

The structural design of our IL-2 based CUE-100 series antibody-based molecules enables modularity of the various components. A key feature is the ability to readily change the targeting epitope (the epitope is represented by the yellow circle in the above image). In addition to their modular design, we believe CUE-100 series molecules have strong manufacturing metrics, including expression levels, cost of goods, and drug product stability. As seen in the image below, our first two drug product candidates exemplify the platform's modular nature and intended efficiencies. Based on the premise that CUE-102 shares the same core molecular framework as CUE-101, except for the T cell epitope pertaining to HPV-E7 versus WT-1, its IND was supported by clinical and safety data from the ongoing CUE-101 monotherapy trial and did not require additional

IND-enabling toxicology studies. This supports our premise that each CUE-100 series Immuno-STAT molecule provides further de-risking and potential accelerated development of subsequent drug product candidates.

Platform Modularity Engineered to Enable Targeting of Many Different Cancers

Structural similarity creates potential regulatory and development efficiencies



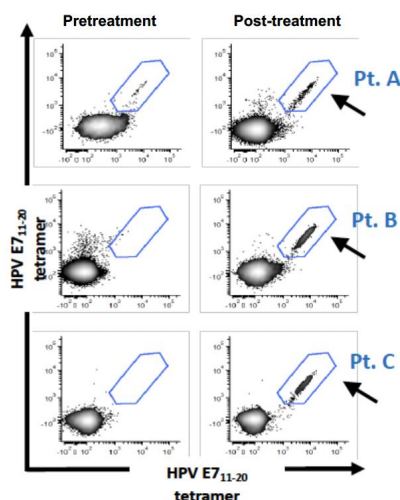
Our development strategy with our first drug product candidate from the CUE-100 series, CUE-101, is focused on demonstrating clinical activity as a monotherapy in the second line and beyond, or 2L+, setting, where the cancer has become highly unstable and life expectancy typically continues to diminish with each additional line of therapy. We believe that the data generated in our monotherapy 2L+ trial, described below, demonstrates clear evidence of single agent anti-tumor activity and underscores the mechanistic rationale for combining with check point blockade in the 1L SoC setting, thereby providing a path forward for a broader opportunity to reach and benefit a greater number of patients. Importantly, recent scientific data has implicated IL-2 in generation of T cells with superior attributes, including “stemness-like” properties. These attributes may further enhance the long-lasting therapeutic properties of the CUE-100 series and further support application of this approach in earlier lines of therapy, such as the adjuvant setting, representing a significant market potential.

CUE-101 is our most advanced clinical stage asset and is being clinically investigated for the treatment of human papillomavirus positive, or HPV+, head and neck squamous cell carcinoma, or HNSCC, in patients compatible with the human leukocyte antigen, HLA-A02. Our first Phase 1 clinical trials are investigating CUE-101 in the treatment of R/M, HPV+ HNSCC as a monotherapy and in combination with KEYTRUDA. We received Fast Track Designation of CUE-101 for the treatment of recurrent metastatic, or R/M, HPV+ HNSCC, as both a monotherapy in 2L+ patients and in combination with KEYTRUDA, the current SoC for 1L R/M HNSCC patients. We also have ongoing and planned investigator sponsored clinical trials in the neoadjuvant and adjuvant settings. This series of trials allows CUE-101 to be investigated in multiple patient populations with broad market opportunities. Both the CUE-101 monotherapy trial in 2L+ R/M HNSCC and CUE-101 trial in 1L in combination with KEYTRUDA have completed enrollment and have demonstrated metrics of clinical activity. In January 2024, we met with the FDA in a Type B meeting to clarify potential paths to registrational trials in both the 2L+ monotherapy and 1L combination settings. We believe this clarification on registrational paths represents an important milestone, providing further risk reduction along with defined resource requirements.

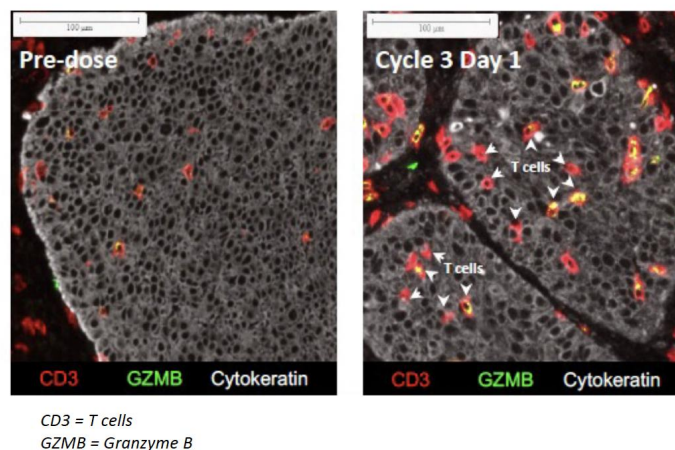
In 2023, we completed enrollment of 25 patients in the expansion phase of our combination Phase 1b clinical trial of CUE-101 at the 4 mg/kg dose level in combination with KEYTRUDA. We also continue to follow patients in the monotherapy portion of our Phase 1 clinical trial of CUE-101 at the dose of 4 mg/kg for the treatment of 2L+ R/M HNSCC patients. These patients previously received and failed several prior lines of therapy, including chemotherapy as well as CPIs, such as KEYTRUDA. We have observed robust expansion of the targeted tumor-specific, HPV E7 specific, T cells in the peripheral blood of patients treated with CUE-101, as shown in the panels on the left below. In addition, pre- and post-treatment paired patient biopsies showed increased tumor infiltrating T cells following CUE-101 treatment as evidenced by the significant increase in activated granzyme B+ cytolytic killer T cells, indicated by the yellow-orange staining, in the right panel below.

CUE-101 Monotherapy Tumor Specific T Cell Expansion and Infiltration

Tumor-specific T cell Expansions

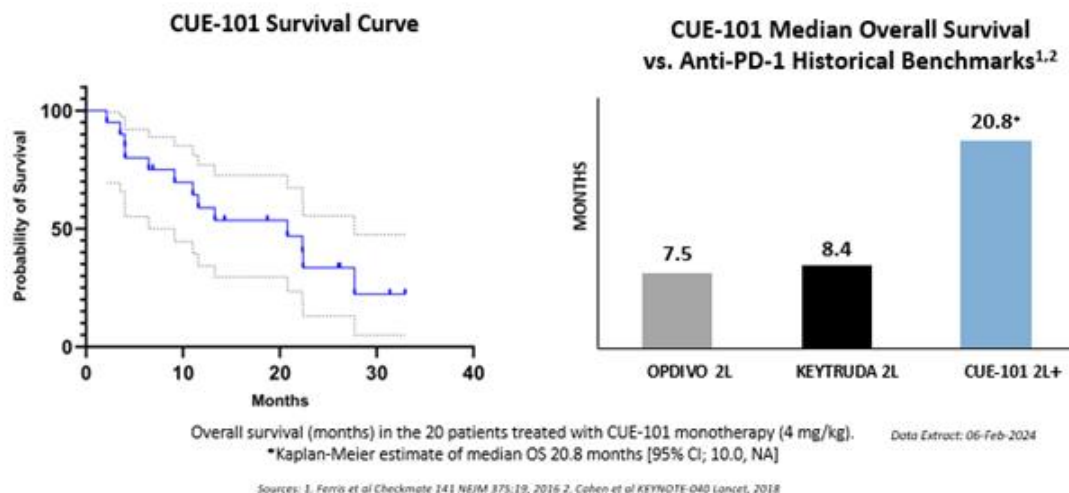


T cell infiltration into tumors post-CUE-101 treatment



In our 2L+ monotherapy Phase 1 trial, CUE-101 has demonstrated evidence of anti-tumor activity, along with a favorable tolerability profile. Of the 20 patients in the monotherapy Phase 1 clinical trial treated at the dose of 4 mg/kg, we observed a confirmed partial response, or PR, lasting for more than 36 weeks and 6 patients with durable stable disease, defined as stable disease on at least two consecutive post-treatment scans lasting at least 12 weeks. One patient with stable disease has had no evidence of tumor growth for 24 months and has had no detectable evidence of circulating HPV DNA in their blood. This data supports the possibility that this patient has a histopathological complete response, i.e., qualitatively no remaining viable tumor, while the quantitative scan may have been measuring dead, fibrotic tissue. This patient recently reached the end of the 24-month treatment period of the trial as defined by the clinical trial protocol. In this monotherapy trial, we have observed a median overall survival, or mOS, of 20.8 months in this 2L+ patient population (as shown below). Data generated from historical reports on second line patients that received CPI therapy (KEYTRUDA or IPDIVO), demonstrated a mOS of 8.4 months and 7.5 months respectively (as shown below). We continue to follow the patients treated in the monotherapy trial and anticipate this overall survival data to continue to mature throughout 2024.

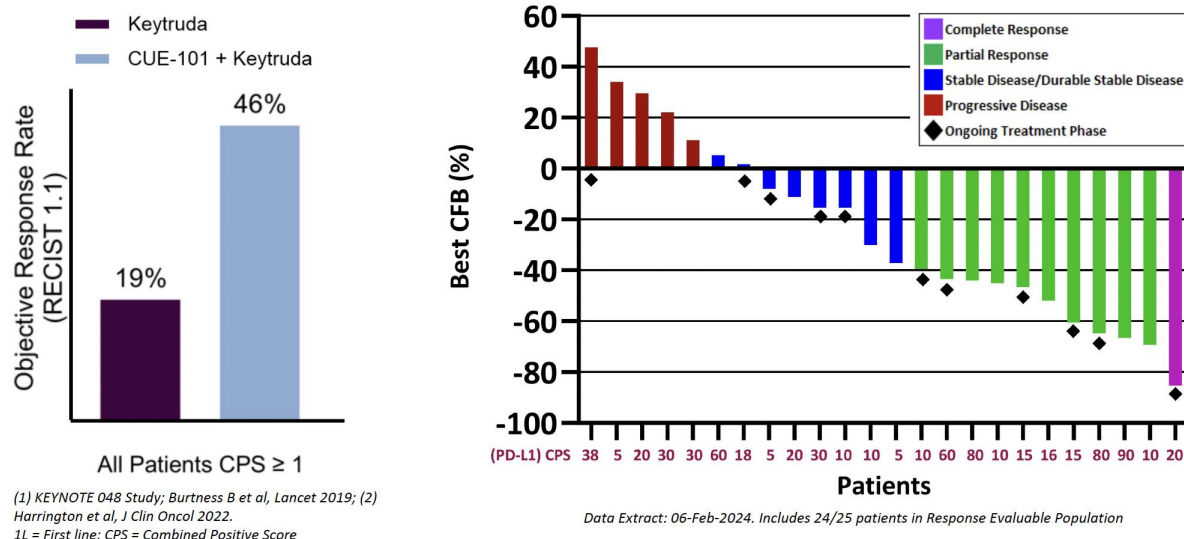
Overall Survival in CUE-101 Phase 1 Monotherapy 4 mg/kg Patients



During the fourth quarter of 2023, we completed enrollment of our Phase 1b trial of CUE-101 in combination with SoC CPI, KEYTRUDA. The waterfall plot below is an update of the data that we presented at the 2023 Society for Immunotherapy of Cancer on November 4, 2023. Of the 24 evaluable patients treated with combination therapy of 4 mg/kg of CUE-101 and 200 mg of KEYTRUDA given every three weeks, we observed one confirmed complete response and ten confirmed partial responses, as well as seven patients with durable stable disease. The overall response rate, or ORR, for these 24 patients is 46% with a disease control rate of 75%. This ORR represents a greater than doubling of the historical ORR of 19% that was observed with KEYTRUDA alone, as reported in the KEYNOTE 048 study. Importantly, these responses include multiple patients with low PD-L1 expression (combined positive score less than 20), a patient population known to be less likely to respond to KEYTRUDA.

Best Change from Baseline and Response in Patients Treated with 4 mg/kg of CUE-101
in Combination with KEYTRUDA

Overall Response by RECIST: ORR=11/24 (46%); DCR 18/24 (75%)

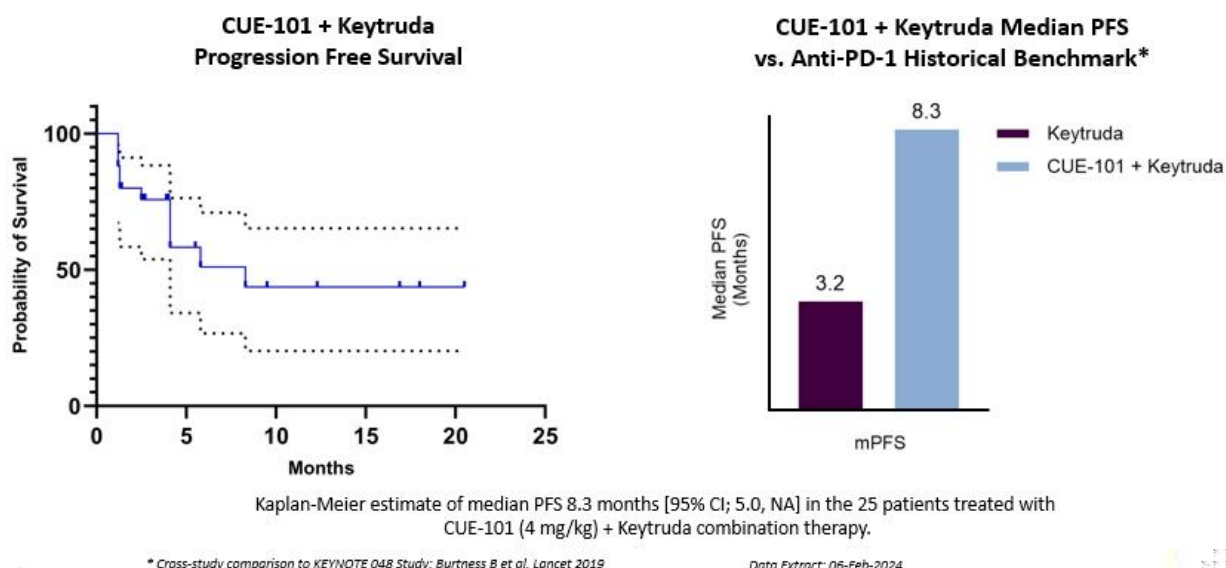


We continue to follow the patients treated with 4mg/kg of CUE-101 in the combination trial and anticipate providing a further update and substantive analysis of this ongoing trial at the upcoming scientific American Society of Clinical Oncology meeting in June 2024.

We believe the observed evidence of combination activity of CUE-101 with KEYTRUDA is most likely due to their complementary mechanisms of action, specifically, CUE-101's mechanism of selectively activating and expanding tumor-specific T cells and KEYTRUDA's mechanism of checkpoint signaling blockade, that enables the anti-tumor T cells to effectively attack and kill the tumor cells.

Furthermore, we believe that CUE-101's evidence of clinical activity and mechanism of action have the potential to expand patient reach and to enhance the clinical activity of KEYTRUDA as well as other CPIs, since the presence of expanded tumor-specific T cells is an obligatory pre-requisite for anti-PD-1 therapy. mPFS denotes the timeframe in which patients remain on drug until the observation of tumor growth goes beyond 20% from baseline. The mPFS of the 25 patients treated with CUE-101 and KEYTRUDA in our ongoing combination trials is 8.3 months, which compares favorably to the historical mPFS of 3.2 months observed with KEYTRUDA monotherapy in the historical, third-party KEYNOTE-48 trial.

Increase of mPFS in 1L Patients Treated with 4mg/kg of CUE-101
in Combination with KEYTRUDA

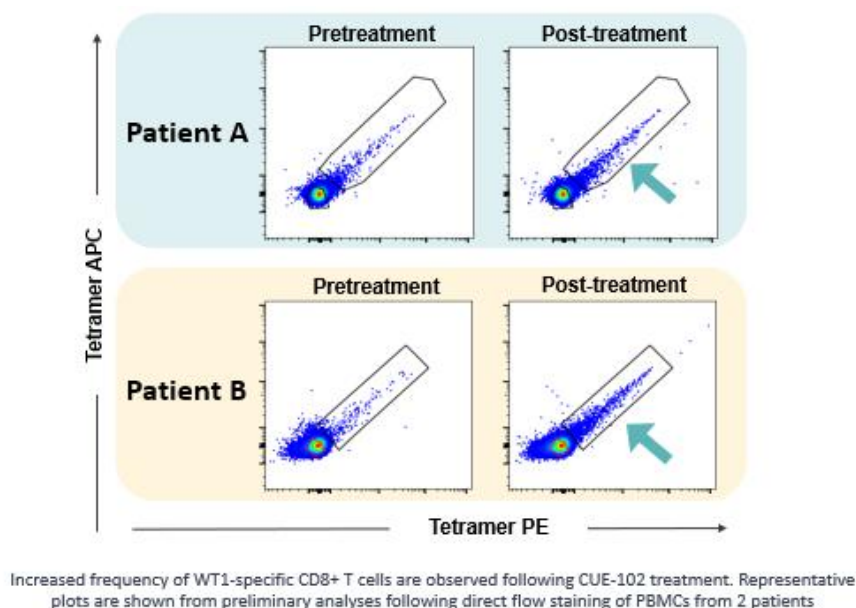


Importantly, we believe that the CUE-101 clinical data generated to date reduces the risk profile of the entire IL-2 based CUE-100 series due to the core molecular framework of the CUE-100 series remaining essentially the same for each drug product candidate, except for the nine amino acid peptide, or targeting peptide epitope, within the major histocompatibility complex, or MHC, pocket. Therefore, with the exception of some protein engineering modifications to ensure stability and manufacturability, the core IL-2 scaffold is a shared molecular feature of all molecules generated within this series, including CUE-102. This supports our premise that each CUE-100 series Immuno-STAT drug product candidate provides further de-risking and potential acceleration of subsequent drug product candidates.

CUE-102, the second HLA-A02 drug product candidate in our CUE-100 series, targets Wilms' Tumor 1 protein, or WT1, an oncofetal antigen known to be over-expressed in more than 20 different cancers, including both solid tumors (such as colorectal, ovarian, pancreatic and lung) and hematologic malignancies (such as acute myeloid leukemia, multiple myeloma and myelodysplastic syndromes). We are conducting a Phase 1 monotherapy clinical trial of CUE-102 in second line R/M WT1+ colorectal, gastric, ovarian, and pancreatic cancer. Similar to CUE-101, CUE-102 may be investigated in multiple patient populations including, as a combination with current standard of care therapies, in first line R/M cancers, as well as, R/M locally advanced settings. Both the CUE-101 monotherapy in second line R/M HNSCC and first line in combination with KEYTRUDA have completed enrollment and have demonstrated metrics of clinical activity.

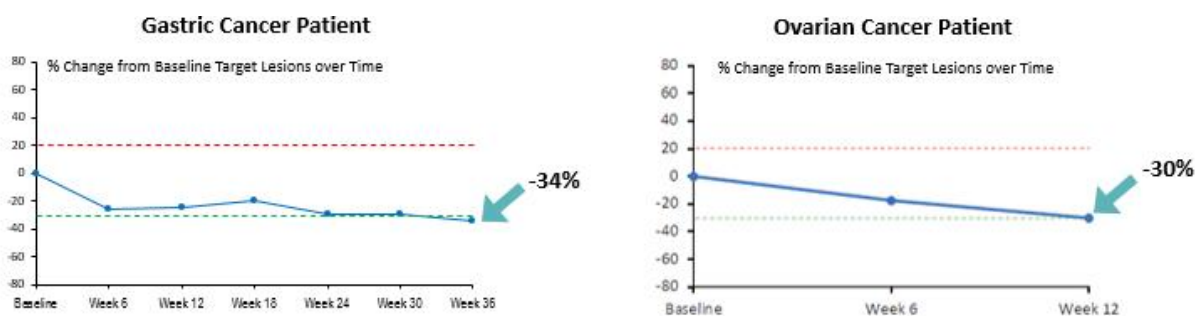
Consistent with our preclinical datasets, selective and robust expansion of WT1+ specific T cells has been observed in treated patients in our ongoing trial. As depicted in the two representative examples from patients treated in the ongoing Phase 1 monotherapy trial shown below, increased frequency of WT1 specific CD8+ T cells were observed following CUE-102 treatment. These representative examples from two patients in the ongoing Phase 1 clinical trial plot the increase in WT1 specific CD8+ T cells from preliminary analyses following direct flow staining of PBMCs. Expansion of these WT1 tumor specific T cells is expected to enhance anti-tumor immunity with the potential to drive tumor reductions.

Selective Expansion of WT1-Specific T Cells Demonstrated in Patients Treated with CUE-102



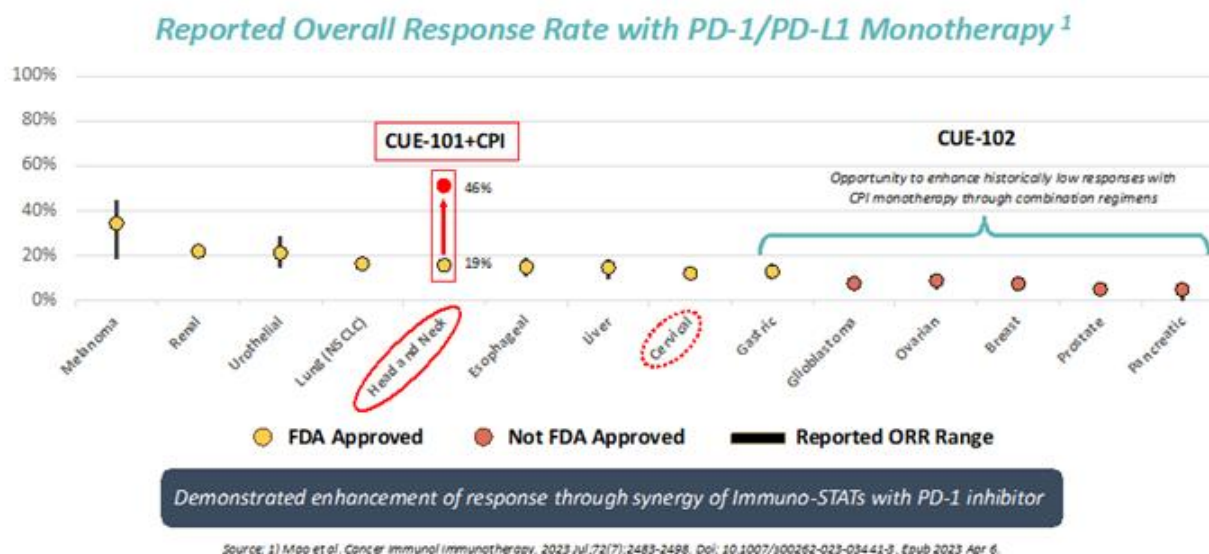
The graphs below show reductions in tumor burden that have been observed in patients treated in the dose-escalation portion of the Phase 1 CUE-102 monotherapy clinical trial. As shown in the graph on the left, a patient with gastric cancer that progressed on three prior lines of therapy, including a CPI, experienced a decrease in the sum of three target lesions of 34% at week 36, as depicted by the blue line crossing the -30% hash line in green. This gastric cancer patient remained on treatment as of the data cut-off date. The graph on the right shows a reduction in tumor burden observed in an ovarian cancer patient in the 2 mg/kg dose-escalation cohort as depicted by the blue line intersecting the -30% hash line in green. Both of these patients subsequently experienced progressive disease due to the emergence of new lesions. We have also observed disease control in patients with pancreatic cancer, including a pancreatic cancer patient who, as of the data cut-off date, remained on treatment and exhibited durable stable disease for greater than six months. Given the encouraging signs of clinical activity observed across all four indications in the Phase 1 dose escalation portion of the trial, we anticipate conducting the Phase 1 expansion portion of the monotherapy trial in more than one WT1 positive cancer type.

Reduction of Target Lesions in Patients Treated with CUE-102



As discussed above, the ability of CUE-101 to selectively activate and amplify targeted tumor specific T cells, as observed in our Phase 1 combination trial, complements the mechanism of CPIs. We are now expanding our efforts into cancers that have historically not been responsive to CPI. The tumor types we are expanding to with CUE-102 are denoted by the red circles on the chart below.

Immuno-STATs Potential for Expanding Patient Reach and Enhancing Efficacy for CPIs

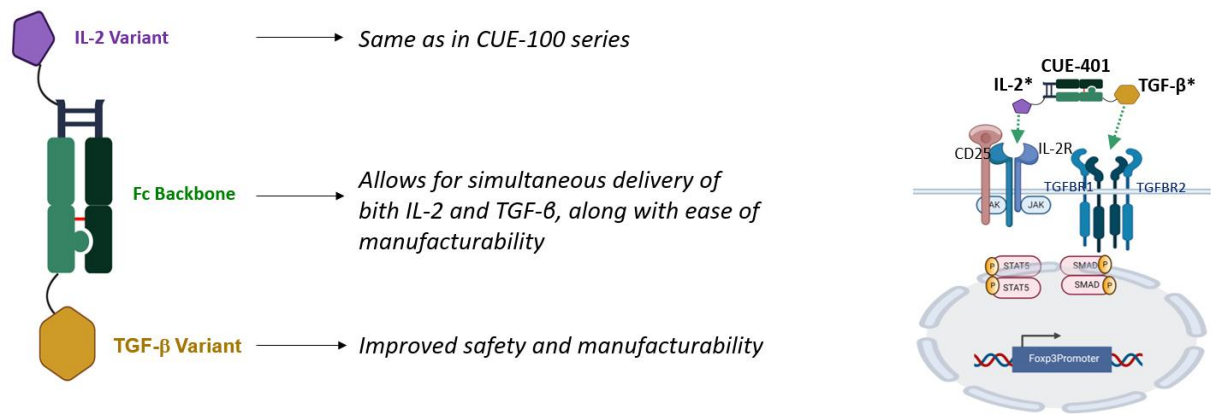


In addition to the CUE-100 series, we have leveraged the modularity and versatility of the Immuno-STAT platform to develop additional biologic series outside of oncology, including CUE-300, CUE-400, and CUE-500, which are specifically designed through rational protein engineering to address distinct therapeutic approaches for treating autoimmune disease. The CUE-300 series incorporates the inhibitory PD-L1 co-modulator for selective inhibition of the autoreactive T cell repertoire. The CUE-400 series represents a novel class of bispecific molecules designed to selectively induce and expand regulatory T cells, or Tregs, for chronic autoimmune diseases. The CUE-500 series represents a novel approach to develop a bispecific Immuno-STAT that can selectively direct memory T cells to deplete B cells, which has been demonstrated through the ablation of B cells with CAR T therapy and is now recognized as an important axis for treatment of autoimmune and inflammatory diseases.

In 2023, we announced a strategic collaboration and option agreement with Ono, or the Ono Collaboration and Option Agreement, to further advance CUE-401 for the treatment of autoimmune and inflammatory diseases. The strategic collaboration with Ono is an important advancement in our corporate development plan to seek third-party support to further develop the CUE-400 series and provides dedicated resources and capabilities to help advance CUE-401 toward the clinic. Under the terms of the Ono Collaboration and Option Agreement, Ono paid us an upfront payment and agreed to fully fund all research activities related to CUE-401 through a specified option period. During this option period, we will be responsible for the research and development of CUE-401. Upon Ono's exercise of its option to license CUE-401, we will receive an option exercise payment and be eligible for development and commercial milestone payments up to an aggregate of approximately \$220 million, as well as tiered royalties on sales. Upon any such exercise, Ono will receive worldwide rights to develop and commercialize CUE-401, with us retaining a 50% co-development and co-commercialization right in the United States. Our decision to elect the co-development and co-commercialization option may be made within 30 days of Ono's option exercise to license CUE-401. The amount paid by Ono to us for the option exercise and future milestone payments will vary based upon our decision to exercise the co-development and co-commercialization option.

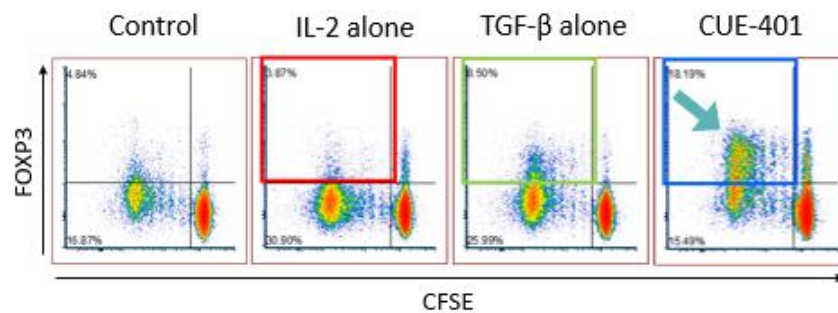
CUE-401 Designed for Selective Treg Induction and Expansion

CUE-401 has the two key signals, IL-2 and transforming growth factor beta, or TGF beta, for selective induction of Tregs. The structure of CUE-401 is similar to that utilized in the CUE-100 series and incorporates the same IL-2 variant. The TGF beta variant was designed to improve the safety profile, enhance manufacturability, and mechanistically align with IL-2 signaling for effective Treg induction and expansion. Co-delivery of IL-2 and TGF beta signals in naïve CD4⁺ T cells results in the induction of Fox P3 which is the master gene transcription factor for Tregs.



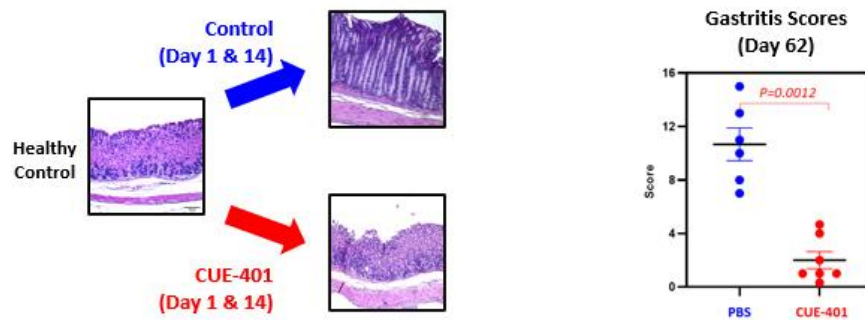
The panels below demonstrate iTreg induction in human peripheral blood mononuclear cells and exemplify the need for both the IL-2 and TGF beta signals to induce Tregs. As shown below, neither IL-2 nor TGF beta alone can generate substantial numbers of new Tregs. In contrast, CUE-401, which has both IL-2 and TGF beta, demonstrated in preclinical studies the ability to generate a robust population of Fox P3+ Tregs by delivering both required signals.

CUE-401 Harnessed Multiple Signals to Induce Tregs in Preclinical Studies



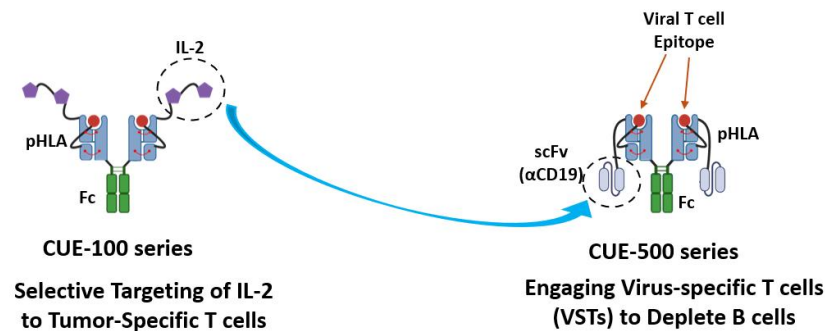
We have generated preclinical data in our labs and in collaboration with Dr. Richard DiPaolo of St. Louis University supporting the premise that CUE-401 may be able to expand and induce Tregs. The resulting Tregs are functionally suppressive and maintain a stable phenotype, whereby CUE-401 treatment suppressed the proliferation of self-reactive T cells in a mouse model of autoimmune gastritis. The therapeutic potential of CUE-401 has also been observed in a T cell transfer model of autoimmune gastritis, wherein treatment with CUE-401 led to a prolonged suppression of self-reactive T cells and significantly reduced pathological evidence of disease in the stomachs of treated mice. As shown in the figure below, short-term treatment with CUE-401 resulted in long-term protection from autoimmune gastritis and tissue destruction in a pre-clinical animal model. The histopathology, as shown on the left side, and the compiled gastritis scores, as shown on the right side, demonstrated significant protection from tissue destruction in animals treated with CUE-401.

Short-term Treatment with CUE-401 Resulted in Significant Long-Term Protection from Gastritis and Tissue Destruction

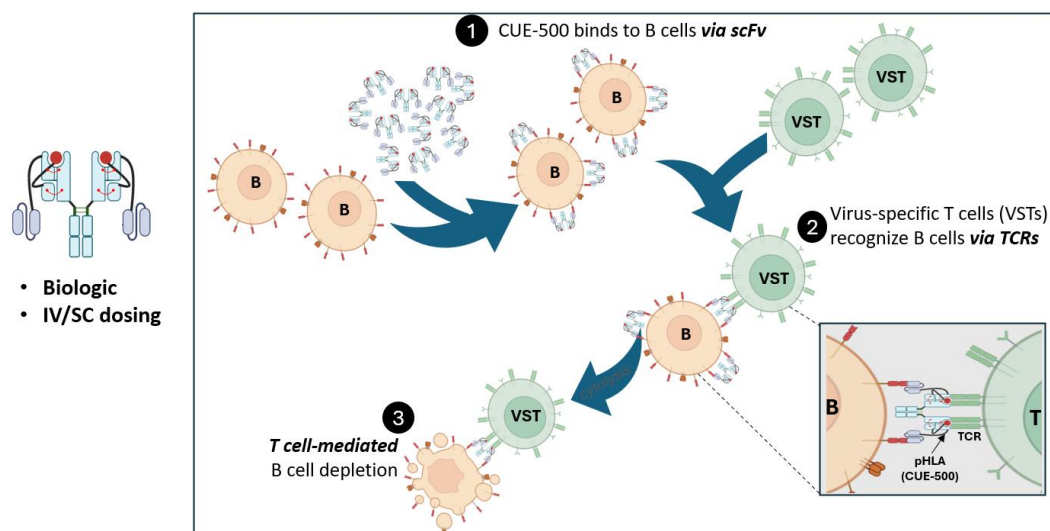


Through our CUE-500 series, we are developing Immuno-STATs designed to selectively harness the protective anti-viral T cell repertoire (virus-specific T cells, or VSTs) and re-direct them to target and deplete B cells. We believe that recent third-party clinical data in autoimmune patients that demonstrated durable long-term efficacy when treated with CD19-CAR-T cells to deplete pathogenic B cells provides strong mechanistic evidence for the superiority of T cell-mediated B cell depletion versus prior approaches with antibody-dependent B cell depletion (such as anti-CD19, anti-CD20 monoclonal antibodies). We believe that our approach to deploy a biologic to selectively re-direct “killer” T cells, while avoiding the systemic engagement and activation of all T cells, to essentially accomplish T cell-mediated B cell depletion has similarities to what has been exemplified with CD19-CAR-T cell therapy approaches. We believe that addressing this important mechanism of autoimmune diseases with a biologic will offer significant advantages over cell therapy-based strategies. The figures below highlight the design and mechanism of action of the CUE-500 series. The CUE-500 series builds upon the de-risking accomplished with the CUE-100 series (>100 patients treated with CUE-101 and CUE-102) and leverages the same modified IL-2. This further supports our premise that each CUE-100 series Immuno-STAT molecule provides further de-risking and potential acceleration of subsequent drug product candidate.

CUE-500 Series: Leveraging a derisked, validated framework for T cell-mediated B cell depletion



CUE-500 Series: Mechanism of Action



Our Business Strategy

Our primary objective is to provide patients suffering from cancer and autoimmune disease with dramatically improved therapeutic outcomes through our platform of biologic drug product candidates. In order to achieve this objective, we are focused on the following strategy:

Advance our Tumor Antigen-specific IL-2-based CUE-100 series for oncology

- Through CUE-101, as representative and exemplary of our IL-2 based CUE-100 series, we have generated data that demonstrated that IL-2 may be selectively and tolerably delivered to the tumor-specific T cells relevant for anti-tumor immunity. Our approach enables a therapeutic index for IL-2 to be achieved, opening the possibility of deploying our platform to treat a variety of cancers both hematologic and solid.
- The expanded patient reach and enhanced therapeutic benefit we have observed to date in our Phase 1 combination trial with KEYTRUDA support our underlying premise that our CUE-100 series complements the mechanism of checkpoint blockade by activating and increasing the targeted T cell population directly in the patient's body. We believe this supportive and foundational data enhances the attractiveness of CUE-101 for further development through registrational trial.
- We continue to develop supportive clinical data demonstrating the clinical activity of CUE-102 as a monotherapy and holding promise for enabling market penetration and expansion for CPI that, to date, have not been successful with approval in the majority of cancers overexpressing WT-1.

Seek strategic partnerships and collaborations for our programs outside of oncology

- As a result of our growing body of supportive data and our focus of resources on corporate prioritization, we believe we are well positioned for strategic alignment with potential corporate partners to provide further capital support of our clinical programs through registration and marketing, if approved. Beyond the IL-2-based CUE-100 series for addressing a broad range of cancers, we also have a pipeline of drug product candidates and programs designed to address significant unmet medical needs for treating serious, life-threatening indications, such as autoimmune disease. CUE-401 is a bispecific protein, specifically designed for the treatment of autoimmune and inflammatory diseases. We presently have an ongoing strategic collaboration and option agreement with Ono to develop CUE-401 towards potential selection of a drug product candidate for clinical development and potential co-development and co-commercialization within the United States. Importantly, the partnership with Ono

represents value potential for our shareholders as CUE-401 has the potential to treat numerous autoimmune diseases.

Our License Agreement with Einstein

On January 14, 2015, or the Effective Date, we entered into a license agreement, as amended and restated on July 31, 2017 and as amended on October 30, 2018, or the Einstein License, with Albert Einstein College of Medicine, or Einstein, for certain patent rights, or the Patents, relating to our core technology platform for the engineering of biologics to control T cell activity, precision, immune-modulatory drug product candidates, and two supporting technologies that enable the discovery of costimulatory signaling molecules (ligands) and T cell targeting peptides. We hold an exclusive worldwide license, with the right to sublicense, import, make, have made, use, provide, offer to sell, and sell all products, processes and services that use the Patents, including certain technology received from Einstein related thereto, which we refer to as the Licensed Products.

The Einstein License is a royalty-bearing license obligating us to pay a percentage of proceeds received from sales of categories of Licensed Products at low single digit rates. We have also agreed to share a portion of our proceeds that we derive from other agreements, like sublicense agreements, that we may enter into relating to the Licensed Products. The percentage of such proceeds that we are required to pay Einstein ranges from the low to mid-teens, depending on how far we have developed a Licensed Product before we enter into an agreement relating to the Licensed Product. These percentages are reduced for sales of Licensed Products in countries where a competing product exists and for products or services involving the use or incorporation of technology received from Einstein relating to synapse for targeted T cell activation molecules, receptor ligand identification or platforms for T cell monitoring. In addition to our obligation to pay royalties based upon a percentage of proceeds from sales of Licensed Products, we have also agreed to pay Einstein annual maintenance fees. The maintenance payments are creditable against any royalty payments we pay under the Einstein License. For the year ended December 31, 2023, there were no payments related to Einstein license maintenance fees under the Einstein License, as they were creditable against actual payments owed to Einstein during the twelve-month period.

Under the Einstein License, we are also obligated to make milestone payments corresponding to: (i) approval of the first IND by the FDA or foreign equivalent for a Licensed Product; (ii) approval of any subsequent IND application or foreign equivalent for a “new indication” for a Licensed Product; (iii) initiation of Phase 2 clinical trials or foreign equivalent on a Licensed Product; (iv) initiation of Phase 2 clinical trials or foreign equivalent for a “new indication” for a Licensed Product; (v) initiation of Phase 3 clinical trials or foreign equivalent on a Licensed Product; (vi) initiation of Phase 3 clinical trials or foreign equivalent for a “new indication” for a Licensed Product; (vii) the first commercial sale of a Licensed Product; (viii) the first commercial sale of each “new indication” for one of our previously approved Licensed Products; and (ix) cumulative sales of certain Licensed Products reaching certain threshold amounts. The aggregate amount of milestone payments made under the Einstein License may equal up to \$1.85 million for each Licensed Product and up to \$1.85 million for each new indication of a Licensed Product. Additionally, the aggregate amount of one-time milestone payments based on cumulative sales of all Licensed Products may equal up to \$5.75 million. At December 31, 2023, we have made payments totaling \$1,233,000 since inception with respect to achievement of these milestones.

In addition to our obligations to make the cash payments to Einstein described above, under the Einstein License we issued Einstein 671,572 shares of our Common Stock immediately prior to completion of the initial public offering of our common stock completed on December 27, 2017.

The Einstein License expires upon the expiration of our last obligation to make royalty payments to Einstein, unless terminated earlier under the provisions thereof. Under the Einstein License, we will be obligated to make royalty payments to Einstein, with respect to certain Licensed Products, for the longer of 15 years from the first sale of such products in each country or for the duration of any market exclusivity period granted by a regulatory agency for such product and, with respect to certain Licensed Products sold by sublicensees, the longer of 10 years from the first sale of such products in each country or for so long as the sublicensee agrees to pay royalties on such products. We have the right to terminate the Einstein License at any time upon 60 days’ written notice to Einstein; provided, however, that we will lose intellectual property rights related to the Patents if we choose to terminate the Einstein License in this manner. Each party has the right to terminate the Einstein License if the other party is in default or breach of any condition of the Einstein License with a right to cure any such breach within 60 days from receipt of notice of such default or breach, unless the other party has disputed the alleged breach in good faith. Either party can also terminate the Einstein License if the other party voluntarily files for bankruptcy or other similar insolvency proceedings, makes a general assignment for the benefit of creditors, or is the subject of an involuntary bankruptcy petition that is not dismissed within 90 days. If we fail to pay any sum that is due and payable to Einstein within 30 days after receiving written notice of our default from Einstein, then Einstein has the option of terminating the Einstein License unless we pay within 45 days of such notice all delinquent sums with interest.

Einstein may also terminate the Einstein License in the event we are convicted of certain felonies relating to the manufacture or use of Licensed Products.

The Einstein License also obligates us to meet certain due diligence requirements, or the Diligence Milestones, as follows:

- update our research and development plan annually;
- initiate Phase 1 clinical trials on a Licensed Product within a number of years from the Effective Date;
- initiate Phase 2 clinical trials on a Licensed Product within a number of years from the Effective Date;
- initiate Phase 3 clinical trials on a Licensed Product within a number of years from the Effective Date;
- submit an application for FDA approval to market and sell a Licensed Product within a number of years from the Effective Date;
- have our first commercial sale of an FDA Licensed Product within a number of years from the Effective Date; and
- spend a minimum amount per year on product development until our first commercial sale of a Licensed Product.

If we fail to meet any of the Diligence Milestones, Einstein will have the right to terminate the Einstein License if such Diligence Milestone is not satisfied within thirty days from receiving a written notice of default from Einstein. Under certain circumstances and upon prior notice to Einstein, we may have the right to an additional extension of our Diligence Milestones if, despite our commercially reasonable efforts we are not able to satisfy the Phase 3 clinical trial Diligence Milestone or any subsequent Diligence Milestone. As of the date of this report, we have met all required Diligence Milestones.

Our Collaboration Agreement with LG Chem

Effective November 6, 2018, we entered into a Collaboration, License and Option Agreement, or the LG Chem Collaboration Agreement, with LG Chem Ltd., or LG Chem, related to the development of Immuno-STATs focused in the field of oncology.

Pursuant to the LG Chem Collaboration Agreement, we granted LG Chem an exclusive license to develop, manufacture and commercialize our lead product, CUE-101, as well as Immuno-STATs that target T-cells against two additional cancer antigens, or Drug Product Candidates, in Australia, Japan, Republic of Korea, Singapore, Malaysia, Vietnam, Thailand, Philippines, Indonesia, China (including Macau and Hong Kong) and Taiwan, which we refer to collectively as the LG Chem Territory. We retain rights to develop and commercialize all assets included in the LG Chem Collaboration Agreement in the United States and in global markets outside of the LG Chem Territory. Under the LG Chem Collaboration Agreement, we will engineer the selected Immuno-STATs for up to three alleles, which are expected to include the predominant alleles in the LG Chem Territory, thereby enhancing our market reach by providing for greater patient coverage of populations in global markets, while LG Chem will establish a chemistry, manufacturing and controls, or CMC, process for the development and commercialization of selected Drug Product Candidates. In addition, LG Chem has the option to select one additional Immuno-STAT for an oncology target, or an Additional Immuno-STAT, for an exclusive worldwide development and commercialization license. On December 18, 2019, we and LG Chem entered into a global license and collaboration agreement, which was amended on November 5, 2020. We refer to such agreement, as amended, as the Global License and Collaboration Agreement. The Global License and Collaboration Agreement supersedes the provisions of the LG Chem Agreement related to LG Chem's option for an Additional Immuno-STAT which agreement provided for effectiveness if and when LG Chem exercised its option, other than certain select provisions including the length of the option period and representations, warranties and covenants of the parties. On April 30, 2021, LG Chem's option pursuant to the Global License and Collaboration Agreement expired. We will retain an option to co-develop and co-commercialize the additional program worldwide.

Under the terms of the LG Chem Collaboration Agreement, LG Chem paid us a \$5.0 million non-refundable, non-creditable upfront payment and purchased approximately \$5.0 million of shares of our common stock at a price per share equal to a 20% premium to the volume weighted-average closing price per share over the 30 trading day period immediately prior to the effective date of the LG Chem Collaboration Agreement. We are also eligible to receive additional aggregate payments of approximately \$400 million if certain research, development, regulatory and commercial milestones are successfully achieved. On May 16, 2019, we earned a \$2.5 million milestone payment for the FDA's acceptance of the IND for our lead drug product candidate, CUE-101, pursuant to the LG Chem Collaboration Agreement. On December 7, 2020, we earned a \$1.25 million milestone payment on the selection of a preclinical candidate pursuant to the LG Chem Collaboration Agreement. On November 23, 2021, we earned a \$3.0 million milestone payment on the confirmation of Collaboration Product candidate. In

addition, the LG Chem Collaboration Agreement also provides that LG Chem will pay us tiered single-digit royalties on net sales of commercialized Product Candidates, or Collaboration Products, in the LG Chem Territory on a product-by-product and country-by-country basis, until the later of expiration of patent rights in a country, the expiration of regulatory exclusivity in such country, or ten years after the first commercial sale of a Collaboration Product in such country, subject to certain royalty step-down provisions set forth in the LG Chem Collaboration Agreement. In addition, the LG Chem Collaboration Agreement also provides that LG Chem will pay us tiered single-digit royalties on net sales of commercialized Drug Product Candidates, or Collaboration Products, in the LG Chem Territory on a product-by-product and country-by-country basis, until the later of expiration of patent rights in a country, the expiration of regulatory exclusivity in such country, or ten years after the first commercial sale of a Collaboration Product in such country, subject to certain royalty step-down provisions set forth in the LG Chem Collaboration Agreement.

Pursuant to the LG Chem Collaboration Agreement, the parties will share research costs related to Collaboration Products, and LG Chem will provide CMC process development for selected Drug Product Candidates and potentially additional downstream manufacturing capabilities, including clinical and commercial supply for Collaboration Products. In return for performing CMC process development, LG Chem is eligible to receive low-single digit percentage royalty payments on the sales of Collaboration Products sold in all countries outside the LG Chem Territory. As of December 31, 2023, we recorded approximately \$19.9 million in collaboration revenue related to this agreement since inception. The majority of the research phase of the LG Chem Collaboration Agreement was substantially complete on March 31, 2022.

The LG Chem Collaboration Agreement includes various representations, warranties, covenants, indemnities and other customary provisions. LG Chem may terminate the LG Chem Collaboration Agreement for convenience or a change of control of us on a program-by-program, product-by-product or country-by-country basis, or in its entirety, at any time following the notice period set forth in the LG Chem Collaboration Agreement. Either party may terminate the LG Chem Collaboration Agreement, in its entirety or on a program-by-program, product-by-product or country-by-country basis, in the event of an uncured material breach. The LG Chem Collaboration Agreement is also terminable by either party (i) upon the bankruptcy, insolvency or liquidation of the other party or (ii) for certain activities involving the challenge of certain patents controlled by the other party. Unless earlier terminated, the LG Chem Collaboration Agreement will expire on a product-by-product and country-by-country basis upon the expiration of the applicable royalty term.

To date, LG Chem has selected one additional cancer antigen, WT1, which is the focus of the CUE-102 research program. We are currently developing two Collaboration Products with LG Chem pursuant to the LG Chem Collaboration Agreement.

Our Collaboration Agreement with Ono

On February 22, 2023, we entered into the Ono Collaboration and Option Agreement, with Ono to further develop CUE-401 and provide dedicated resources and capabilities to help advance CUE-401 toward the clinic. Under the terms of the Ono Collaboration and Option Agreement, Ono paid us an upfront payment and agreed to fully fund all research activities related to CUE-401 through a specified option period. During this option period, we will be responsible for the research and development of CUE-401. Upon Ono's exercise of its option to license CUE-401, we will receive an option exercise payment and be eligible for development and commercial milestone payments up to an aggregate of approximately \$220 million, as well as tiered royalties on sales. Upon any such exercise, Ono will receive worldwide rights to develop and commercialize CUE-401, with us retaining a 50% co-development and co-commercialization right in the United States. Our decision to elect the co-development and co-commercialization option may be made within 30 days of Ono's option exercise to license CUE-401. The amount paid by Ono to us for the option exercise and future milestone payments will vary based upon our decision to exercise the co-development and co-commercialization option.

Under the terms of the Ono Collaboration and Option Agreement, we will perform research activities related to CUE-401 through a specified option period of 24 months, or the Research Term. During this Research Term, we will be responsible for the execution of scientific investigation, nonclinical, preclinical, and clinical drug research and development activities designed to progress CUE-401 toward a potential IND and regulatory approval, collectively referred to as R&D. Ono is responsible for the funding of R&D activities performed by us. Per the Ono Collaboration and Option Agreement, as consideration for the R&D activities performed by us, Ono (i) made a one-time, non-refundable, non-creditable upfront payment of \$3.0 million to us and (ii) will reimburse us for all costs incurred in conducting research, including (a) pass through costs from third party contractors and (b) full time employee salaries capped at \$2.1 million in the first 18 months of the Research Term. The term of the Ono Collaboration and Option Agreement extends until the expiration of the Research Term, which cannot exceed a 24-month period. We have forecasted that we will be able to complete the R&D activities within the

first 18 months of the Research Term based on the initial research and development plans we have established. We received the \$3.0 million upfront payment in March 2023.

Aside from the \$3.0 million upfront payment and funding related to pass through costs, we do not believe that any variable consideration should be included in the transaction price as of December 31, 2023. Such assessment considered the application of the constraint to ensure that estimates of variable consideration would be included in the transaction price only to the extent we have a high degree of confidence that revenue would not be reversed in a subsequent reporting period. We will re-evaluate the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as other changes in circumstances occur. As of December 31, 2023, we recognized revenue of approximately \$5.2 million related to the Ono Collaboration and Option Agreement and recorded short-term research and development liabilities of approximately \$2.1 million on our balance sheet.

Our Intellectual Property

We believe that our current patents and patent applications and any future patents and other proprietary rights that we own, or control through licensing, are and will be essential to our business. We believe that these intellectual property rights will affect our ability to compete effectively with others. We also rely and will rely on trade secrets, know-how, continuing technological innovations and licensing opportunities to develop, maintain and strengthen our competitive position. We seek to protect these, in part, through confidentiality agreements with certain employees, consultants, advisors and other parties. Our success will depend in part on our ability, and the ability of our licensors, to obtain, maintain (including making periodic filings and payments) and enforce patent protection for our/their intellectual property, including those patents and patent applications to which we have secured exclusive rights.

As of December 31, 2023, we owned or had licensed 94 issued patents (including 17 issued U.S. patents), 75 pending patent applications in the United States (including 6 pending U.S. provisional patent applications), 9 pending international PCT applications and 268 pending foreign patent applications. Our patent applications describe certain features of our technologies, including our Immuno-STAT platform, our Neo-STAT platform, CAR-T and ex-vivo applications of our Immuno-STAT platform, our RDI-STAT platform, our CUE-300 Series platform, including CUE-301, our CUE-400 Series platform, including CUE-401, as well as specific biologic molecules, drug product candidates and methods of treatment using our Immuno-STATs. We plan to spend considerable resources and focus in the future on obtaining U.S. and foreign patents. We have and will continue to actively protect our intellectual property. No assurances can be given that any of our patent applications will result in the issuance of a patent or that the examination process will not require us to narrow our claims. In addition, any issued patents may be contested, circumvented, found unenforceable or invalid, and we may not be able to successfully enforce our patent rights against third parties. No assurance can be given that others will not independently develop a similar or competing technology or design around any patents that may be issued to us. We intend to expand our international operations in the future and our patent portfolio, copyright, trademark and trade secret protections may not be available or may be limited in foreign countries.

Each of our patents, if and when granted, will generally have a term of 20 years from its respective U.S. or international non-provisional priority filing date, subject to available extensions. They are thus set to expire no earlier than dates ranging from 2033 to 2042, although patents that specifically cover our drug product candidates will expire no earlier than December 2037, subject to available extensions.

Competition

While we believe that our drug product candidates, technology, knowledge and experience provide us with significant competitive advantages, we face competition from established and emerging pharmaceutical and biotechnology companies, academic institutions, governmental agencies and public and private research institutions, among others, who may have drug product candidates in further stages of development than ours.

Oncology Competition

We compete with other companies working to develop cytokines as cancer immunotherapies, as well as those developing other immunotherapeutic modalities, including monoclonal antibodies, bi-specific antibodies, antibody-drug conjugates, cell therapies, oncolytic viruses, and vaccines with application in treating patients living with cancer. Potential competitors in the cytokine-based therapy space include Asher Bio, Aulos Bio, BioNTech SE, Medicenna Therapeutics, Moderna, Inc., Mural Oncology, Roche Holding AG, Synthekine, Werewolf Therapeutics, and Xilio Therapeutics. In the cell therapy space, potential competitors include Adaptimmune Therapeutics, Bristol-Myers Squibb, Iovance Biotherapeutics, Gilead Sciences, Janssen Pharmaceuticals, and Novartis AG. In the CPI space, potential competitors include AstraZeneca, Bristol-Myers Squibb, Merck & Co., and Roche Holding AG.

We believe that our approach provides us with a competitive advantage through selective delivery of immune activating signals, coupling engineered cytokines (i.e., IL-2) to a targeting moiety (i.e., peptide-MHC complex) for enhanced activation of cancer-specific CD8+ T cells.

Autoimmune Competition

We compete with other companies working to develop cytokines to restore immune balance, as well as those developing other therapeutic modalities, including monoclonal antibodies, bi-specific antibodies, cell therapies, and vaccines with application in treating patients living with autoimmune disease. Potential competitors in the cytokine-based therapy space include Amgen, Bristol-Myers Squibb, Merck & Co., Nektar Therapeutics, and Sanofi S.A. In the regulatory T cell therapies space, potential competitors include Abata Therapeutics, Coya Therapeutics, Quell Therapeutics, Sangamo Therapeutics, and Sonoma Biotherapeutics.

Many of our competitors have greater financial, technical and human resources than we do. Additionally, many competitors have greater experience in product discovery and development, obtaining FDA and other regulatory approvals, and commercialization capabilities, which may provide them with a competitive advantage.

We expect any drug product candidate that we commercialize, either independently or with our strategic partners, will compete with existing, market-leading products and believe that our ability to compete will depend on our ability to execute on the following objectives:

- design, develop and commercialize products that are superior to other products in the market in terms of, among other things, safety, efficacy, convenience, or price;
- obtain patent and/or other proprietary protection for our processes and drug product candidates;
- obtain required regulatory approvals;
- obtain favorable reimbursement, formulary and guideline status; and
- collaborate with others in the design, development and commercialization of our products.

Established competitors may invest heavily to discover and develop novel compounds that could make our drug product candidates obsolete. In addition, any new product that competes with an approved product must demonstrate compelling advantages in efficacy, convenience, tolerability and/or safety in order to obtain approval, to overcome price competition and to be commercially successful. If we are not able to compete effectively, our business will not grow and our financial condition and operations will suffer.

Government Regulation and Licensure of Products

Government authorities in the United States, at the federal, state and local level, and in other countries and jurisdictions, including the European Union, extensively regulate, among other things, the research, development, testing, manufacture, pricing, reimbursement, sales, quality control, approval, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting, and import and export of pharmaceutical products, including biological products. The processes for obtaining marketing approvals in the United States and in foreign countries and jurisdictions, along with subsequent compliance with applicable statutes and regulations and other regulatory authorities, require the expenditure of substantial time and financial resources.

Licensure and Regulation of Biologics in the United States

In the United States, our drug product candidates are regulated as biological products, or biologics, under the Public Health Service Act, or the PHSA, and the Federal Food, Drug and Cosmetic Act, or the FDCA, and its implementing regulations and guidance. A company, institution, or organization which takes responsibility for the initiation and management of a clinical development program for such products, and for their regulatory approval, is typically referred to as a sponsor. The failure to comply with the applicable U.S. requirements at any time during the product development process, including non-clinical testing, clinical testing, the approval process or post-approval process, may subject a sponsor to delays in the conduct of the study, regulatory review and approval, and/or administrative or judicial sanctions. A sponsor seeking approval to market and distribute a new biologic in the United States generally must satisfactorily complete each of the following steps:

- preclinical laboratory tests, animal studies and formulation studies all performed in accordance with the FDA's

Good Laboratory Practice, or GLP, regulations and standards and other applicable regulations;

- completion of the manufacture, under current Good Manufacturing Practices, or GMP, conditions, of the drug substance and drug product that the sponsor intends to use in human clinical trials along with required analytical and stability testing;
- design of a clinical protocol and submission to the FDA of an investigational new drug application, or IND, application for human clinical testing, which must become effective before human clinical trials may begin;
- approval by an independent institutional review board, or IRB, representing each clinical site before each clinical trial may be initiated;
- performance of adequate and well-controlled human clinical trials to establish the safety, potency, and purity of the product candidate for each proposed indication, in accordance with current Good Clinical Practices, or GCP;
- preparation and submission to the FDA of a Biologic License Application, or BLA, for a biologic product requesting marketing for one or more proposed indications, including submission of detailed information on the manufacture and composition of the product in clinical development and proposed labelling;
- review of the product by an FDA advisory committee, where appropriate or if applicable;
- satisfactory completion of one or more FDA inspections of the manufacturing facility or facilities, including those of third parties, at which the product, or components thereof, are produced to assess compliance with GMP requirements and to assure that the chemistry, methods, and controls, or CMC, for the product are adequate to preserve the product's identity, strength, quality, and purity, and, if applicable, the FDA's current good tissue practice for the use of human cellular and tissue products;
- satisfactory completion of any FDA audits of the non-clinical and clinical trial sites to assure compliance with GCPs and the integrity of clinical data in support of the BLA;
- payment of user Prescription Drug User Fee Act, or PDUFA, securing FDA approval of the BLA and licensure of the new biologic product; and
- compliance with any post-approval requirements, including the potential requirement to implement a Risk Evaluation and Mitigation Strategy, or REMS, and any post-approval studies required by the FDA.

Preclinical Studies

Before testing any biologic product candidate in humans, a product candidate must undergo preclinical testing. Preclinical tests include laboratory evaluations of product chemistry, formulation and stability, as well as studies to evaluate the potential for efficacy and toxicity in animal studies. These studies are generally referred to as IND-enabling studies. The conduct of the preclinical tests and formulation of the compounds for testing must comply with federal regulations and requirements, including GLP regulations and standards and the United States Department of Agriculture's Animal Welfare Act, if applicable. The results of the preclinical tests, together with manufacturing information and analytical data, are submitted to the FDA as part of an IND application.

The IND Process

An IND is an exemption from the FDCA that allows an unapproved product candidate to be shipped in interstate commerce for use in an investigational clinical trial and a request for FDA authorization to administer such investigational product to humans. The IND automatically becomes effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions about the product or conduct of the proposed clinical trial, including concerns that human research subjects will be exposed to unreasonable health risks. In that case, the IND sponsor and the FDA must resolve any outstanding FDA concerns before the clinical trials can begin or recommence.

As a result, submission of the IND may result in the FDA not allowing the trials to commence or allowing the trial to commence on the terms originally specified by the sponsor in the IND. If the FDA raises concerns or questions either during this initial 30-day period or following commencement of the clinical trial, it may choose to impose a partial or complete clinical hold. Clinical holds are imposed by the FDA whenever there is concern for patient safety and may be a result of new data, findings, or

developments in clinical, nonclinical, and/or CMC. This order issued by the FDA would delay either a proposed clinical study or cause suspension of an ongoing study, until all outstanding concerns have been adequately addressed and the FDA has notified the company that investigations may proceed. This could cause significant delays or difficulties in completing planned clinical studies in a timely manner.

Expanded Access to an Investigational Drug for Treatment Use

Expanded access, sometimes called “compassionate use,” is the use of investigational products outside of clinical trials to treat patients with serious or immediately life-threatening diseases or conditions when there are no comparable or satisfactory alternative treatment options. The rules and regulations related to expanded access are intended to improve access to investigational products for patients who may benefit from investigational therapies. FDA regulations allow access to investigational products under an IND by the company or the treating physician for treatment purposes on a case-by-case basis for: individual patients (single-patient IND applications for treatment in emergency settings and non-emergency settings); intermediate-size patient populations; and larger populations for use of the investigational product under a treatment protocol or treatment IND application.

When considering an IND application for expanded access to an investigational product with the purpose of treating a patient or a group of patients, the sponsor and treating physicians or investigators will determine suitability when all of the following criteria apply: patient(s) have a serious or immediately life-threatening disease or condition, and there is no comparable or satisfactory alternative therapy to diagnose, monitor, or treat the disease or condition; the potential patient benefit justifies the potential risks of the treatment and the potential risks are not unreasonable in the context or condition to be treated; and the expanded use of the investigational drug for the requested treatment will not interfere initiation, conduct, or completion of clinical investigations that could support marketing approval of the product or otherwise compromise the potential development of the product.

There is no obligation for a sponsor to make its drug products available for expanded access; however, as required by the 21st Century Cures Act, or the Cures Act, passed in 2016, if a sponsor has a policy regarding how it responds to expanded access requests, it must make that policy publicly available. Although these requirements were rolled out over time, they have now come into full effect. Sponsors are required to make such policies publicly available upon the earlier of initiation of a Phase 2 or Phase 3 study; or 15 days after the investigational drug or biologic receives designation as a breakthrough therapy, fast track product, or regenerative medicine advanced therapy.

In addition, on May 30, 2018, the Right to Try Act was signed into law. The law, among other things, provides a federal framework for certain patients to access certain investigational products that have completed a Phase 1 clinical trial and that are undergoing investigation for FDA approval. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA permission under the FDA expanded access program. There is no obligation for a manufacturer to make its investigational products available to eligible patients as a result of the Right to Try Act.

Human Clinical Trials in Support of a BLA

Clinical trials involve the administration of the investigational product candidate to healthy volunteers or patients with the disease to be treated under the supervision of a qualified principal investigator in accordance with GCP requirements. Clinical trials are conducted under study protocols detailing, among other things, the objectives of the study, inclusion and exclusion criteria, the parameters to be used in monitoring safety, and the effectiveness criteria to be evaluated. A protocol for each clinical trial and any subsequent protocol amendments must be submitted to the FDA as part of the IND.

Further, each clinical trial must be reviewed and approved by an IRB either centrally or individually at each institution at which the clinical trial will be conducted. The IRB will consider, among other things, clinical trial design, patient informed consent, ethical factors, the safety of human subjects, and the possible liability of the institution. An IRB must operate in compliance with FDA regulations. The FDA, IRB, or the clinical trial sponsor may suspend or discontinue a clinical trial at any time for various reasons, including a finding that the clinical trial is not being conducted in accordance with FDA requirements or the subjects or patients are being exposed to an unacceptable health risk. Clinical testing also must satisfy extensive GCP rules and the requirements for informed consent.

Additionally, some clinical trials are overseen by an independent group of qualified experts organized by the clinical trial sponsor, known as a data safety monitoring board, or DSMB, or data monitoring committee, or DMC. This group may recommend continuation of the study as planned, changes in study conduct, or cessation of the study at designated check points based on certain available data from the study to which only the DSMB or DMC has access. Finally, research activities involving infectious agents, hazardous chemicals, recombinant DNA, and genetically altered organisms and agents may be subject to review and approval of an Institutional Biosafety Committee in accordance with U.S. National Institutes of Health, or NIH, Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules.

Clinical trials typically are conducted in three sequential phases, but the phases may overlap or be combined. Additional studies may be required after approval.

- *Phase 1* clinical trials are initially conducted in a limited population to test the product candidate for safety, including adverse effects, dose tolerance, absorption, metabolism, distribution, excretion, and pharmacodynamics in healthy humans or, on occasion, in patients, such as cancer patients.
- *Phase 2* clinical trials are generally conducted in a limited patient population to identify possible adverse effects and safety risks, evaluate the efficacy of the product candidate for specific targeted indications and determine dose tolerance and optimal dosage. Multiple Phase 2 clinical trials may be conducted by the sponsor to obtain information prior to beginning larger and more costly Phase 3 clinical trials.
- *Phase 3* clinical trials proceed if the Phase 2 clinical trials demonstrate that a dose range of the product candidate is potentially effective and has an acceptable safety profile. Phase 3 clinical trials are undertaken within an expanded patient population to further evaluate dosage, provide substantial evidence of clinical efficacy, and further test for safety in an expanded and diverse patient population at multiple, geographically dispersed clinical trial sites. A well-controlled, statistically robust Phase 3 trial may be designed to deliver the data that regulatory authorities will use to decide whether or not to approve, and, if approved, how to appropriately label a biologic; such Phase 3 studies are referred to as “pivotal.”

In some cases, the FDA may approve a BLA for a product candidate but require the sponsor to conduct additional clinical trials to further assess the product candidate’s safety and effectiveness after approval. Such trials are typically referred to as post-approval clinical trials. These studies are used to gain additional experience from the treatment of patients in the intended therapeutic indication and to document a clinical benefit in the case of biologics approved under accelerated approval regulations. If the FDA approves a product while a company has ongoing clinical trials that were not necessary for approval, a company may be able to use the data from these clinical trials to meet all or part of any post-approval clinical trial requirement or to request a change in the product labeling. Failure to exhibit due diligence with regard to conducting post-approval clinical trials could result in withdrawal of approval for products.

A clinical trial may combine the elements of more than one phase and the FDA often requires more than one Phase 3 trial to support marketing approval of a product candidate. A company’s designation of a clinical trial as being of a particular phase is not necessarily indicative that the study will be sufficient to satisfy the FDA requirements of that phase because this determination cannot be made until the protocol and data have been submitted to and reviewed by the FDA. Generally, pivotal trials are Phase 3 trials, but they may be Phase 2 trials if the design provides a well-controlled and reliable assessment of clinical benefit, particularly in an area of unmet medical need.

In March 2022, the FDA released final guidance entitled “Expansion Cohorts: Use in First-In-Human Clinical Trials to Expedite Development of Oncology Drugs and Biologics,” which outlines how developers can utilize an adaptive trial design commonly referred to as a seamless trial design in early stages of oncology biological product development (i.e., the first-in-human clinical trial) to compress the traditional three phases of trials into one continuous trial called an expansion cohort trial. Information to support the design of individual expansion cohorts are included in IND applications and assessed by the FDA. Expansion cohort trials can potentially bring efficiency to product development and reduce developmental costs and time.

In December 2022, with the passage of the Food and Drug Omnibus Reform Act, or FDORA, Congress required sponsors to develop and submit a diversity action plan for each Phase 3 clinical trial or any other “pivotal study” of a new drug or biological product. These plans are meant to encourage the enrollment of more diverse patient populations in late-stage clinical trials of FDA-regulated products. Specifically, action plans must include the sponsor’s goals for enrollment, the underlying rationale for those goals, and an explanation of how the sponsor intends to meet them. In addition to these

requirements, the legislation directs the FDA to issue new guidance on diversity action plans. In January 2024, the FDA issued draft guidance setting out its policies for the collection of race and ethnicity data in clinical trials.

In June 2023, the FDA issued draft guidance with updated recommendations for GCPs aimed at modernizing the design and conduct of clinical trials. The updates are intended to help pave the way for more efficient clinical trials to facilitate the development of medical products. The draft guidance is adopted from the International Council for Harmonisation's, or ICH's, recently updated E6(R3) draft guideline that was developed to enable the incorporation of rapidly developing technological and methodological innovations into the clinical trial enterprise. In addition, the FDA issued draft guidance outlining recommendations for the implementation of decentralized clinical trials.

Finally, sponsors of clinical trials are required to register and disclose certain clinical trial information on a public registry (clinicaltrials.gov) maintained by the NIH. In particular, information related to the product, patient population, phase of investigation, study sites and investigators and other aspects of the clinical trial is made public as part of the registration of the clinical trial. Although the FDA has historically not enforced these reporting requirements due to the U.S. Department of Health and Human Services', or HHS's, long delay in issuing final implementing regulations, those regulations have now been issued and the FDA has issued several pre-notices for voluntary corrective action and several notices of non-compliance during the past two years. While these notices of non-compliance did not result in civil monetary penalties, the failure to submit clinical trial information to clinicaltrials.gov, as required, is a prohibited act under the FDCA with violations subject to potential civil monetary penalties of up to \$10,000 for each day the violation continues.

Clinical Studies Outside the United States in Support of FDA Approval

In connection with our clinical development program, we may conduct trials at sites outside the United States. When a foreign clinical study is conducted under an IND, all IND requirements must be met unless waived. When a foreign clinical study is not conducted under an IND, the sponsor must ensure that the study complies with certain regulatory requirements of the FDA in order to use the study as support for an IND or application for marketing approval. Specifically, the studies must be conducted in accordance with GCP, including undergoing review and receiving approval by an independent ethics committee, or IEC, and seeking and receiving informed consent from subjects. GCP requirements encompass both ethical and data integrity standards for clinical studies. The FDA's regulations are intended to help ensure the protection of human subjects enrolled in non-IND foreign clinical studies, as well as the quality and integrity of the resulting data. They further help ensure that non-IND foreign studies are conducted in a manner comparable to that required for IND studies.

The acceptance by the FDA of study data from clinical trials conducted outside the United States in support of US approval may be subject to certain conditions or may not be accepted at all. In cases where data from foreign clinical trials are intended to serve as the sole basis for marketing approval in the U.S., the FDA will generally not approve the application on the basis of foreign data alone unless (i) the data are applicable to the U.S. population and U.S. medical practice; (ii) the trials were performed by clinical investigators of recognized competence and pursuant to GCP regulations; and (iii) the data may be considered valid without the need for an on-site inspection by the FDA, or if the FDA considers such inspection to be necessary, the FDA is able to validate the data through an on-site inspection or other appropriate means.

In addition, even where the foreign study data are not intended to serve as the sole basis for approval, the FDA will not accept the data as support for an application for marketing approval unless the study is well-designed and well-conducted in accordance with GCP requirements and the FDA is able to validate the data from the study through an onsite inspection if deemed necessary. Many foreign regulatory authorities have similar approval requirements. In addition, such foreign trials are subject to the applicable local laws of the foreign jurisdictions where the trials are conducted.

Interactions with FDA During the Clinical Development Program

Following the clearance of an IND and the commencement of clinical trials, the sponsor will continue to have interactions with the FDA. Progress reports detailing the results of clinical trials must be submitted annually within 60 days of the anniversary dates that the IND went into effect and more frequently if serious adverse events occur. These reports must include a development safety update report, or DSUR. In addition, IND safety reports must be submitted to the FDA for any of the following: serious and unexpected suspected adverse reactions; findings from other trials or animal or *in vitro* testing that suggest a significant risk in humans exposed to the product; and any clinically important increase in the occurrence of a serious suspected adverse reaction over that listed in the protocol or investigator brochure.

In addition, sponsors are given opportunities to meet with the FDA at certain points in the clinical development program. Meetings at other times may also be requested. There are five types of meetings that occur between sponsors and the

FDA. Type A meetings are those that are necessary for an otherwise stalled product development program to proceed or to address an important safety issue. Type B meetings include pre-IND and pre-BLA meetings, as well as end of phase meetings such as EOP2 meetings. A Type C meeting is any meeting other than a Type A or Type B meeting regarding the development and review of a product, including for example meetings to facilitate early consultations on the use of a biomarker as a new surrogate endpoint that has never been previously used as the primary basis for product approval in the proposed context of use. A Type D meeting is focused on a narrow set of issues, which should be limited to no more than two focused topics and should not require input from more than three disciplines or divisions. Finally, INTERACT meetings are intended for novel products and development programs that present unique challenges in the early development of an investigational product. The FDA has indicated that its responses, as conveyed in meeting minutes and advice letters, only constitute mere recommendations and/or advice made to a sponsor and, as such, sponsors are not bound by such recommendations and/or advice. Nonetheless, from a practical perspective, a sponsor's failure to follow the FDA's recommendations for design of a clinical program may put the program at significant risk of failure.

Pediatric Studies

Under the Pediatric Research Equity Act of 2003, or PREA, a BLA or supplement thereto must contain data that are adequate to assess the safety, potency and purity of the product for the claimed indications in all relevant pediatric subpopulations, and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. Sponsors must also submit pediatric study plans prior to the assessment data. Those plans must contain an outline of the proposed pediatric study or studies the sponsor plans to conduct, including study objectives and design, any deferral or waiver requests, and other information required by regulation. The sponsor, the FDA, and the FDA's internal review committee must then review the information submitted, consult with each other, and agree upon a final plan. The FDA or the sponsor may request an amendment to the plan at any time. In May 2023, the FDA issued new draft guidance that further describes the pediatric study requirements under PREA.

For products intended to treat a serious or life-threatening disease or condition, the FDA must, upon the request of a sponsor, meet to discuss preparation of the initial pediatric study plan or to discuss deferral or waiver of pediatric assessments. In addition, FDA will meet early in the development process to discuss pediatric study plans with sponsors and FDA must meet with sponsors by no later than the end-of-phase 1 meeting for serious or life-threatening diseases and by no later than 90 days after FDA's receipt of the study plan.

The FDA may, on its own initiative or at the request of the sponsor, grant deferrals for submission of some or all pediatric data until after approval of the product for use in adults, or full or partial waivers from the pediatric data requirements. A deferral may be granted for several reasons, including a finding that the product or therapeutic candidate is ready for approval for use in adults before pediatric trials are complete or that additional safety or effectiveness data needs to be collected before the pediatric trials begin. The FDA is required to send a PREA Non-Compliance letter to sponsors who have failed to submit their pediatric assessments required under PREA, have failed to seek or obtain a deferral or deferral extension or have failed to request approval for a required pediatric formulation. Unless otherwise required by regulation, the pediatric data requirements do not apply to products with orphan designation, although the FDA has taken steps to limit what it considers abuse of this statutory exemption in PREA.

Compliance with GMP Requirements

The FDA's regulations require that pharmaceutical products be manufactured in specific approved facilities and in accordance with GMPs. The GMP regulations include requirements relating to organization of personnel, buildings and facilities, equipment, control of components and product containers and closures, production and process controls, packaging and labeling controls, holding and distribution, laboratory controls, records and reports and returned or salvaged products. Manufacturers and others involved in the manufacture and distribution of products must also register their establishments with the FDA and certain state agencies. Both domestic and foreign manufacturing establishments must register and provide additional information to the FDA upon their initial participation in the manufacturing process.

Any product manufactured by or imported from a facility that has not registered, whether foreign or domestic, is deemed misbranded under the FDCA. The PREVENT Pandemics Act, which was enacted in December 2022, clarifies that foreign drug manufacturing establishments are subject to registration and listing requirements even if a drug or biologic undergoes further manufacture, preparation, propagation, compounding, or processing at a separate establishment outside the United States prior to being imported or offered for import into the United States. Establishments may be subject to periodic unannounced inspections by government authorities to ensure compliance with GMPs and other laws. Inspections must follow a "risk-based schedule" that may result in certain establishments being inspected more frequently. Manufacturers may also have to provide, on request, electronic or physical records regarding their establishments. Delaying, denying, limiting, or refusing inspection by the FDA may lead to a product being deemed to be adulterated.

Changes to the manufacturing process, specifications or container closure system for an approved product are strictly regulated and often require prior FDA approval before being implemented. The FDA's regulations also require, among other things, the investigation and correction of any deviations from GMP and the imposition of reporting and documentation requirements upon the sponsor and any third-party manufacturers involved in producing the approved product.

Submission and Filing for Review of a BLA

The results of product candidate development, preclinical testing, and clinical trials, including negative or ambiguous results as well as positive findings, are submitted to the FDA as part of a BLA requesting a license to market the product. The BLA must contain extensive manufacturing information and detailed information on the composition of the product and proposed labeling as well as payment of a user fee. Under federal law, the submission of most BLAs is subject to an application user fee, which for federal fiscal year 2024 is \$4,048,695 for an application requiring clinical data. The sponsor of a licensed BLA is also subject to an annual program fee, which for federal fiscal year 2024 is \$416,734. Certain exceptions and waivers are available for some of these fees, such as an exception from the application fee for products with orphan designation and a waiver for certain small businesses.

The FDA conducts a preliminary review of all applications within 60 days of receipt and must inform the sponsor at that time or before whether an application is sufficiently complete to permit substantive review. In the event that the FDA determines that an application does not satisfy this standard, it will issue a Refuse to File, or RTF, determination to the sponsor. The FDA may request additional information and studies, and the application must be resubmitted with the additional information. The resubmitted application is subject to review before the FDA accepts it for filing.

Once the submission has been accepted for filing, the FDA begins an in-depth review of the application. Under the goals and policies agreed to by the FDA under the PDUFA, the FDA has ten months in which to complete its initial review of a standard application and respond to the sponsor, and six months for a priority review of the application. The FDA does not always meet its PDUFA goal dates for standard and priority BLAs. The review process may often be significantly extended by FDA requests for additional information or clarification. The review process and the PDUFA goal date may be extended by three months if the FDA requests or if the sponsor otherwise provides additional information or clarification regarding information already provided in the submission within the last three months before the PDUFA goal date.

In connection with its review of an application, the FDA will typically submit information requests to the applicant and set deadlines for responses thereto. The FDA will also inspect the facility or facilities where the product is or will be manufactured. These pre-approval inspections may cover all facilities associated with a submission, including component manufacturing, finished product manufacturing and control testing laboratories. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with current GMP requirements and adequate to assure consistent production of the product within required specifications. Additionally, before approving an application, the FDA will typically inspect one or more clinical sites to assure compliance with GCP and the integrity of the data submitted in support of the application. With passage of FDORA, Congress clarified FDA's authority to conduct inspections by expressly permitting inspection of facilities involved in the preparation, conduct, or analysis of clinical and non-clinical studies submitted to FDA as well as other persons holding study records or involved in the study process.

The FDA may also refer the application to an advisory committee for review, evaluation, and recommendation as to whether the application should be approved. In particular, the FDA may refer applications for novel biologic products or biologic products that present difficult questions of safety or efficacy to an advisory committee. Typically, an advisory committee is a panel of independent experts, including clinicians and other scientific experts, that reviews, evaluates, and provides a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

Decisions on BLAs

After evaluating the application and all related information, including the advisory committee recommendations, if any, and inspection reports of manufacturing facilities and clinical trial sites, the FDA will issue either a Complete Response Letter, or CRL, or an approval letter. To reach this determination, the FDA must determine whether there is substantial evidence that the product is effective and that expected benefits of the proposed product outweigh its potential risks to patients. This assessment is informed by the severity of the underlying condition and how well patients' medical needs are addressed by currently available therapies; uncertainty about how the premarket clinical trial evidence will extrapolate to real-world use of the product in the post-market setting; and whether risk management tools are necessary to manage specific risks.

If the application is not approved, the FDA will issue a CRL, which will contain the conditions that must be met in order to secure final approval of the application, and, when possible, will outline recommended actions the sponsor might take to obtain approval of the application. Sponsors that receive a CRL may submit to the FDA information that represents a complete response to the issues identified by the FDA. Such resubmissions are classified under PDUFA as either Class 1 or

Class 2. The classification of a resubmission is based on the information submitted by a sponsor in response to an action letter. Under the goals and policies agreed to by the FDA under PDUFA, the FDA has two months to review a Class 1 resubmission and six months to review a Class 2 resubmission. The FDA will not approve an application until issues identified in the complete response letter have been addressed. For those seeking to challenge FDA's CRL decision, the agency has indicated that sponsors may request a formal hearing on the CRL or they may file a request for reconsideration or a request for a formal dispute resolution.

An approval letter, on the other hand, authorizes commercial marketing of the product with specific prescribing information for specific indications.

The FDA may limit the approved indications for use of the product. It may also require that contraindications, warnings or precautions be included in the product labeling. In addition, the FDA may call for post-approval studies, including post-approval clinical trials, to further assess the product's safety after approval. The agency may also require testing and surveillance programs to monitor the product after commercialization, or impose other conditions, including distribution restrictions or other risk management mechanisms, including REMS, to help ensure that the benefits of the product outweigh the potential risks. REMS can include medication guides, communication plans for healthcare professionals, and elements to assure safe use, or ETASU. ETASU can include, but are not limited to, special training or certification for prescribing or dispensing, dispensing only under certain circumstances, special monitoring, and the use of patent registries.

The FDA may prevent or limit further marketing of a product based on the results of post-approval studies or surveillance programs. After approval, many types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further testing requirements and FDA review and approval.

Expedited Review Programs

The FDA is authorized to expedite the review of applications in several ways. Under the Fast Track program, the sponsor of a product candidate may request the FDA to designate the product for a specific indication as a Fast Track product concurrent with or after the filing of the IND. Product candidates are eligible for Fast Track designation if they are intended to treat a serious or life-threatening condition and demonstrate the potential to address unmet medical needs for the condition. Fast Track designation applies to the combination of the product candidate and the specific indication for which it is being studied. In addition to other benefits, such as the ability to have greater interactions with the FDA, the FDA may initiate review of sections of a Fast Track application before the application is complete, a process known as rolling review.

Any product candidate submitted to the FDA for marketing, including under a Fast Track program, may be eligible for other types of FDA programs intended to expedite development and review, such as breakthrough therapy designation, priority review and accelerated approval.

- *Breakthrough therapy designation.* To qualify for the breakthrough therapy program, product candidates must be intended to treat a serious or life-threatening disease or condition and preliminary clinical evidence must indicate that such product candidates may demonstrate substantial improvement on one or more clinically significant endpoints over existing therapies. The FDA will seek to ensure the sponsor of a breakthrough therapy product candidate receives intensive guidance on an efficient development program, intensive involvement of senior managers and experienced staff on a proactive, collaborative and cross-disciplinary review and rolling review.
- *Priority review.* A product candidate is eligible for priority review if it treats a serious condition and, if approved, it would be a significant improvement in the safety or effectiveness of the treatment, diagnosis or prevention compared to marketed products. FDA aims to complete its review of priority review applications within six months as opposed to 10 months for standard review.
- *Accelerated approval.* Biologic products studied for their safety and effectiveness in treating serious or life-threatening illnesses and that provide meaningful therapeutic benefit over existing treatments may receive accelerated approval. Accelerated approval means that a product candidate may be approved on the basis of adequate and well controlled clinical trials establishing that the product candidate has an effect on a surrogate endpoint that is reasonably likely to predict a clinical benefit, or on the basis of an effect on a clinical endpoint other than survival or irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity and prevalence of the condition and the availability or lack of alternative treatments. As a condition of approval, the FDA may require that a sponsor of a biologic product candidate receiving accelerated approval

perform adequate and well controlled post-marketing clinical trials. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials.

With passage of FDORA, in December 2022, Congress modified certain provisions governing accelerated approval of drug and biologic products. Specifically, the new legislation authorized the FDA to: require a sponsor to have its confirmatory clinical trial underway before accelerated approval is awarded; require a sponsor of a product granted accelerated approval to submit progress reports on its post-approval studies to FDA every six months (until the study is completed); and use expedited procedures to withdraw accelerated approval of a new drug application, or NDA, or BLA after the confirmatory trial fails to verify the product's clinical benefit. Further, FDORA requires the agency to publish on its website "the rationale for why a post-approval study is not appropriate or necessary" whenever it decides not to require such a study upon granting accelerated approval.

In March 2023, the FDA issued draft guidance that outlines its current thinking and approach to accelerated approval. The agency indicated that the accelerated approval pathway is commonly used for approval of oncology drugs due to the serious and life-threatening nature of cancer. Although single-arm trials have been commonly used to support accelerated approval, a randomized controlled trial is the preferred approach as it provides a more robust efficacy and safety assessment and allows for direct comparisons to an available therapy. To that end, the FDA outlined considerations for designing, conducting, and analyzing data for trials intended to support accelerated approvals of oncology therapeutics. While this guidance is currently only in draft form and will ultimately not be legally binding even when finalized, sponsors typically observe the FDA's guidance closely to ensure that their investigational products qualify for accelerated approval.

- *Regenerative advanced therapy.* With passage of the Cures Act in December 2016, Congress authorized the FDA to accelerate review and approval of products designated as regenerative advanced therapies. A product is eligible for this designation if it is a regenerative medicine therapy that is intended to treat, modify, reverse or cure a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the product candidate has the potential to address unmet medical needs for such disease or condition. The benefits of a regenerative advanced therapy designation include early interactions with the FDA to expedite development and review, benefits available to breakthrough therapies, potential eligibility for priority review and accelerated approval based on surrogate or intermediate endpoints.

None of these expedited programs changes the standards for approval but each may help expedite the development or approval process governing product candidates.

Project Optimus

Project Optimus is an initiative of the Oncology Center of Excellence, or OCE, at the FDA. This project focuses on dose optimization and dose selection in oncology drug development, and whether the current paradigm based on cytotoxic chemotherapeutics leads to doses and schedules of molecularly targeted therapies that provide more toxicity without additional efficacy, among other things. In Project Optimus, drug developers have the opportunity to meet with the FDA's Oncology Review Divisions early in their development programs, well before conducting trials intended for registration, to discuss dose-finding and dose optimization. The program thus allows sponsors to develop strategies for dose finding and dose optimization that leverages nonclinical and clinical data in dose selection, including randomized evaluations of a range of doses in trials, with the objective of performing these studies as early as possible in the development program to bring promising new therapies to patients.

Real-Time Oncology Review of Supplemental NDAs

Through its OCE, the FDA has established two pilot programs allowing for real-time review of supplemental applications for previously approved oncology products. This approach will allow FDA to evaluate clinical data as soon as the results of a clinical trial become available with the objective of reviewing and approving a new indication soon after a sponsor files the application. The first of these pilot programs, Real-Time Oncology Review, or RTOR, focuses on early submission of data that are the most relevant to assessing the product's safety and effectiveness. RTOR allows the FDA to review much of the data earlier, after the clinical trial results become available and the database is locked, but before the information is formally submitted to the agency.

The FDA has established several criteria to determine whether a supplemental application may be selected for RTOR. Those criteria include whether: the investigational product is likely to demonstrate substantial improvements over available therapy; the study design is straight forward, as determined by the review division and the OCE; the endpoints can be easily interpreted. Applications with chemistry, manufacturing and control formulation changes and supplements with

pharmacology/toxicology data are excluded from RTOR. In addition, submissions with greater complexity, including those with companion diagnostics, may also be excluded for the purposes of the pilot program. On the basis of these criteria, the appropriate FDA review division and OCE management will jointly decide whether the application can be selected for the RTOR pilot program.

If the FDA determines that RTOR is an appropriate review pathway, the sponsor can send pre-submission data to the agency under the original application two to four weeks after all patient data have been entered and locked in the database, and the sponsor is ready to request FDA approval. The package should also include key raw and derived datasets, including safety/efficacy tables and figures, study protocol and amendments, and a draft of the package insert. The sponsor must also submit key results, analysis, and datasets for other disciplines, if applicable. The FDA will then evaluate these materials for sufficiency and integrity so that it can analyze the data to properly address key regulatory questions. By the time the sponsor submits the application to the FDA, the review team will have completed the analysis and be familiar with the data, and can conduct a more efficient, timely, and thorough review.

Post-Approval Regulation

If regulatory approval for marketing of a product or new indication for an existing product is obtained, the sponsor will be required to comply with all regular post-approval regulatory requirements as well as any post-approval requirements that the FDA have imposed as part of the approval process. The sponsor will be required to report certain adverse reactions and production problems to the FDA, provide updated safety and efficacy information and comply with requirements concerning advertising and promotional labeling requirements. Manufacturers and certain of their subcontractors are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with ongoing regulatory requirements, including GMP regulations, which impose certain procedural and documentation requirements upon manufacturers. Accordingly, the sponsor and its third-party manufacturers must continue to expend time, money, and effort in the areas of production and quality control to maintain compliance with GMP regulations and other regulatory requirements.

A product may also be subject to official lot release, meaning that the manufacturer is required to perform certain tests on each lot of the product before it is released for distribution. If the product is subject to official lot release, the manufacturer must submit samples of each lot, together with a release protocol showing a summary of the history of manufacture of the lot and the results of all of the manufacturer's tests performed on the lot, to the FDA. The FDA may in addition perform certain confirmatory tests on lots of some products before releasing the lots for distribution. Finally, the FDA will conduct laboratory research related to the safety, purity, potency, and effectiveness of pharmaceutical products.

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical trials to assess new safety risks; or imposition of distribution or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical trials;
- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of product license approvals;
- product seizure or detention, or refusal to permit the import or export of products; or
- injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates marketing, labeling, advertising and promotion of products that are placed on the market. Pharmaceutical products may be promoted only for the approved indications and in accordance with the provisions of the approved label. Promotional claims about a drug's safety or effectiveness are prohibited before the drug is approved. Although health care providers may prescribe products for off-label uses in their professional judgment, drug manufacturers are prohibited from soliciting, encouraging or promoting unapproved uses of a product. 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 liability. In September 2021, the FDA published final regulations which describe the types of evidence that the agency will consider in determining the intended use of a biologic.

If a company is found to have promoted off-label uses, it may become subject to adverse public relations and administrative and judicial enforcement by the FDA, the U.S. Department of Justice, or the Office of the Inspector General of the Department of the HHS, as well as state authorities. This could subject a company to a range of penalties that could have a significant commercial impact, including civil and criminal fines and agreements that materially restrict the manner in which a company promotes or distributes drug products. The federal government has levied large civil and criminal fines against companies for alleged improper promotion and has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed.

It may be permissible, under very specific, narrow conditions, for a manufacturer to engage in nonpromotional, non-misleading communication regarding off-label information, such as distributing scientific or medical journal information. Moreover, with passage of the Pre-Approval Information Exchange Act in December 2022, sponsors of products that have not been approved may proactively communicate to payors certain information about products in development to help expedite patient access upon product approval. Previously, such communications were permitted under FDA guidance but the new legislation explicitly provides protection to sponsors who convey certain information about products in development to payors, including unapproved uses of approved products. In addition, in October 2023, the FDA published draft guidance outlining the agency's non-binding policies governing the distribution of scientific information on unapproved uses to healthcare providers. This draft guidance calls for such communications to be truthful, non-misleading, factual, and unbiased and include all information necessary for healthcare providers to interpret the strengths and weaknesses and validity and utility of the information about the unapproved use.

In addition, the distribution of prescription pharmaceutical products is subject to a variety of federal and state laws. The Prescription Drug Marketing Act, or PDMA, was the first federal law to set minimum standards for the registration and regulation of drug distributors by the states and to regulate the distribution of drug samples. Both the PDMA and state laws limit the distribution of prescription pharmaceutical product samples and impose requirements to ensure accountability in distribution. In November 2013, the federal Drug Supply Chain Security Act, or DSCSA, became effective in the United States, mandating an industry-wide, electronic, interoperable system to trace prescription drugs through the pharmaceutical distribution supply chain with a ten-year phase-in process. Manufacturers were required by November 2023 to have such systems and processes in place but, in August 2023, the FDA set a one-year period in which it would exercise its enforcement discretion with respect to these requirements.

Orphan Drug Designation and Exclusivity

Orphan drug designation in the United States is designed to encourage sponsors to develop products intended for rare diseases or conditions. In the United States, a rare disease or condition is statutorily defined as a condition that affects fewer than 200,000 individuals in the United States or that affects more than 200,000 individuals in the United States and for which there is no reasonable expectation that the cost of developing and making available the biologic for the disease or condition will be recovered from sales of the product in the United States.

Orphan drug designation qualifies a company for tax credits and market exclusivity for seven years following the date of the product's marketing approval if granted by the FDA. An application for designation as an orphan product can be made any time prior to the filing of an application for approval to market the product. A product becomes an orphan when it receives orphan drug designation from the Office of Orphan Products Development at the FDA based on acceptable confidential requests made under the regulatory provisions. The product must then go through the review and approval process like any other product.

A sponsor may request orphan drug designation of a previously unapproved product or new orphan indication for an already marketed product. In addition, a sponsor of a product that is otherwise the same product as an already approved orphan drug may seek and obtain orphan drug designation for the subsequent product for the same rare disease or condition if it can present a plausible hypothesis that its product may be clinically superior to the first drug. More than one sponsor may receive orphan drug designation for the same product for the same rare disease or condition, but each sponsor seeking orphan drug designation must file a complete request for designation.

If a product with orphan designation receives the first FDA approval for the disease or condition for which it has such designation or for a select indication or use within the rare disease or condition for which it was designated, the product

generally will receive orphan drug exclusivity. Orphan drug exclusivity means that the FDA may not approve another sponsor's marketing application for the same product for the same indication for seven years, except in certain limited circumstances. If a product designated as an orphan drug ultimately receives marketing approval for an indication broader than what was designated in its orphan drug application, it may not be entitled to exclusivity.

The period of exclusivity begins on the date that the marketing application is approved by the FDA. Orphan drug exclusivity will not bar approval of another product under certain circumstances, including if the company with orphan drug exclusivity is not able to meet market demand or the subsequent product is shown to be clinically superior to the approved product on the basis of greater efficacy or safety, or providing a major contribution to patient care. Under Omnibus legislation signed by the then President of the United States on December 27, 2020, the requirement for a product to show clinical superiority applies to drug products that received orphan drug designation before enactment of amendments to the FDCA in 2017 but have not yet been approved by FDA.

In September 2021, the Court of Appeals for the 11th Circuit held that, for the purpose of determining the scope of market exclusivity, the term "same disease or condition" in the statute means the designated "rare disease or condition" and could not be interpreted by the FDA to mean the "indication or use." Thus, the court concluded, orphan drug exclusivity applies to the entire designated disease or condition rather than the "indication or use." Although there have been legislative proposals to overrule this decision, they have not been enacted into law. On January 23, 2023, FDA announced that, in matters beyond the scope of that court order, FDA will continue to apply its existing regulations tying orphan-drug exclusivity to the uses or indications for which the orphan drug was approved.

Pediatric Exclusivity

Pediatric exclusivity is another type of non-patent marketing exclusivity in the United States and, if granted, provides for the attachment of an additional six months of regulatory exclusivity to the term of any existing regulatory exclusivity, including orphan exclusivity, for biologic products. This six-month exclusivity may be granted if a BLA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The data do not need to show the product to be effective in the pediatric population studied; rather, if the clinical trial is deemed to fairly respond to the FDA's request, the additional protection is granted. If reports of requested pediatric studies are submitted to and accepted by the FDA within the statutory time limits, whatever statutory or regulatory periods of exclusivity or patent protection cover the product are extended by six months. This is not a patent term extension, but it effectively extends the regulatory period during which the FDA cannot approve another application.

Biosimilars and Exclusivity

The 2010 Patient Protection and Affordable Care Act, which was signed into law in March 2010, included a subtitle called the Biologics Price Competition and Innovation Act of 2009, or the BPCIA. The BPCIA established a regulatory scheme authorizing the FDA to approve biosimilars and interchangeable biosimilars. A biosimilar is a biological product that is highly similar to an existing FDA-licensed "reference product." To date, the FDA has licensed a number of biosimilar products and several interchangeable biosimilar products.

Under the BPCIA, a manufacturer may submit an application for licensure of a biologic product that is "biosimilar to" or "interchangeable with" a previously approved biological product or "reference product." In order for the FDA to approve a biosimilar product, it must find that there are no clinically meaningful differences between the reference product and proposed biosimilar product in terms of safety, purity, and potency. For the FDA to approve a biosimilar product as interchangeable with a reference product, the agency must find that the biosimilar product can be expected to produce the same clinical results as the reference product, and (for products administered multiple times) that the biologic and the reference biologic may be switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic. In December 2022, Congress clarified through FDORA that FDA may approve multiple first interchangeable biosimilar biological products so long as the products are all approved on the first day on which such a product is approved as interchangeable with the reference product.

An application for a biosimilar product may not be submitted to the FDA until four years following the date of approval of the reference product. The FDA may not approve a biosimilar product until 12 years from the date on which the reference product was approved. Even if a product is considered to be a reference product eligible for exclusivity, another company could market a competing version of that product if the FDA approves a full BLA for such product containing the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity, and potency of their product. The BPCIA also created certain exclusivity periods for biosimilars approved as interchangeable

products. There have been recent government proposals to reduce the 12-year reference product exclusivity period, but none has been enacted to date. At the same time, since passage of the BPCIA, many states have passed laws or amendments to laws, which address pharmacy practices involving biosimilar products.

Patent Term Restoration and Extension

A patent claiming a new biologic product, its method of use or its method of manufacture may be eligible for a limited patent term extension under the Hatch-Waxman Act, which permits a patent restoration of up to five years for patent term lost during product development and FDA regulatory review. The restoration period granted on a patent covering a product is typically one-half the time between the effective date of the IND clearing the clinical investigation involving human beings and the submission date of an application, plus the time between the submission date of an application and the ultimate approval date. Patent term restoration cannot be used to extend the remaining term of a patent past a total of 14 years from the product's approval date. Only one patent applicable to an approved product is eligible for the extension, and the application for the extension must be submitted prior to the expiration of the patent in question. A patent that covers multiple products for which approval is sought can only be extended in connection with one of the approvals. The U.S. Patent and Trademark Office reviews and approves the application for any patent term extension or restoration in consultation with the FDA.

FDA Approval of Companion Diagnostics

In August 2014, the FDA issued final guidance clarifying the requirements that will apply to approval of therapeutic products and *in vitro* companion diagnostics. According to the guidance, for novel drugs, a companion diagnostic device and its corresponding therapeutic should be approved or cleared contemporaneously by the FDA for the use indicated in the therapeutic product's labeling. Approval or clearance of the companion diagnostic device will ensure that the device has been adequately evaluated and has adequate performance characteristics in the intended population. In July 2016, the FDA issued a draft guidance intended to assist sponsors of the drug therapeutic and *in vitro* companion diagnostic device on issues related to co-development of the products.

The 2014 guidance also explains that a companion diagnostic device used to make treatment decisions in clinical trials of a biologic product candidate generally will be considered an investigational device, unless it is employed for an intended use for which the device is already approved or cleared. If used to make critical treatment decisions, such as patient selection, the diagnostic device generally will be considered a significant risk device under the FDA's Investigational Device Exemption, or IDE, regulations. Thus, the sponsor of the diagnostic device will be required to comply with the IDE regulations. According to the guidance, if a diagnostic device and a product are to be studied together to support their respective approvals, both products can be studied in the same investigational study, if the study meets both the requirements of the IDE regulations and the IND regulations. The guidance provides that depending on the details of the study plan and subjects, a sponsor may seek to submit an IND alone, or both an IND and an IDE.

In April 2020, the FDA issued additional guidance which describes considerations for the development and labeling of companion diagnostic devices to support the indicated uses of multiple biological oncology products, when appropriate. The 2020 guidance expands on the policy statement in the 2014 guidance by recommending that companion diagnostic developers consider a number of factors when determining whether their test could be developed, or the labeling for approved companion diagnostics could be revised through a supplement, to support a broader labeling claim such as use with a specific group of oncology therapeutic products (rather than listing an individual therapeutic product(s)).

Under the FDCA, *in vitro* diagnostics, including companion diagnostics, are regulated as medical devices. In the United States, the FDCA and its implementing regulations, and other federal and state statutes and regulations govern, among other things, medical device design and development, preclinical and clinical testing, premarket clearance or approval, registration and listing, manufacturing, labeling, storage, advertising and promotion, sales and distribution, export and import, and post-market surveillance. Unless an exemption applies, diagnostic tests require marketing clearance or approval from the FDA prior to commercial distribution.

The FDA previously has required *in vitro* companion diagnostics intended to select the patients who will respond to the product candidate to obtain pre-market approval, or PMA, simultaneously with approval of the therapeutic product candidate. The PMA process, including the gathering of clinical and preclinical data and the submission to and review by the FDA, can take several years or longer. It involves a rigorous premarket review during which the sponsor must prepare and provide the FDA with reasonable assurance of the device's safety and effectiveness and information about the device and its components regarding, among other things, device design, manufacturing and labeling. PMA applications are subject to an application fee. For federal fiscal year 2024, the standard fee is \$483,560 and the small business fee is \$120,890.

A clinical trial is typically required for a PMA application and, in a small percentage of cases, the FDA may require a clinical study in support of a 510(k) submission. A manufacturer that wishes to conduct a clinical study involving the device is subject to the FDA's IDE regulation. The IDE regulation distinguishes between significant and non-significant risk device studies and the procedures for obtaining approval to begin the study differ accordingly. Also, some types of studies are exempt from the IDE regulations. A significant risk device presents a potential for serious risk to the health, safety, or welfare of a subject. Significant risk devices are devices that are substantially important in diagnosing, curing, mitigating, or treating disease or in preventing impairment to human health. Studies of devices that pose a significant risk require both FDA and an IRB approval prior to initiation of a clinical study. Non-significant risk devices are devices that do not pose a significant risk to the human subjects. A non-significant risk device study requires only IRB approval prior to initiation of a clinical study.

After a device is placed on the market, it remains subject to significant regulatory requirements. Medical devices may be marketed only for the uses and indications for which they are cleared or approved. Device manufacturers must also establish registration and device listings with the FDA. A medical device manufacturer's manufacturing processes and those of its suppliers are required to comply with the applicable portions of the Quality System Regulation, which covers the methods and documentation of the design, testing, production, processes, controls, quality assurance, labeling, packaging and shipping of medical devices. Domestic facility records and manufacturing processes are subject to periodic unscheduled inspections by the FDA. The FDA also may inspect foreign facilities that export products to the United States.

Federal and State Data Privacy and Security Laws

Under the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, HHS has issued regulations to protect the privacy and security of protected health information used or disclosed by covered entities including certain healthcare providers, health plans, and healthcare clearinghouses. HIPAA also regulates standardization of data content, codes, and formats used in healthcare transactions and standardization of identifiers for health plans and providers. HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and their regulations, including the omnibus final rule published on January 25, 2013, also imposes certain obligations on the business associates of covered entities that obtain protected health information in providing services to or on behalf of covered entities. In addition to federal privacy regulations, there are a number of state laws governing confidentiality and security of health information that are applicable to our business. In addition to possible federal civil and criminal penalties for HIPAA violations, state attorneys general are authorized to file civil actions for damages or injunctions in federal courts to enforce HIPAA and seek attorney's fees and costs associated with pursuing federal civil actions. Accordingly, state attorneys general (along with private plaintiffs) have brought civil actions seeking injunctions and damages resulting from alleged violations of HIPAA's privacy and security rules. New laws and regulations governing privacy and security may be adopted in the future as well.

Additionally, California recently enacted legislation that has been dubbed the first "GDPR-like" law in the United States. Known as the California Consumer Privacy Act, or CCPA, it creates new individual privacy rights for consumers (as that word is broadly defined in the law) and places increased privacy and security obligations on entities handling personal data of consumers or households. The CCPA went into effect on January 1, 2020 and requires covered companies to provide new disclosures to California consumers, provide such consumers new ways to opt-out of certain sales of personal information, and allow for a new cause of action for data breaches. The CCPA could impact our business activities depending on how it is interpreted and exemplifies the vulnerability of our business to not only cyber threats but also the evolving regulatory environment related to personal data and protected health information.

In November 2020, California voters passed a ballot initiative for the California Privacy Rights Act, or CPRA, which went into effect on January 1, 2023, and significantly expanded the CCPA to incorporate additional GDPR-like provisions including requiring that the use, retention, and sharing of personal information of California residents be reasonably necessary and proportionate to the purposes of collection or processing, granting additional protections for sensitive personal information, and requiring greater disclosures related to notice to residents regarding retention of information. The CPRA also created a new enforcement agency – the California Privacy Protection Agency – whose sole responsibility is to enforce the CPRA, which will further increase compliance risk. The provisions in the CPRA may apply to some of our business activities.

In addition to California, eleven other states have passed comprehensive privacy laws similar to the CCPA and CPRA. These laws are either in effect or will go into effect sometime before the end of 2026. Like the CCPA and CPRA, these laws create obligations related to the processing of personal information, as well as special obligations for the processing of "sensitive" data, which includes health data in some cases. Some of the provisions of these laws may apply to our business activities. There are also states that are strongly considering or have already passed comprehensive privacy laws during the 2024 legislative sessions that will go into effect in 2025 and beyond. Other states will be considering similar laws in the future, and Congress has also been debating passing a federal privacy law. There are also states that are specifically regulating health information that may affect our business. For example, the State of Washington passed the My Health My Data Act in 2023 which specifically regulated health information that is not otherwise regulated by the HIPAA rules, and the law also has a private right of action, which further increases the relevant compliance risk. Connecticut and Nevada have also passed similar laws regulating consumer health data, and more states are considering such legislation in 2024. These laws may impact our business activities, including our identification of research subjects, relationships with business partners and ultimately the marketing and distribution of our products.

Regulation and Procedures Governing Approval of Medicinal Products in the European Union

In order to market any product outside of the United States, a company must also comply with numerous and varying regulatory requirements of other countries and jurisdictions regarding quality, safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of products. Whether or not it obtains FDA approval for a product, a sponsor will need to obtain the necessary approvals by the comparable foreign regulatory authorities before it can commence clinical trials or marketing of the product in those countries or jurisdictions. Specifically, the process governing approval of medicinal products in the European Union, or EU, generally follows the same lines as in the United States. It entails satisfactory completion of preclinical studies and adequate and well-controlled clinical trials to establish the safety and efficacy of the product for each proposed indication. It also requires the submission to the relevant competent authorities of a marketing authorization application, or MAA, and granting of a marketing authorization by these authorities before the product can be marketed and sold in the EU.

Non-clinical Studies

Non-clinical studies are performed to demonstrate the health or environmental safety of new chemical or biological substances. Non-clinical (pharmaco-toxicological) studies must be conducted in compliance with the principles of good laboratory practice, or GLP, as set forth in EU Directive 2004/10/EC (unless otherwise justified for certain particular medicinal products – e.g., radio-pharmaceutical precursors for radio-labeling purposes). In particular, non-clinical studies, both in vitro and in vivo, must be planned, performed, monitored, recorded, reported and archived in accordance with the GLP principles, which define a set of rules and criteria for a quality system for the organizational process and the conditions for non-clinical studies. These GLP standards reflect the Organization for Economic Co-operation and Development requirements.

Clinical Trial Approval

On January 31, 2022, the new Clinical Trials Regulation (EU) No 536/2014, or CTR, became effective in the European Union and replaced the prior Clinical Trials Directive 2001/20/EC. The new regulation aims at simplifying and streamlining the authorization, conduct and transparency of clinical trials in the EU. Under the new coordinated procedure for the approval of clinical trials, the sponsor of a clinical trial to be conducted in more than one Member State of the European Union, or EU Member State, will only be required to submit a single application for approval. The submission will be made through the Clinical Trials Information System, a new clinical trials portal overseen by the European Medicines Agency, or EMA, and available to clinical trial sponsors, competent authorities of the EU Member States and the public.

The main characteristics of the regulation include: a streamlined application procedure via a single entry point, the “EU Portal and Database”; a single set of documents to be prepared and submitted for the application as well as simplified reporting procedures for clinical trial sponsors; and a harmonized procedure for the assessment of applications for clinical trials, which is divided in two parts. Part I is assessed by the appointed reporting Member State, whose assessment report is submitted for review by the sponsor and all other competent authorities of all EU Member States in which an application for authorization of a clinical trial has been submitted, or concerned member states. Part II is assessed separately by each concerned member state. Strict deadlines have been established for the assessment of clinical trial applications. The role of the relevant ethics committees in the assessment procedure will continue to be governed by the national law of the concerned member state. However, overall related timelines will be defined by the Clinical Trials Regulation.

The new regulation did not change the preexisting requirement that a sponsor must obtain prior approval from the competent national authority of the EU Member State in which the clinical trial is to be conducted. If the clinical trial is conducted in different EU Member States, the competent authorities in each of these EU Member States must provide their approval for the conduct of the clinical trial. Furthermore, the sponsor may only start a clinical trial at a specific study site after the applicable ethics committee has issued a favorable opinion.

The CTR foresees a three-year transition period. The extent to which ongoing and new clinical trials will be governed by the CTR varies. Clinical trials for which an application was submitted (i) prior to January 31, 2022 under the Clinical Trials Directive, or (ii) between January 31, 2022 and January 31, 2023 and for which the sponsor has opted for the application of the Clinical Trials Directive remain governed by said Directive until January 31, 2025. After this date, all clinical trials (including those which are ongoing) will become subject to the provisions of the CTR.

Parties conducting certain clinical trials must, as in the United States, post clinical trial information in the European Union at the EU Clinical Trials Registry.

PRIME Designation

In March 2016, the EMA, launched an initiative to facilitate development of drug product candidates in indications, often rare, for which few or no therapies currently exist. The PRiority Medicines, or PRIME, scheme is intended to encourage drug development in areas of unmet medical need and provides accelerated assessment of products representing substantial innovation reviewed under the centralized procedure. Products from small- and medium-sized enterprises may qualify for earlier entry into the PRIME scheme than larger companies. Many benefits accrue to sponsors of drug product candidates with PRIME designation, including but not limited to, early and proactive regulatory dialogue with the EMA, frequent discussions on clinical trial designs and other development program elements, and accelerated marketing authorization application assessment once a dossier has been submitted. Importantly, a dedicated EMA contact and rapporteur from the Committee for Human Medicinal Products, or CHMP, or Committee for Advanced Therapies are appointed early in the PRIME scheme facilitating increased understanding of the product at the EMA's Committee level. A kick-off meeting initiates these relationships and includes a team of multidisciplinary experts at the EMA to provide guidance on the overall development and regulatory strategies.

Pediatric Studies

Sponsors developing a new medicinal product must agree upon a Pediatric Investigation Plan, or PIP, with the EMA's pediatric committee, or PDCO, and must conduct pediatric clinical trials in accordance with that PIP, unless a waiver applies (e.g., because the relevant disease or condition occurs only in adults). The PIP sets out the timing and measures proposed to generate data to support a pediatric indication of the drug for which marketing authorization is being sought. The marketing authorization application for the product must include the results of pediatric clinical trials conducted in accordance with the PIP, unless a waiver applies, or a deferral has been granted by the PDCO of the obligation to implement some or all of the measures of the PIP until there are sufficient data to demonstrate the efficacy and safety of the product in adults, in which case the pediatric clinical trials must be completed at a later date.

Marketing Authorization

To obtain a marketing authorization for a product under the EU regulatory system, a sponsor must submit an MAA, either under a centralized procedure administered by the EMA or one of the procedures administered by competent authorities in EU Member States (decentralized procedure, national procedure, or mutual recognition procedure). A marketing authorization may be granted only to a sponsor established in the European Union. Regulation (EC) No 1901/2006 provides that prior to obtaining a marketing authorization in the European Union, a sponsor must demonstrate compliance with all measures included in an EMA-approved Pediatric Investigation Plan, or PIP, covering all subsets of the pediatric population, unless the EMA has granted a product-specific waiver, class waiver, or a deferral for one or more of the measures included in the PIP.

The centralized procedure provides for the grant of a single marketing authorization by the European Commission that is valid for all EU Member States. Pursuant to Regulation (EC) No. 726/2004, the centralized procedure is compulsory for specific products, including for medicines produced by certain biotechnological processes, products designated as orphan medicinal products, advanced therapy products and products with a new active substance indicated for the treatment of certain diseases, including products for the treatment of cancer. For products with a new active substance indicated for the treatment of other diseases and products that are highly innovative or for which a centralized process is in the interest of patients, the centralized procedure may be optional. Manufacturers must demonstrate the quality, safety, and efficacy of their products to the EMA, which provides an opinion regarding the MAA. The European Commission grants or refuses marketing authorization in light of the opinion delivered by the EMA.

Under the centralized procedure, the CHMP established at the EMA is responsible for conducting an initial assessment of a product. Under the centralized procedure in the EU, the maximum timeframe for the evaluation of an MAA is 210 days, excluding clock stops when additional information or written or oral explanation is to be provided by the sponsor in response to questions of the CHMP. Accelerated evaluation may be granted by the CHMP in exceptional cases, when a medicinal product is of major interest from the point of view of public health and, in particular, from the viewpoint of therapeutic innovation. If the CHMP accepts such a request, the time limit of 210 days will be reduced to 150 days, but it is possible that the CHMP may revert to the standard time limit for the centralized procedure if it determines that it is no longer appropriate to conduct an accelerated assessment.

Conditional Approval

In particular circumstances, EU legislation (Article 14—a Regulation (EC) No 726/2004 (as amended by Regulation (EU) 2019/5 and Regulation (EC) No 507/2006 on Conditional Marketing Authorizations for Medicinal Products for Human Use) enables sponsors to obtain a “conditional marketing authorization” prior to obtaining the comprehensive clinical data required for an application for a full marketing authorization. Such conditional approvals may be granted for product candidates (including medicines designated as orphan medicinal products) if (1) the product candidate is intended for the treatment, prevention or medical diagnosis of seriously debilitating or life-threatening diseases; (2) the product candidate is intended to meet unmet medical needs of patients; (3) a marketing authorization may be granted prior to submission of comprehensive clinical data provided that the benefit of the immediate availability on the market of the medicinal product concerned outweighs the risk inherent in the fact that additional data are still required; (4) the risk-benefit balance of the product candidate is positive; and (5) it is likely that the sponsor will be in a position to provide the required comprehensive clinical trial data. A conditional marketing authorization may contain specific obligations to be fulfilled by the marketing authorization holder, including obligations with respect to the completion of ongoing or new clinical trials and with respect to the collection of pharmacovigilance data. Conditional marketing authorizations are valid for one year, and may be renewed annually, if the risk-benefit balance remains positive, and after an assessment of the need for additional or modified conditions or specific obligations. The timelines for the centralized procedure described above also apply with respect to the review by the CHMP of applications for a conditional marketing authorization.

Exceptional Circumstances

A marketing authorization may also be granted “under exceptional circumstances” when the applicant can show that it is unable to provide comprehensive data on the efficacy and safety under normal conditions of use even after the product has been authorized and subject to specific procedures being introduced. This may arise in particular when the intended indications are very rare and, in the present state of scientific knowledge, it is not possible to provide comprehensive information, or when generating data may be contrary to generally accepted ethical principles. This marketing authorization is close to the conditional marketing authorization as it is reserved to medicinal products to be approved for severe diseases or unmet medical needs and the applicant does not hold the complete data set legally required for the grant of a marketing authorization. However, unlike the conditional marketing authorization, the applicant does not have to provide the missing data and will never have to. Although the marketing authorization “under exceptional circumstances” is granted definitively, the risk-benefit balance of the medicinal product is reviewed annually and the marketing authorization is withdrawn in case the risk-benefit ratio is no longer favorable. Under these procedures, before granting the marketing authorization, the EMA or the competent authorities of the member states make an assessment of the risk-benefit balance of the product on the basis of scientific criteria concerning its quality, safety, and efficacy. Except conditional marketing authorizations, marketing authorizations have an initial duration of five years. After these five years, the authorization may be renewed on the basis of a reevaluation of the risk-benefit balance.

Regulatory Data Protection in the European Union

In the EU, new chemical entities approved on the basis of a complete independent data package qualify for eight years of data exclusivity upon marketing authorization and an additional two years of market exclusivity pursuant to Regulation (EC) No 726/2004, as amended, and Directive 2001/83/EC, as amended. Data exclusivity prevents regulatory authorities in the European Union from referencing the innovator’s data to assess a generic (abbreviated) application for a period of eight years. During the additional two-year period of market exclusivity, a generic marketing authorization application can be submitted, and the innovator’s data may be referenced, but no generic medicinal product can be marketed until the expiration of the market exclusivity. The overall ten-year period will be extended to a maximum of eleven years if, during the first eight years of those ten years, the marketing authorization holder obtains an authorization for one or more new therapeutic indications which, during the scientific evaluation prior to authorization, is held to bring a significant clinical benefit in comparison with existing therapies. Even if a compound is considered to be a new chemical entity so that the innovator gains the prescribed period of data exclusivity, another company may market another version of the product if such company obtained marketing authorization based on an MAA with a complete independent data package of pharmaceutical tests, preclinical tests and clinical trials.

Patent Term Extensions in the European Union and Other Jurisdictions

The European Union also provides for patent term extension through Supplementary Protection Certificates, or SPCs. The rules and requirements for obtaining a SPC are similar to those in the United States. An SPC may extend the term of a patent for up to five years after its originally scheduled expiration date and can provide up to a maximum of fifteen years of

marketing exclusivity for a drug. These periods can be extended for six additional months if pediatric exclusivity is obtained, which is described in detail below. Although SPCs are available throughout the European Union, sponsors must apply on a country-by-country basis. Similar patent term extension rights exist in certain other foreign jurisdictions outside the European Union.

Periods of Authorization and Renewals

A marketing authorization is valid for five years, in principle, and it may be renewed after five years on the basis of a reevaluation of the risk-benefit balance by the EMA or by the competent authority of the authorizing member state. To that end, the marketing authorization holder must provide the EMA or the competent authority with a consolidated version of the file in respect of quality, safety and efficacy, including all variations introduced since the marketing authorization was granted, at least six months before the marketing authorization ceases to be valid. Once renewed, the marketing authorization is valid for an unlimited period, unless the European Commission or the competent authority decides, on justified grounds relating to pharmacovigilance, to proceed with one additional five-year renewal period. Any authorization that is not followed by the placement of the drug on the EU market (in the case of the centralized procedure) or on the market of the authorizing member state within three years after authorization ceases to be valid.

Regulatory Requirements after Marketing Authorization

Following approval, the holder of the marketing authorization is required to comply with a range of requirements applicable to the manufacturing, marketing, promotion and sale of the medicinal product. These include compliance with the European Union's stringent pharmacovigilance or safety reporting rules, pursuant to which post-authorization studies and additional monitoring obligations can be imposed. In addition, the manufacturing of authorized products, for which a separate manufacturer's license is mandatory, must also be conducted in strict compliance with the EMA's GMP requirements and comparable requirements of other regulatory bodies in the European Union, which mandate the methods, facilities, and controls used in manufacturing, processing and packing of drugs to assure their safety and identity. Finally, the marketing and promotion of authorized products, including industry-sponsored continuing medical education and advertising directed toward the prescribers of drugs and/or the general public, are strictly regulated in the European Union under Directive 2001/83EC, as amended.

Orphan Drug Designation and Exclusivity

Regulation (EC) No 141/2000 and Regulation (EC) No. 847/2000 provide that a product can be designated as an orphan drug by the European Commission if its sponsor can establish: that the product is intended for the diagnosis, prevention or treatment of (1) a life-threatening or chronically debilitating condition affecting not more than five in ten thousand persons in the European Union when the application is made, or (2) a life-threatening, seriously debilitating or serious and chronic condition in the European Union and that without incentives it is unlikely that the marketing of the drug in the European Union would generate sufficient return to justify the necessary investment. For either of these conditions, the sponsor must demonstrate that there exists no satisfactory method of diagnosis, prevention, or treatment of the condition in question that has been authorized in the European Union or, if such method exists, the drug will be of significant benefit to those affected by that condition.

An orphan drug designation provides a number of benefits, including fee reductions, regulatory assistance, and the possibility to apply for a centralized European Union marketing authorization. Marketing authorization for an orphan drug leads to a ten-year period of market exclusivity. During this market exclusivity period, neither the EMA nor the European Commission or the member states can accept an application or grant a marketing authorization for a "similar medicinal product." A "similar medicinal product" is defined as a medicinal product containing a similar active substance or substances as contained in an authorized orphan medicinal product, and which is intended for the same therapeutic indication. The market exclusivity period for the authorized therapeutic indication may, however, be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan drug designation because, for example, the product is sufficiently profitable not to justify market exclusivity.

Pediatric Exclusivity

Products that are granted a marketing authorization with the results of the pediatric clinical trials conducted in accordance with the PIP are eligible for a six month extension of the protection under a supplementary protection certificate (if any is in effect at the time of approval) even where the trial results are negative. In the case of orphan medicinal products, a

two year extension of the orphan market exclusivity may be available. This pediatric reward is subject to specific conditions and is not automatically available when data in compliance with the PIP are developed and submitted.

Approval of Companion Diagnostic Devices

In the European Union, medical devices such as companion diagnostics must comply with the General Safety and Performance Requirements, or SPRs, detailed in Annex I of the EU Medical Devices Regulation (Regulation (EU) 2017/745), or MDR, which came into force on May 26, 2021 and replaced the previously applicable EU Medical Devices Directive (Council Directive 93/42/EEC). Compliance with SPRs and additional requirements applicable to companion medical devices is a prerequisite to be able to affix the CE Mark of Conformity to medical devices, without which they cannot be marketed or sold. To demonstrate compliance with the SPRs, a manufacturer must undergo a conformity assessment procedure, which varies according to the type of medical device and its classification. The MDR is meant to establish a uniform, transparent, predictable, and sustainable regulatory framework across the EU for medical devices.

Separately, the regulatory authorities in the EU also adopted a new In Vitro Diagnostic Regulation, or IVDR, (EU) 2017/746, which became effective in May 2022. The new regulation replaces the In Vitro Diagnostics Directive (IVDD) 98/79/EC. Manufacturers wishing to apply to a notified body for a conformity assessment of their in vitro diagnostic medical device had until May 2022 to update their Technical Documentation to meet the requirements and comply with the new, more stringent Regulation. The regulation will, among other things: strengthen the rules on placing devices on the market and reinforce surveillance once they are available; establish explicit provisions on manufacturers' responsibilities for the follow-up of the quality, performance, and safety of devices placed on the market; improve the traceability of medical devices throughout the supply chain to the end-user or patient through a unique identification number; set up a central database to provide patients, healthcare professionals and the public with comprehensive information on products available in the European Union; and strengthen rules for the assessment of certain high-risk devices, such as implants, which may have to undergo an additional check by experts before they are placed on the market.

The IVDR became effective in May 2022. However, it became clear in 2021 that that EU Member States, health institutions and economic operators were not ready to apply the IVDR as from that date. The European Commission therefore proposed a progressive or staggered roll-out of the rules of the IVDR. The current transition periods range from 26 May 2025 for high risk IVDs to 26 May 2027 for lower risk IVDs. Certain provisions for devices manufactured and used in health institutions, would have to apply as from 26 May 2028. These transition periods only apply to so called 'legacy device', meaning devices covered by a certificate or declaration of conformity issued under the previous legal framework (notably, the IVDD).

Brexit and the Regulatory Framework in the United Kingdom

The United Kingdom's, or UK's, withdrawal from the EU took place on January 31, 2020. The EU and the UK reached an agreement on their new partnership in the Trade and Cooperation Agreement, or the Agreement, which was applied provisionally beginning on January 1, 2021 and which entered into force on May 1, 2021. The Agreement focuses primarily on free trade by ensuring no tariffs or quotas on trade in goods, including healthcare products such as medicinal products. Thereafter, the EU and the UK will form two separate markets governed by two distinct regulatory and legal regimes. As such, the Agreement seeks to minimize barriers to trade in goods while accepting that border checks will become inevitable as a consequence that the UK is no longer part of the single market.

On February 27, 2023, the UK government and the European Commission announced a political agreement in principle to replace the Northern Ireland Protocol with a new set of arrangements, known as the “Windsor Framework.” This new framework fundamentally changes the existing system under the Northern Ireland Protocol, including with respect to the regulation of medicinal products in the UK. In particular, the MHRA will be responsible for approving all medicinal products destined for the UK market (i.e., Great Britain and Northern Ireland), and the EMA will no longer have any role in approving medicinal products destined for Northern Ireland. A single UK-wide marketing authorization will be granted by the MHRA for all medicinal products to be sold in the UK, enabling products to be sold in a single pack and under a single authorization throughout the UK. The Windsor Framework was approved by the EU-UK Joint Committee on March 24, 2023, so the UK government and the EU will enact legislative measures to bring it into law. On June 9, 2023, the MHRA announced that the medicines aspects of the Windsor Framework will apply from January 1, 2025. The Human Medicines Regulations 2012 (SI 2012/1916) (as amended), or HMR, is the primary legal instrument for the regulation of medicines in the UK. The HMR has incorporated into the domestic law the body of EU law instruments governing medicinal products that pre-existed prior to the UK’s withdrawal from the EU.

EU laws which have been transposed into UK law through secondary legislation continue to be applicable as “retained EU law.” However, new legislation such as the CTR will not be applicable in Great Britain. Since a significant proportion of the regulatory framework for pharmaceutical products in the UK covering the quality, safety, and efficacy of pharmaceutical products, clinical trials, marketing authorizations, commercial sales, and distribution of pharmaceutical products is derived from EU directives and regulations, Brexit may have a material impact upon the regulatory regime with respect to the development, manufacture, importation, approval, and commercialization of our drug product candidates in the UK. For example, the UK is no longer covered by the centralized procedures for obtaining EU-wide marketing authorizations from the EMA, and a separate marketing authorization will be required to market our drug product candidates in the UK. A new international recognition framework has been in place since January 1, 2024, whereby the MHRA will have regard to decisions on the approval of marketing authorizations made by the EMA and certain other regulators when determining an application for a new Great Britain marketing authorization.

General Data Protection Regulation

The collection, use, disclosure, transfer, or other processing of personal data regarding individuals in the EU, including personal health data, is subject to the GDPR, which became effective on May 25, 2018. The GDPR is wide-ranging in scope and imposes numerous requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates, providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, providing notification of data breaches, and taking certain measures when engaging third-party processors. The GDPR also imposes strict rules on the transfer of personal data to countries outside the EU, including the United States, and permits data protection authorities to impose large penalties for violations of the GDPR, including potential fines of up to €20 million or 4% of annual global revenues, whichever is greater. The GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the GDPR. Compliance with the GDPR is a rigorous and time-intensive process that may increase the cost of doing business or require companies to change their business practices to ensure full compliance. In July 2020, the Court of Justice of the European Union, or the CJEU, invalidated the EU-U.S. Privacy Shield framework, one of the mechanisms used to legitimize the transfer of personal data from the EEA to the United States. The CJEU decision also drew into question the long-term viability of an alternative means of data transfer, the standard contractual clauses, for transfers of personal data from the EEA to the United States.

Following the CJEU decision, in October 2022, President Biden signed an executive order to implement the EU-U.S. Data Privacy Framework, which would serve as a replacement to the EU-US Privacy Shield. The European Union initiated the process to adopt an adequacy decision for the EU-U.S. Data Privacy Framework in December 2022, and the European Commission adopted the adequacy decision in July 2023. The adequacy decision permits U.S. companies who self-certify to the EU-U.S. Data Privacy Framework to rely on it as a valid data transfer mechanism for data transfers from the European Union to the United States. However, some privacy advocacy groups have already suggested that they will be challenging the EU-U.S. Data Privacy Framework. If these challenges are successful, they may not only impact the EU-U.S. Data Privacy Framework, but also further limit the viability of the standard contractual clauses and other data transfer mechanisms. The uncertainty around this issue has the potential to impact our business.

On June 23, 2016, the electorate in the UK voted in favor of leaving the EU, commonly referred to as Brexit. As with other issues related to Brexit, there are open questions about how personal data will be protected in the UK and whether personal information can transfer from the EU to the UK. Following the withdrawal of the UK from the EU, the UK Data

Protection Act 2018 applies to the processing of personal data that takes place in the UK and includes parallel obligations to those set forth by GDPR. While the Data Protection Act of 2018 in the UK that “implements” and complements the GDPR has achieved Royal Assent on May 23, 2018 and is now effective in the UK, it is unclear whether transfer of data from the EEA to the UK will remain lawful under the GDPR, although these transfers currently are permitted by an adequacy decision from the European Commission. The UK government has already determined that it considers all European Union 27 and EEA member states to be adequate for the purposes of data protection, ensuring that data flows from the UK to the EU/EEA remain unaffected. In addition, a recent decision from the European Commission appears to deem the UK as being “essentially adequate” for purposes of data transfer from the EU to the UK, although this decision may be re-evaluated in the future. The UK and the U.S. have also agreed to a U.S.-UK “Data Bridge,” which functions similarly to the EU-U.S. Data Privacy Framework and provides an additional legal mechanism for companies to transfer data from the UK to the United States. In addition to the UK, Switzerland is also in the process of approving an adequacy decision in relation to the Swiss-U.S. Data Privacy Framework (which would function similarly to the EU-U.S. Data Privacy Framework and the U.S.-UK Data Bridge in relation to data transfers from Switzerland to the United States). Any changes or updates to these developments have the potential to impact our business.

Coverage, Pricing, and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any drug product candidates for which we may seek regulatory approval by the FDA or other government authorities. In the United States and markets in other countries, patients who are prescribed treatments for their conditions and providers performing the prescribed services generally rely on third-party payors to reimburse all or part of the associated healthcare costs. Patients are unlikely to use any drug product candidates we may develop unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of such drug product candidates. Even if any drug product candidates we may develop are approved, sales of such drug product candidates will depend, in part, on the extent to which third-party payors, including government health programs in the United States such as Medicare and Medicaid, commercial health insurers, and managed care organizations, provide coverage, and establish adequate reimbursement levels for, such drug product candidates. The process for determining whether a payor will provide coverage for a product may be separate from the process for setting the price or reimbursement rate that the payor will pay for the product once coverage is approved. Third-party payors are increasingly challenging the prices charged, examining the medical necessity, and reviewing the cost-effectiveness of medical products and services and imposing controls to manage costs. Third-party payors may limit coverage to specific products on an approved list, also known as a formulary, which might not include all of the approved products for a particular indication.

In order to secure coverage and reimbursement for any product that might be approved for sale, a company may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of the product, in addition to the costs required to obtain FDA or other comparable marketing approvals. Nonetheless, drug product candidates may not be considered medically necessary or cost effective. A decision by a third-party payor not to cover any drug product candidates we may develop could reduce physician utilization of such drug product candidates once approved and have a material adverse effect on our sales, results of operations and financial condition. Additionally, a payor’s decision to provide coverage for a product does not imply that an adequate reimbursement rate will be approved. Further, one payor’s determination to provide coverage for a product does not assure that other payors will also provide coverage and reimbursement for the product, and the level of coverage and reimbursement can differ significantly from payor to payor. Third-party reimbursement and coverage may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment in product development.

The containment of healthcare costs also has become a priority of federal, state and foreign governments and the prices of pharmaceuticals have been a focus in this effort. Governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement, and requirements for substitution of generic products. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit a company’s revenue generated from the sale of any approved products. Coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which a company or its collaborators receive marketing approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

Outside the United States, ensuring adequate coverage and payment for any drug product candidates we may develop will face challenges. Pricing of prescription pharmaceuticals is subject to governmental control in many countries. Pricing negotiations with governmental authorities can extend well beyond the receipt of regulatory marketing approval for a product and may require us to conduct a clinical trial that compares the cost effectiveness of any drug product candidates we may develop to other available therapies. The conduct of such a clinical trial could be expensive and result in delays in our commercialization efforts.

In the European Union, pricing and reimbursement schemes vary widely from country to country. Some countries provide that products may be marketed only after a reimbursement price has been agreed. Some countries may require the completion of additional studies that compare the cost-effectiveness of a particular product candidate to currently available therapies (so called health technology assessments) in order to obtain reimbursement or pricing approval. For example, the European Union provides options for its member states to restrict the range of products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. European Union member states may approve a specific price for a product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the product on the market. Other member states allow companies to fix their own prices for products but monitor and control prescription volumes and issue guidance to physicians to limit prescriptions. Recently, many countries in the European Union have increased the amount of discounts required on pharmaceuticals and these efforts could continue as countries attempt to manage healthcare expenditures, especially in light of the severe fiscal and debt crises experienced by many countries in the European Union. The downward pressure on health care costs in general, particularly prescription products, has become intense. As a result, increasingly high barriers are being erected to the entry of new products. Political, economic, and regulatory developments may further complicate pricing negotiations, and pricing negotiations may continue after reimbursement has been obtained. Reference pricing used by various European Union member states, and parallel trade (arbitrage between low-priced and high-priced member states), can further reduce prices. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our products, if approved in those countries.

Healthcare Law and Regulation

Healthcare providers and third-party payors play a primary role in the recommendation and prescription of pharmaceutical products that are granted marketing approval. Arrangements with providers, consultants, third-party payors, and customers are subject to broadly applicable fraud and abuse, anti-kickback, false claims laws, reporting of payments to physicians and teaching physicians and patient privacy laws and regulations and other healthcare laws and regulations that may constrain our business and/or financial arrangements. Restrictions under applicable federal and state healthcare laws and regulations, include the following:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, offering, paying, receiving, or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made, in whole or in part, under a federal healthcare program such as Medicare and Medicaid;
- the federal civil and criminal false claims laws, including the civil False Claims Act, and civil monetary penalties laws, which prohibit individuals or entities from, among other things, knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false, fictitious, or fraudulent or knowingly making, using, or causing to be made or used a false record or statement to avoid, decrease, or conceal an obligation to pay money to the federal government;
- the federal civil monetary penalty and false statement laws and regulations relating to pricing and submission of pricing information for government programs, including penalties for knowingly and intentionally overcharging 340b eligible entities and the submission of false or fraudulent pricing information to government entities;
- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created additional federal criminal laws that prohibit, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, and their respective implementing regulations, including the Final Omnibus Rule published in January 2013, which impose obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security, and transmission of individually identifiable health information;
- the federal false statements statute, which prohibits knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or payment for health care benefits, items or services;
- the Foreign Corrupt Practices Act, which prohibits companies and their intermediaries from making, or offering or promising to make improper payments to non-U.S. officials for the purpose of obtaining or retaining business

or otherwise seeking favorable treatment;

- the federal transparency requirements known as the federal Physician Payments Sunshine Act, under the Patient Protection and Affordable Care Act, or PPACA, as amended by the Health Care Education Reconciliation Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies to report annually to the Centers for Medicare & Medicaid Services, or CMS, within HHS information related to payments and other transfers of value made by that entity to physicians, other healthcare providers and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members; and
- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to healthcare items or services that are reimbursed by non-governmental third-party payors, including private insurers.

Some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring pharmaceutical manufacturers to report information related to payments to physicians and other health care providers or marketing expenditures. State and foreign laws also govern the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Healthcare Reform

A primary trend in the U.S. healthcare industry and elsewhere is cost containment. There have been a number of federal and state proposals during the last few years regarding the pricing of pharmaceutical and biopharmaceutical products, limiting coverage and reimbursement for drugs and other medical products, government control and other changes to the healthcare system in the United States. By way of example, the United States and state governments continue to propose and pass legislation designed to reduce the cost of healthcare. In March 2010, the United States Congress enacted the PPACA, which, among other things, includes changes to the coverage and payment for products under government health care programs.

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least \$1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. These changes included aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, which went into effect in April 2013 and will remain in effect through 2031 under the Coronavirus Aid, Relief, and Economic Security Act, or the CARES Act.

The American Taxpayer Relief Act of 2012, among other things, reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These laws may result in additional reductions in Medicare and other healthcare funding and otherwise affect the prices we may obtain for any of our drug product candidates for which we may obtain regulatory approval or the frequency with which any such product candidate is prescribed or used.

Under current legislation, the actual reductions in Medicare payments may vary up to 4%. The Consolidated Appropriations Act, which was signed into law by President Biden in December 2022, made several changes to sequestration of the Medicare program. Section 1001 of the Consolidated Appropriations Act delays the 4% Statutory Pay-As-You-Go Act of 2010 sequester for two years, through the end of calendar year 2024. Triggered by enactment of the American Rescue Plan Act of 2021, the 4% cut to the Medicare program would have taken effect in January 2023. The Consolidated Appropriations Act's health care offset title includes Section 4163, which extends the 2% Budget Control Act of 2011 Medicare sequester for six months into fiscal year 2032 and lowers the payment reduction percentages in fiscal years 2030 and 2031.

Since enactment of the PPACA, there have been, and continue to be, numerous legal challenges and Congressional actions to repeal and replace provisions of the law. For example, with enactment of the Tax Cuts and Jobs Act of 2017, or the TCJA, Congress repealed the "individual mandate." The repeal of this provision, which requires most Americans to carry a minimal level of health insurance, became effective in 2019. On June 17, 2021, the U.S. Supreme Court dismissed the most recent judicial challenge to the PPACA brought by several states without specifically ruling on the constitutionality of the PPACA. Litigation and legislation over the PPACA are likely to continue, with unpredictable and uncertain results.

The former administration also took executive actions to undermine or delay implementation of the PPACA, including directing federal agencies with authorities and responsibilities under the PPACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the PPACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. On January 28, 2021, however, the current administration rescinded those orders and issued a new Executive Order which directs federal agencies to reconsider rules and other policies that limit Americans' access to health care, and consider actions that will protect and strengthen that access. Under this Order, federal agencies are directed to re-examine: policies that undermine protections for people with pre-existing conditions, including complications related to COVID-19; demonstrations and waivers under Medicaid and the PPACA that may reduce coverage or undermine the programs, including work requirements; policies that undermine the Health Insurance Marketplace or other markets for health insurance; policies that make it more difficult to enroll in Medicaid and the PPACA; and policies that reduce affordability of coverage or financial assistance, including for dependents.

Pharmaceutical Price Initiatives

The prices of prescription pharmaceuticals have also been the subject of considerable discussion in the United States. There have been several recent U.S. congressional inquiries, as well as proposed and enacted state and federal legislation designed to, among other things, bring more transparency to pharmaceutical pricing, review the relationship between pricing and manufacturer patient programs, and reduce the costs of pharmaceuticals under Medicare and Medicaid. In 2020, the President of the United States issued several executive orders intended to lower the costs of prescription products and certain provisions in these orders have been incorporated into regulations. These regulations include an interim final rule implementing a most favored nation model for prices that would tie Medicare Part B payments for certain physician-administered pharmaceuticals to the lowest price paid in other economically advanced countries, effective January 1, 2021. That rule, however, has been subject to a nationwide preliminary injunction and, on December 29, 2021, CMS issued a final rule to rescind it. With issuance of this rule, CMS stated that it will explore all options to incorporate value into payments for Medicare Part B pharmaceuticals and improve beneficiaries' access to evidence-based care.

In addition, in October 2020, HHS and the FDA published a final rule allowing states and other entities to develop a Section 804 Importation Program, or SIP, to import certain prescription drugs from Canada into the United States. That regulation was challenged in a lawsuit by the Pharmaceutical Research and Manufacturers of America, or PhRMA, but the case was dismissed by a federal district court in February 2023 after the court found that PhRMA did not have standing to sue HHS. Nine states (Colorado, Florida, Maine, New Hampshire, New Mexico, North Dakota, Texas, Vermont and Wisconsin) have passed laws allowing for the importation of drugs from Canada. Certain of these states have submitted Section 804 Importation Program proposals and are awaiting FDA approval. On January 5, 2024, the FDA approved Florida's plan for Canadian drug importation. Further, on November 20, 2020, HHS finalized a regulation removing safe harbor protection for price reductions from pharmaceutical manufacturers to plan sponsors under Part D, either directly or through pharmacy benefit managers, unless the price reduction is required by law. The final rule would eliminate the current safe harbor for Medicare drug rebates and create new safe harbors for beneficiary point-of-sale discounts and pharmacy benefit manager service fees. It originally was set to go into effect on January 1, 2022, but with passage of the Inflation Reduction Act of 2022, or IRA, has been delayed by Congress to January 1, 2032.

On July 9, 2021, the President of the United States signed Executive Order 14063, which focuses on, among other things, the price of pharmaceuticals. The Order directs HHS to create a plan within 45 days to combat "excessive pricing of prescription pharmaceuticals and enhance domestic pharmaceutical supply chains, to reduce the prices paid by the federal government for such pharmaceuticals, and to address the recurrent problem of price gouging." On September 9, 2021, HHS released its plan to reduce pharmaceutical prices. The key features of that plan are to: (a) make pharmaceutical prices more affordable and equitable for all consumers and throughout the health care system by supporting pharmaceutical price negotiations with manufacturers; (b) improve and promote competition throughout the prescription pharmaceutical industry by supporting market changes that strengthen supply chains, promote biosimilars and generic drugs, and increase transparency; and (c) foster scientific innovation to promote better healthcare and improve health by supporting public and private research and making sure that market incentives promote discovery of valuable and accessible new treatments.

On August 16, 2022, the IRA was signed into law by the President of the United States. The new legislation has implications for Medicare Part D, which is a program available to individuals who are entitled to Medicare Part A or enrolled in Medicare Part B to give them the option of paying a monthly premium for outpatient prescription drug coverage. Among other things, the IRA requires manufacturers of certain drugs to engage in price negotiations with Medicare (beginning in 2026), with prices that can be negotiated subject to a cap; imposes rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation (first due in 2023); and replaces the Part D coverage gap discount program with a

new discounting program (beginning in 2025). The IRA permits the Secretary of HHS to implement many of these provisions through guidance, as opposed to regulation, for the initial years.

Specifically, with respect to price negotiations, Congress authorized Medicare to negotiate lower prices for certain costly single-source drug and biologic products that do not have competing generics or biosimilars and are reimbursed under Medicare Part B and Part D. CMS may negotiate prices for ten high-cost drugs paid for by Medicare Part D starting in 2026, followed by 15 Part D drugs in 2027, 15 Part B or Part D drugs in 2028, and 20 Part B or Part D drugs in 2029 and beyond. This provision applies to drug products that have been approved for at least 9 years and biologics that have been licensed for 13 years, but it does not apply to drugs and biologics that have been approved for a single rare disease or condition. Further, the legislation subjects drug manufacturers to civil monetary penalties and a potential excise tax for failing to comply with the legislation by offering a price that is not equal to or less than the negotiated “maximum fair price” under the law or for taking price increases that exceed inflation. The legislation also requires manufacturers to pay rebates for drugs in Medicare Part D whose price increases exceed inflation. The new law also caps Medicare out-of-pocket drug costs at an estimated \$4,000 a year in 2024 and, thereafter beginning in 2025, at \$2,000 a year.

On June 6, 2023, Merck & Co. filed a lawsuit against the HHS and CMS asserting that, among other things, the IRA’s Drug Price Negotiation Program for Medicare constitutes an uncompensated taking in violation of the Fifth Amendment of the Constitution. Subsequently, a number of other parties, including the U.S. Chamber of Commerce, or Chamber, Bristol Myers Squibb Company, the PhRMA, Astellas, Novo Nordisk, Janssen Pharmaceuticals, Novartis, AstraZeneca and Boehringer Ingelheim, also filed lawsuits in various courts with similar constitutional claims against the HHS and CMS. We expect that litigation involving these and other provisions of the IRA will continue, with unpredictable and uncertain results.

At the state level, individual states are increasingly aggressive in passing legislation and implementing regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. A number of states, for example, require drug manufacturers and other entities in the drug supply chain, including health carriers, pharmacy benefit managers, wholesale distributors, to disclose information about pricing of pharmaceuticals. In addition, regional health care authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other health care programs. These measures could reduce the ultimate demand for our products, once approved, or put pressure on our product pricing. We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our drug product candidates or additional pricing pressures.

Additional Regulations

In addition to the foregoing, state, and federal laws regarding environmental protection and hazardous substances, including the Occupational Safety and Health Act, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act, affect our business. These and other laws govern the use, handling, and disposal of various biologic, chemical, and radioactive substances used in, and wastes generated by, our operations. If our operations result in contamination of the environment or expose individuals to hazardous substances, we could be liable for damages and governmental fines. Equivalent laws have been adopted in foreign countries that impose similar obligations.

Human Capital

As of December 31, 2023, we had 53 full-time employees. Substantially all of our employees are located in Massachusetts. None of our employees are represented by a labor union or covered by a collective bargaining agreement, and we believe our relationship with our employees is good. Additionally, we utilize independent contractors and other third parties to assist with various aspects of our drug and product development.

We recognize the value of our employees and are committed to being a workplace that encourages respect, collaboration, communication, transparency, and integrity. We seek to hire employees with diverse backgrounds and perspectives. Our success starts and ends with having the best talent, and as a result, we are focused on attracting, developing and retaining our employees. We offer employees a competitive and comprehensive benefits package. The principal purposes of our incentive plans are to attract, retain and motivate selected employees, consultants, advisors and directors through the granting of stock-based compensation awards and cash-based performance bonus awards, as applicable. We support employees

attending industry conferences and obtaining professional licenses. We use a variety of human capital measures in managing our business, including: workforce demographics; inclusion and diversity; and employee health and safety.

Corporation Information

Our website address is www.cuebiopharma.com. Our website and the information contained on, or that can be accessed through, the website will not be deemed to be incorporated by reference in, and are not considered part of, this Annual Report on Form 10-K or any other report or document we file with the Securities and Exchange Commission, or the SEC, and any reference to our website address is intended to be an inactive textual reference only.

Item 1A. Risk Factors

We are subject to various risks that may materially harm our business, prospects, financial condition and results of operations. This discussion highlights some of the risks that may affect our future operating results. These are the risks and uncertainties we believe are most important for you to consider. We cannot be certain that we will successfully address these risks. If we are unable to address these risks, our business may not grow, our stock price may suffer, and we may be unable to stay in business. Additional risks and uncertainties not presently known to us, which we currently deem immaterial or which are similar to those faced by other companies in our industry or business in general, may also impair our business, prospects, results of operations and financial condition. The risks discussed below include forward-looking statements, and our actual results may differ substantially from those discussed in these forward-looking statements.

Risks Related to Our Business

We are a clinical-stage biopharmaceutical company, have no history of generating commercial revenue, have a history of operating losses, and may never achieve or maintain profitability.

We are a clinical-stage biopharmaceutical company. We have a limited operating history, have never generated revenue from product sales, and have a history of losses from operations. As of December 31, 2023, we had an accumulated deficit of approximately \$301.1 million. Our ability to achieve commercial revenue-generating operations and, ultimately, achieve profitability will depend on whether we can obtain additional capital when we need it, complete the development of our technology, receive regulatory approval of our drug product candidates, successfully commercialize our drug product candidates and/or find strategic collaborators that can incorporate our drug product candidates into new or existing drugs which can be successfully commercialized together. There can be no assurance that we will ever generate commercial revenues or achieve or maintain profitability.

We currently do not have, and may never develop, any FDA-approved or commercialized products.

We currently do not have any products approved by the FDA or any other regulatory agency or any commercialized products and thus have never generated commercial revenue from product sales. We have not yet sought to obtain any regulatory approvals for any drug product candidates in the United States or any foreign market. Therefore, any estimated timing for our drug product candidates to be commercialized would be highly speculative.

To date, we have invested substantial resources in an exclusive license with Einstein that forms the foundation for our drug product candidates and potential applications. For us to develop any products that might ultimately be commercialized, we will have to invest further time and capital in research and product development, regulatory compliance and market development. We and our licensor, prospective business partners and other collaborators may never develop any products that can be commercialized. All of our development efforts will require substantial additional funding, none of which may result in any commercial revenue. Our efforts may not lead to commercially successful products for a number of reasons, including:

- we and our licensor, prospective business partners and other collaborators may not be able to complete research regarding, and nonclinical and clinical development of, our drug product candidates;
- regulatory approvals and marketing authorizations may not be achieved for our drug product candidates, or the scope of the approved indication may be narrower than sought;
- we and our licensor, prospective business partners and other collaborators may experience delays in our development programs, clinical trials and the regulatory approval process;
- our technology may not prove to be safe and effective in clinical trials or preclinical studies and our drug product candidates may have adverse side effects which outweigh any potential benefit to patients;
- we may not be able to identify suitable collaborators to complete development or commercialization of our potential products;
- we may not be able to maintain, protect or expand our portfolio of intellectual property rights, including patents, trade secrets and know-how;

- any future products that are ultimately approved by the FDA or other regulatory bodies may not be commercially accepted in the marketplace by physicians or patients;
- any future products that are ultimately approved by the FDA or other regulatory bodies may not be able to be manufactured in commercial quantities or at an acceptable cost;
- physicians may not receive any reimbursement from third-party payors, or the level of reimbursement may be insufficient to support widespread adoption of any of our future products once approved by the FDA or other regulatory bodies; and
- rapid technological change may make our technology and drug product candidates obsolete.

Moreover, in the first quarter of 2022, we determined to prioritize and strategically focus on our CUE-101 and CUE-102 oncology programs in our CUE-100 series. We are actively seeking third party support through partnerships and collaborations, or alternative funding structures, to further develop CUE-103 and our Neo-STAT and RDI-STAT programs, as well as our programs outside of oncology, including our CUE-200, CUE-300 and CUE-400 series, and there is no guarantee that we will be able to do so on favorable terms or at all.

We are substantially dependent on the success of our drug product candidates, only two of which are currently being tested in clinical trials, and significant additional research and development and clinical testing will be required before we can potentially seek regulatory approval for or commercialize any of our drug product candidates.

Our main focus and the investment of a significant portion of our efforts and financial resources has been in the development of our lead product candidate, CUE-101, for which we are currently actively conducting Phase 1 clinical trials and CUE-102, for which we are currently actively conducting a Phase 1 clinical trial. Our other drug product candidates are all at a preclinical stage. In the first quarter of 2022, we determined to prioritize and strategically focus on our CUE-101 and CUE-102 oncology programs in our CUE-100 series. We expect that additional trials of CUE-101 and CUE-102 will be required in order to gain approval by the FDA. Therefore, significant additional research and development activity and clinical testing are required before we and our collaborators will have a chance to achieve a commercially viable product from CUE-101, CUE-102 or our other drug product candidates. Our research and development efforts remain subject to all of the risks associated with the development of new biopharmaceutical products and treatments based on immune modulation. Development of the underlying technology may be affected by unanticipated technical or other problems, among other research and development issues, and the possible insufficiency of funds needed in order to complete development of these drug product candidates. Safety, regulatory and efficacy issues, clinical hurdles or other challenges may result in delays and cause us to incur additional expenses that would increase our losses. If we and our collaborators cannot complete, or if we experience significant delays in developing, our potential drug product candidates or products for use in potential commercial applications, particularly after incurring significant expenditures, our business may fail and investors may lose the entirety of their investment.

We have limited experience in conducting clinical trials and no history of commercializing biologic products, which may make it difficult to evaluate the prospects for our future viability.

Our operations to date have been limited to financing and staffing our company, conducting research and developing our core technologies, and identifying and optimizing our lead product clinical candidates. Additionally, we have conducted limited clinical testing of two of our drug product candidates. Although we have recruited a team that has experience with clinical trials in the United States, as a company, we have limited experience conducting clinical trials and have not had previous experience commercializing drug product candidates or submitting a Biologic License Application, or BLA, to the FDA or similar submissions to initiate clinical trials or obtain marketing authorization to foreign regulatory authorities. We cannot be certain that current or planned clinical trials will begin or be completed on time, if at all, or that our planned development programs would be acceptable to the FDA or other regulatory authorities, or that, if regulatory approval is obtained, our drug product candidates can be successfully commercialized. Clinical trials and commercializing our drug product candidates will require significant additional financial and management resources, and reliance on third-party clinical investigators, contract research organizations, or CROs, contract manufacturing organization, or CMOs, consultants and collaborators. Relying on third-party clinical investigators, CROs, CMOs or collaborators may result in delays that are outside of our control.

Furthermore, we may not have the financial resources to continue development of, or to enter into collaborations for, a product candidate if we experience any problems or other unforeseen events that delay or prevent regulatory approval of, or our ability to commercialize, drug product candidates, including:

- negative or inconclusive results from our IND-enabling studies, clinical trials or the clinical trials of other drug product candidates similar to ours, leading to a decision or requirement to conduct additional preclinical testing or clinical trials or abandon a program;
- delays in submitting INDs or comparable foreign applications or delays or failure in obtaining the necessary approvals from regulators to commence a clinical trial, or a suspension or termination of a clinical trial once commenced;
- conditions imposed by the FDA or a foreign regulatory authority regarding the number, scope or design of our clinical trials;
- delays in enrolling patients in clinical trials;
- high drop-out rates of patients;
- inadequate supply or quality of clinical trial materials or other supplies necessary to conduct our clinical trials;
- greater than anticipated clinical trial costs;
- poor effectiveness or unacceptable side effects of our drug product candidates during clinical trials;
- unfavorable FDA or other regulatory agency inspection and review of a clinical trial site;
- difficulty in establishing or managing relationships with CROs, CMOs, and clinical investigators;
- failure of our third-party contractors or investigators to comply with regulatory requirements or otherwise meet their contractual obligations in a timely manner, or at all;
- serious and unexpected drug-related side effects or other safety issues experienced by participants in our clinical trials or by individuals using drugs similar to our drug product candidates;
- delays and changes in regulatory requirements, policy and guidelines, including the imposition of additional regulatory oversight around clinical testing generally or with respect to our technology in particular; or
- varying interpretations of data by the FDA and foreign regulatory authorities.

In addition, policies of the FDA and other regulatory authorities with respect to clinical trials may change and additional government regulations may be enacted. For example, in December 2022, with the passage of the Food and Drug Omnibus Reform Act, or FDORA, Congress required sponsors to develop and submit a diversity action plan for each Phase 3 clinical trial or any other “pivotal study” of a new drug or biological product. These plans are meant to encourage the enrollment of more diverse patient populations in late-stage clinical trials of FDA-regulated products. Specifically, action plans must include the sponsor’s goals for enrollment, the underlying rationale for those goals, and an explanation of how the sponsor intends to meet them. In addition to these requirements, the legislation directs the FDA to issue new guidance on diversity action plans. Similarly, the regulatory landscape related to clinical trials in the EU recently evolved. The EU Clinical Trials Regulation, or CTR, which was adopted in April 2014 and repeals the EU Clinical Trials Directive, became applicable on January 31, 2022. While the Clinical Trials Directive required a separate clinical trial application, or CTA, to be submitted in each member state, to both the competent national health authority and an independent ethics committee, the CTR introduces a centralized process and only requires the submission of a single application to all member states concerned. The CTR allows sponsors to make a single submission to both the competent authority and an ethics committee in each member state, leading to a single decision per member state. The assessment procedure of the CTA has been harmonized as well, including a joint assessment by all member states concerned, and a separate assessment by each member state with respect to specific requirements related to its own territory, including ethics rules. Each member state’s decision is communicated to the sponsor via the centralized EU portal. Once the CTA is approved, clinical study development may proceed. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies governing clinical trials, our development plans may be impacted.

Our current or planned clinical trials or those of our collaborators may reveal significant adverse events, toxicities or other side effects not seen in our preclinical studies and may result in a safety profile that could inhibit or prevent regulatory approval or market acceptance of any of our drug product candidates.

In order to obtain marketing approval for any of our biologic drug product candidates, we must demonstrate the safety, purity, and efficacy of the product candidate for the relevant clinical indication or indications through preclinical studies and clinical trials as well as additional supporting data. If our drug product candidates are associated with undesirable side effects in preclinical studies or clinical trials or have characteristics that are unexpected, we may need to interrupt, delay or abandon their development or limit development to more narrow uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective.

We are conducting Phase 1 clinical trials for our lead product candidate, CUE-101, and a Phase 1 clinical trial for CUE-102, but otherwise we have not conducted any clinical trials. We have conducted various preclinical studies of our drug product candidates, but we do not know the predictive value of these studies for humans, and we cannot guarantee that any positive results in preclinical studies will successfully translate to human patients. It is not uncommon to observe results in human clinical trials that are unexpected based on preclinical testing, and many drug product candidates fail in clinical trials despite promising preclinical results. Moreover, preclinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that have believed their drug product candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain marketing approval for their products. Human patients in clinical trials may suffer significant adverse events or other side effects not observed in our preclinical studies, including, but not limited to, immunogenic responses, organ toxicities such as liver, heart or kidney or other tolerability issues or possibly even death. The observed potency and kinetics of our drug product candidates in preclinical studies may not be observed in human clinical trials. If clinical trials of our drug product candidates fail to demonstrate efficacy to the satisfaction of regulatory authorities or do not otherwise produce positive results, we may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of our drug product candidates.

If significant adverse events or other side effects are observed in any of our current or future clinical trials, we may have difficulty recruiting patients to the clinical trial, patients may drop out of our trial, or we may be required to abandon the trial or our development efforts of that product candidate altogether. We, the FDA or other applicable regulatory authorities, or an Institutional Review Board may suspend clinical trials of a product candidate at any time for various reasons, including a belief that subjects in such trials are being exposed to unacceptable health risks or adverse side effects. Some potential therapeutics developed in the pharmaceutical and biotechnology industries that initially showed therapeutic promise in early-stage studies have later been found to cause side effects that prevented their further development. Even if the side effects do not preclude the drug from obtaining or maintaining marketing approval, undesirable side effects may inhibit market acceptance of the approved product due to its tolerability as compared to other therapies. Any of these developments could materially harm our business, financial condition and prospects.

Further, if any of our drug product candidates obtains marketing approval, toxicities associated with our drug product candidates may also develop after such approval and lead to a requirement to conduct additional clinical safety trials, additional warnings being added to the labeling, significant restrictions on the use of the product or the withdrawal of the product from the market. We cannot predict whether our drug product candidates will cause toxicities in humans that would preclude or lead to the revocation of regulatory approval based on preclinical studies or clinical testing. However, any such event, were it to occur, would cause substantial harm to our business and financial condition and would result in the diversion of our management's attention.

Success in preclinical studies or early clinical trials may not be indicative of results obtained in later trials.

Results from preclinical studies or early clinical trials are not necessarily predictive of future clinical trial results, and interim results of a clinical trial are not necessarily indicative of final results. Our drug product candidates may fail to show the desired safety and efficacy in clinical development despite demonstrating positive results in preclinical studies or having successfully advanced through initial clinical trials or preliminary stages of clinical trials. There can be no assurance that the results seen in preclinical studies for any of our drug product candidates ultimately will result in success in clinical trials or that results seen in Phase 1 or 2 trials will be replicated in Phase 3 trials.

There is a high failure rate for drugs and biologic products proceeding through clinical trials. Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials even after achieving promising results in preclinical testing and earlier-stage clinical trials. Data obtained from preclinical and clinical activities are subject to varying interpretations, which may delay, limit or prevent regulatory approval. In addition, we may experience regulatory delays or rejections as a result of many factors, including changes in regulatory policy or requirements during the period of our drug product candidate development. Any such delays could materially and adversely affect our business, financial condition, results of operations and prospects.

We plan to continue to seek collaborations or strategic alliances. However, we may not be able to establish such relationships, and relationships we have established may not provide the expected benefits.

Effective November 6, 2018, we entered into the LG Chem Collaboration Agreement for the development of our Immuno-STATs focused in the field of oncology. Pursuant to the LG Chem Collaboration Agreement, we have granted certain exclusive license rights to LG Chem in Australia and in certain countries in Asia and LG Chem has agreed to provide certain services to us and to make payments to us that include licensing fees, milestone payments and sales royalties. This agreement does not commit LG Chem to a long-term relationship, and LG Chem may disengage with us at any time.

In the first quarter of 2022, we determined to prioritize and strategically focus on our CUE-101 and CUE-102 oncology programs in our CUE-100 series, and we are actively seeking third party support through partnerships and collaborations, or alternative funding structures, to further develop CUE-103 and our Neo-STAT and RDI-STAT programs, as well as our programs outside of oncology, including our CUE-200, CUE-300 and CUE-400 series, and there is no guarantee that we will be able to do so on favorable terms or at all.

On February 22, 2023, we entered into a strategic collaboration agreement, or the Ono Collaboration and Option Agreement, with Ono Pharmaceutical Co., Ltd., or Ono, to further develop CUE-401 and provide dedicated resources and capabilities to help advance CUE-401 toward the clinic. Pursuant to the Ono Collaboration and Option Agreement, Ono paid us an upfront payment and agreed to fully fund all research activities related to CUE-401 through a specified option period of 24 months, which research activities are to be performed by us. Upon Ono's exercise of its option to license CUE-401, we will receive an option exercise payment and be eligible for development and commercial milestone payments up to an aggregate of approximately \$220 million, as well as tiered royalties on sales. Upon any such exercise, Ono will receive worldwide rights to develop and commercialize CUE-401, with us retaining a 50% co-development and co-commercialization right in the United States. Our decision to elect the co-development and co-commercialization option may be made within 30 days of Ono's option exercise to license CUE-401. The amount paid by Ono to us for the option exercise and future milestone payments will vary based upon our decision to exercise the co-development and co-commercialization option. This agreement has not committed Ono to a long-term relationship with us, and we may not realize the payments provided for under the agreement.

We plan to also seek additional strategic alliances or collaborations with other third parties that we believe will complement or augment our development and commercialization efforts with respect to our drug product candidates and any future drug product candidates that we may develop. In addition, we currently do not have sales, marketing, manufacturing or distribution capabilities or arrangements. In order to commercialize our potential products, we plan to seek development and marketing partners or sublicensees to obtain necessary marketing, manufacturing and distribution capabilities.

Any of these relationships may require us to incur non-recurring and other charges, give up certain rights relating to our intellectual property and research and development activities, increase our near and long-term expenditures, issue securities that dilute our existing stockholders, issue debt which may require liens on our assets and which will increase our monthly expense obligations, or disrupt our management and business. Moreover, we may not be successful in our efforts to establish additional strategic partnerships or collaborations for our drug product candidates because they may be deemed to be at too early of a stage of development for collaborative effort and third parties may not view our drug product candidates as having the requisite clinical and/or commercial potential based on current or future demonstrated safety, purity, and efficacy. If we are unable to establish additional strategic partnerships or collaborations to develop our drug product candidates, the costs for us to independently develop our drug product candidates may be higher than we currently anticipate, which could materially harm our business prospects, financial condition and results of operation.

Further, collaborations involving our drug product candidates are subject to numerous risks, which may include the following:

- our collaborators may have significant discretion in determining the efforts and resources that they will apply to our collaboration as compared to their other then-existing collaborations;

- our collaborators may not pursue development and commercialization of our drug product candidates or may elect not to continue or renew development or commercialization of our 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;
- our collaborators may delay clinical trials, provide insufficient funding for a clinical trial, 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;
- our collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our drug product candidates;
- a collaborator with marketing and distribution rights to one or more products may not commit sufficient resources to the marketing and distribution of each of our potential products;
- our collaborators may not properly maintain or defend our intellectual property rights in accordance with the terms of our contractual arrangements with them 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 other potential liability;
- disputes may arise between us and a collaborator that cause the delay or termination of the research, development or commercialization of our drug product candidates, or that result in costly litigation or arbitration that diverts our managements' attention and our other resources;
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable drug product candidates; and
- our collaborators may own or co-own intellectual property covering our potential products that results from our collaboration with them, and in such case, we would not have the exclusive right to commercialize such intellectual property without our collaborators' involvement and consent.

As a result, we may not be able to realize the benefit of collaboration agreements, strategic partnerships or licenses of our technology or potential products, which could delay our product development timelines or otherwise adversely affect our business. We also cannot be certain that, following a strategic transaction or license, we will achieve sufficient revenue, net income or other benefits to justify such transaction. Any delays in entering into new collaborations or strategic partnership agreements related to our drug product candidates could delay the development and commercialization of our drug product candidates, which would harm our business prospects, financial condition, and results of operations.

Our collaboration agreement with LG Chem contains exclusivity provisions that restrict our research and development activities.

We have granted to LG Chem under the LG Chem Collaboration Agreement an exclusive license to develop, manufacture and commercialize CUE-101, as well as the Drug Product Candidates, in the LG Chem Territory. Under the LG Chem Collaboration Agreement, we will engineer the selected Immuno-STAT for up to three alleles, which are expected to include the predominant alleles in the LG Chem Territory, while LG Chem will establish a CMC process for the development and commercialization of Drug Product Candidates.

These restrictions on our development, manufacturing, and commercialization activities could impact our ability to successfully develop certain drug product candidates, which could harm our future business prospects for commercializing drugs for those drug product candidates.

We may not be successful in our efforts to identify additional drug product candidates. Due to our limited resources and access to capital, we must prioritize the development of certain drug product candidates; these decisions may prove to be wrong and may adversely affect our business.

In the first quarter of 2022, we decided to strategically focus on our CUE-101 and CUE-102 oncology programs in our CUE-100 series. We are actively seeking third party support through partnerships and collaborations, or alternative funding

structures, to further develop CUE-103 and our Neo-STAT and RDI-STAT programs outside of oncology, including our CUE-200, CUE-300 and CUE-400 series, and there is no guarantee that we will be able to do so on favorable terms or at all.

Although we may explore other therapeutic opportunities, in addition to the drug product candidates that we are currently developing, we may fail to identify successful drug product candidates for clinical development for a number of reasons. If we fail to identify additional potential drug product candidates, our business could be materially harmed.

Research programs to pursue the development of our drug product candidates for additional indications and to identify new drug product candidates and disease targets require substantial technical, financial and human resources whether or not they are ultimately successful. Our research programs may initially show promise in identifying potential indications and/or drug product candidates, yet fail to yield results for clinical development for a number of reasons, including:

- the research methodology used may not be successful in identifying potential indications and/or drug product candidates;
- our key platform technology, Immuno-STAT Biologics™, may not adequately enable us to design, discover and validate drug product candidates;
- potential drug product candidates may, after further study, be shown to have harmful adverse effects or other characteristics that indicate they are unlikely to be effective drugs; or
- it may take greater human and financial resources than we possess to identify additional therapeutic opportunities for our drug product candidates or to develop suitable potential drug product candidates through internal research programs, thereby limiting our ability to develop, diversify and expand our drug portfolio.

Because we have limited financial and human resources, we intend to initially focus on research programs and drug product candidates for a limited set of indications. As a result, we may forego or delay pursuit of opportunities with other drug product candidates or for other indications that later prove to have greater commercial potential or a greater likelihood of success. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities.

Accordingly, there can be no assurance that we will ever be able to identify additional therapeutic opportunities for our drug product candidates or to develop suitable potential drug product candidates through internal research programs, which could materially adversely affect our future growth and prospects. We may focus our efforts and resources on potential drug product candidates or other potential programs that ultimately prove to be unsuccessful.

We face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.

The biotechnology and pharmaceutical industries are characterized by intense competition and rapid innovation. Our competitors may be able to develop other compounds or drugs that are able to achieve similar or better results than our drug product candidates. Our competitors may include major multinational pharmaceutical companies, established biotechnology companies, specialty pharmaceutical companies, and universities and other research institutions. Many of our competitors have substantially greater financial, technical and other resources than we have, such as a larger research and development staff and experienced marketing and manufacturing organizations, established relationships with CROs and other collaborators, as well as established sales forces. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large, established companies. Mergers and acquisitions in the biotechnology and pharmaceutical industries may result in even more resources being concentrated in our competitors. Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for investment in these industries. Our competitors, either alone or with collaborative partners, may succeed in developing, acquiring or licensing on an exclusive basis drug or biologic products that are more effective, safer, more easily commercialized or less costly than our drug product candidates or may develop proprietary technologies or secure patent protection and, in turn, exclude us from technologies that we may need for the development of our technologies and potential products.

Immunotherapy technologies are advancing at a rapid pace and we anticipate competing with companies developing bi-specific antibodies (e.g., Amgen, Immatics, Immunocore, Janssen Pharmaceuticals, Regeneron and Roche Holding AG), cell therapies (e.g., Adaptimmune, Bristol-Myers Squibb, Gilead Sciences, Iovance Biotherapeutics, Janssen Pharmaceuticals, and Novartis AG), antibody-drug conjugates (e.g., AbbVie, Gilead Sciences, Pfizer, and Roche Holding AG), immune checkpoint inhibitors (e.g., AstraZeneca, Bristol-Myers Squibb, GSK, Merck and Roche Holding AG), and targeted cytokines (e.g., Asher Bio, Aulos Bio, BioNTech SE, Medicenna Therapeutics, Moderna, Inc., Mural Oncology, Roche Holding AG, SyntheKine, Werewolf Therapeutics, and Xilio Therapeutics) many of which have significantly greater financial and other resources than we currently have.

Even if we obtain regulatory approval of any of our drug product candidates, we may not be the first to market, and that may negatively affect the price or demand for our drug product candidates. Additionally, we may not be able to implement our business plan if the acceptance of our drug product candidates is inhibited by price competition or the reluctance of physicians to switch from existing methods of treatment to our drug product candidates, or if physicians switch to other new drug or biologic products or choose to reserve our drug product candidates for use in limited circumstances. Furthermore, a competitor could obtain orphan product exclusivity from the FDA with respect to such competitor's product. If such competitor product is determined to be the same product as one of our drug product candidates, we may be prevented from obtaining approval from the FDA for such product candidate for the same indication for seven years, except in limited circumstances, and we may be subject to similar restrictions under non-U.S. regulations.

If we lose key management personnel, or if we fail to recruit additional highly skilled personnel, our ability to identify and develop new or next generation drug product candidates will be impaired, could result in loss of markets or market share and could make us less competitive.

We are highly dependent upon the principal members of our management team, including Daniel Passeri, M.Sc., our Chief Executive Officer, Anish Suri, our President and Chief Scientific Officer, Matteo Levisetti, our Chief Medical Officer, and other members of our scientific and clinical advisory team. Our team has significant experience and knowledge of oncology drug discovery and development, T cell modulation, protein biochemistry and immunological assays, and the loss of any current or future team member could impair our ability to design, identify, and develop new intellectual property and drug product candidates and new scientific or product ideas. Additionally, if we lose the services of any of these persons, we would likely be forced to expend significant time and money in the pursuit of replacements, which may result in a delay in the development of our drug product candidates and the implementation of our business plan and plan of operations and diversion of our management's attention. We can give no assurance that we could find satisfactory replacements for our current and future key scientific and management employees on terms that would not be unduly expensive or burdensome to us.

To induce valuable personnel to remain at our company, in addition to salary and cash incentives, we have granted stock options and restricted stock units that vest over time. Despite our efforts to retain valuable employees, members of our management, scientific and development teams may terminate their employment with us on short notice. Although we have employment agreements with our key employees, these employment agreements provide for at-will employment, which means that these employees could leave our employment at any time, for or without cause. 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 and scientific personnel.

Our internal computer systems, or those used by third-party CROs, manufacturers or other contractors or consultants, may fail or suffer security breaches.

Despite the implementation of security measures, our internal computer systems and those of our future CROs, manufacturers and other contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures, cyberattacks or cyber-intrusions, loss of funds or information from phishing or other fraudulent schemes, attachments to emails, persons inside our organization, or persons with access to systems inside our organization or those with whom we do business. The risk of a security breach or disruption, particularly through cyber-attacks or cyber intrusion, including by computer hackers, foreign governments, and cyber terrorists, has generally increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased. Increased security threats and more sophisticated cybercrimes and cyberattacks pose a potential risk to the security and availability of our internal computer systems, networks and services, including those used by third-party CROs, manufacturers or other contractors or consultants, as well as the confidentiality, availability and integrity of our data and the data of potential trial participants or patients, employees and others. Although to our knowledge we have not experienced any such material system failure or security breach to date, if such an event were to occur, it could result in a material disruption of our development programs and our business operations. For example, the loss of clinical trial data from future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information (such as individually identifiable health information), we could incur significant liabilities and the further development and commercialization of our drug product candidates could be delayed. In addition, the foreign, federal and state regulatory environment surrounding information security and privacy is increasingly demanding, with frequent imposition of new and changing requirements. Compliance with changes in privacy and information security laws and standards may result in significant expense due to increased investment in technology and the development of new operational processes.

Public health epidemics or pandemics may adversely impact our business, including our clinical trials and preclinical studies.

Public health crises such as pandemics or similar outbreaks could adversely impact our business, financial condition, results of operations and prospects. We and the third-party manufacturers and CROs that we engage may face disruptions that could affect our ability to initiate and complete preclinical studies or clinical trials or submit regulatory applications, including disruptions in our ability to obtain necessary site approvals or other delays at clinical trial sites, including recruitment or patient enrollment, or disruptions in procuring items that are essential for our research and development activities, such as, for example, raw materials used in the manufacturing of our drug product candidates or laboratory supplies for our ongoing and planned clinical trials, in each case, for which there may be shortages because of ongoing efforts to address any pandemic.

For example, in January 2021, we were notified by our CMO that the manufacture of our GMP material for the CUE-102 drug product candidate would be delayed by approximately six weeks due to the invocation of the Defense Production Act, or DPA, which gives priority to the manufacture of vaccines and other drug products used to prevent or treat COVID-19. The GMP material for CUE-102 was ultimately manufactured in the second half of 2021. The delay in the manufacturing of our CUE-102 GMP batch impacted the expected filing date of the CUE-102 IND that was planned for the fourth quarter of 2021, which we filed on March 31, 2022. Despite our efforts to manage and remedy these impacts, their ultimate impact depends on factors beyond our knowledge or control, including the duration and severity of the pandemic, as well as third-party actions taken to contain its spread and mitigate its public health effects. Additionally, the COVID-19 pandemic adversely impacted financial markets, resulting in high share price volatility, reduced market liquidity, and substantial declines in the market prices of the securities of many publicly traded companies. Volatile or declining markets for equities could adversely affect our ability to raise capital when needed through the sale of shares of common stock or other equity or equity-linked securities. If these market conditions persist when we need to raise capital, and if we are unable to sell shares of our common stock under then prevailing market conditions, we might have to accept lower prices for our shares and issue a larger number of shares than might have been the case under better market conditions, resulting in significant dilution of the interests of our stockholders.

The public health emergency declarations related to COVID-19 ended on May 11, 2023. However, the FDA retained a number of COVID-19 related policies. It is unclear how, if at all, these policies will impact our efforts to develop and commercialize our drug product candidates.

These and other factors arising from any future public health crises could adversely impact our business generally, and could have a material adverse impact on our operations and financial condition and results.

War, terrorism, other acts of violence, or natural or manmade disasters may affect the markets in which we operate, our patients and resources required in our research and development activities.

Our business may be adversely affected by political instability, disruption or destruction in a geographic region in which we operate, regardless of cause, including war, terrorism, riot, civil insurrection or social unrest, and natural or manmade disasters, including famine, flood, fire, earthquake, storm or pandemic events and spread of disease, such as the COVID-19 pandemic, and geopolitical conflicts. Such events may affect our business by increasing prices for resources required in our research and development activities or limiting our access to patients for our clinical trials which may delay our progress on one or more of our clinical or preclinical drug product candidates.

Risks Related to Our Reliance on Third Parties

We rely on third parties to conduct our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may not be able to successfully complete development of, obtain regulatory approval for, or commercialize our drug product candidates and our business could be substantially harmed.

We rely upon and plan to continue to rely upon third-party CROs for execution of our clinical trials, and control only certain aspects of their activities. Nevertheless, we are responsible for ensuring that each of our trials is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards and our reliance on the CROs does not relieve us of our regulatory responsibilities. We and our CROs, including our CMO Catalent Pharma Solutions, LLC, or Catalent, are required to comply with FDA laws and regulations regarding current good clinical practice, or GCP, for all of our products in clinical development. Regulatory authorities enforce GCP through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of our CROs fail to comply with applicable GCP, 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 be certain that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials comply with GCP regulations. In addition, our clinical trials must be conducted with product produced under GMP regulations. While we work closely with our

CMOs on the manufacturing process for our drug product candidates, including quality audits, we generally do not control the implementation of the manufacturing process of, and are completely dependent on, our CMOs for compliance with GMP regulatory requirements and for manufacture of both active drug substances and finished drug products. In addition, portions of the clinical trials for our drug product candidates may be conducted outside of the United States, which will make it more difficult for us to monitor CROs and perform visits of our clinical trial sites and will force us to rely heavily on CROs to ensure the proper and timely conduct of our clinical trials and compliance with applicable regulations, including GCP. Failure to comply with applicable regulations in the conduct of the clinical trials for our drug product candidates may require us to repeat clinical trials, which would delay the regulatory approval process.

Some of our CROs have an ability to terminate their respective agreements with us if, among other reasons, it can be reasonably demonstrated that the safety of the subjects participating in our clinical trials warrants termination, if we make a general assignment for the benefit of our creditors or if we are liquidated. If any of our relationships with these third-party CROs terminate for any reason, we may not be able to enter into arrangements with alternative CROs or to do so on commercially reasonable terms. In addition, our CROs are not our employees, and except for remedies available to us under our agreements with such CROs, we cannot control whether or not they devote sufficient time and resources to our preclinical and clinical programs. If CROs do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols, regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to obtain regulatory approval for or successfully commercialize our drug product candidates. Consequently, our results of operations and the commercial prospects for our drug product candidates would be harmed, our costs could increase substantially and our ability to generate revenue could be delayed significantly.

Switching or adding additional CROs involves additional 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 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.

We rely completely on third parties to manufacture our preclinical and clinical drug supplies for our drug product candidates.

We rely completely on third parties to manufacture clinical drug supplies for our drug product candidates. If we were to experience an unexpected loss of supply of our drug product candidates for any reason, whether as a result of manufacturing, supply or storage issues or otherwise, we could experience disruptions in supply or delays, suspensions or terminations of clinical trials or regulatory submissions. We do not currently have nor do we plan to acquire the infrastructure or capability internally to manufacture our preclinical and clinical drug supplies and we lack the resources and the capability to manufacture any of our drug product candidates on a clinical or commercial scale. The facilities used by our contract manufacturers or other third-party manufacturers to manufacture our drug product candidates, including Catalent and Ajinomoto, must obtain and maintain approval by the FDA. While we work closely with our third-party manufacturers on the manufacturing process for our drug product candidates, including quality audits, we generally do not control the implementation of the manufacturing process of, and are completely dependent on, our contract manufacturers or other third-party manufacturers for compliance with GMP regulatory requirements and for manufacture of both active drug substances and finished drug products. If our contract manufacturers or other third-party manufacturers cannot successfully manufacture material that conforms to applicable specifications and the strict regulatory requirements of the FDA or others, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities and we may not have sufficient access to supplies, which could significantly and adversely affect our operations.

In addition, we have no control over the ability of our contract manufacturers or other third-party manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve, or withdraws approval for, these facilities for the manufacture of our products and drug product candidates, we may need to find alternative manufacturing facilities, which would significantly impact our ability to commercialize, develop, or obtain or maintain regulatory approval for our products and drug product candidates.

We also rely on our manufacturers to purchase from third-party suppliers the materials necessary to produce our drug product candidates for our clinical trials. There are a limited number of suppliers for raw materials that we use to manufacture our products and drug product candidates and we may need to assess alternate suppliers to prevent a possible disruption of the manufacture of the materials necessary to produce our drug product candidates for our clinical trials. We do not have any control over the process or timing of the acquisition of these raw materials by our manufacturers. Moreover, we currently do not have any agreements for the commercial production of these raw materials. Although we generally do not begin a clinical trial unless we believe we have a sufficient supply of a product candidate to complete the clinical trial, any significant delay in the supply of a product candidate, or the raw material components thereof, for an ongoing clinical trial due to the need to

replace a contract manufacturer or other third-party manufacturer could considerably delay completion of our clinical trials, product testing and potential regulatory approval of our drug product candidates.

Reliance on third-party manufacturers entails additional risks, including the possible breach of manufacturing agreements by the third party, the possible misappropriation of our proprietary information and the possible termination or non-renewal of an agreement by a third party at a time that is costly or inconvenient for us.

We expect to continue to depend on contract manufacturers or other third-party manufacturers for the foreseeable future. We may, however, be unable to enter into agreements or do so on commercially reasonable terms for potential future drug product candidates, which could have a material adverse impact upon our business.

We rely on certain sole or limited sources of supply for our drug product candidates and disruptions in the chain of supply have in the past, and may in the future, cause delays in developing, obtaining approval for, and commercializing our drug product candidates.

Currently, we use Catalent and Ajinomoto as our source of supply for manufacturing clinical supply of our lead product candidates, CUE-101 and CUE-102. If we experience multiple successive batch failures, or if supply from Catalent and Ajinomoto is otherwise interrupted, there could be a significant disruption in our drug product candidates supply. Any alternative vendor would need to be qualified through an IND supplement, which could result in delay of our clinical trials of CUE-101 and CUE-102. On February 5, 2024, Catalent entered into a merger agreement under which Novo Holdings will acquire Catalent. The parties to the merger expected the acquisition to be completed towards the end of 2024. While we have been in communications with Catalent, and as of the filing of this report we are not aware of any delays or interruptions related to our agreements with Catalent as a result of the merger, we cannot guarantee that there will not be delays or interruptions in the future.

The manufacturing processes for CUE-101 and CUE-102 and our other drug product candidates are complex, and it may be difficult or impossible to finalize appropriate processes for the scaled manufacture of the drug product candidates. These factors could cause the delay of clinical trials, regulatory submissions, required approvals or commercialization of any of our drug product candidates; cause us to incur higher costs; or prevent us from commercializing them successfully. Furthermore, if our suppliers fail to deliver the required clinical or commercial quantities of active pharmaceutical ingredient on a timely basis and at commercially reasonable prices and we are unable to secure one or more replacement suppliers capable of production at a substantially equivalent cost, our clinical trials may be delayed.

For example, in January 2021, we were notified by Catalent that the manufacture of our GMP material for the CUE-102 drug product candidate would be delayed by approximately six weeks due to the invocation of the DPA. The delay in the manufacturing of our CUE-102 GMP batch impacted the expected filing date of the CUE-102 IND that was planned for the fourth quarter of 2021 and which was filed on March 31, 2022.

Risks Related to Intellectual Property and Other Legal Matters

If we or our licensor(s) is unable to protect our or its intellectual property, then our financial condition, results of operations and the value of our technology and potential products could be adversely affected.

Patents and other proprietary rights are essential to our business, and our ability to compete effectively is dependent upon the proprietary nature of our technologies. We also rely upon trade secrets, know-how, continuing technological innovations and licensing opportunities to develop, maintain and strengthen our competitive position. We seek to protect these, in part, through confidentiality agreements with certain employees, consultants and other parties. Our success will depend in part on the ability of ourselves and our licensor(s) to obtain, to maintain (including making periodic filings and payments) and to enforce patent protection for its intellectual property, particularly those patent applications and other intellectual property to which we have secured exclusive rights. We and our licensor(s) may not successfully prosecute or continue to prosecute the patent applications which we have licensed. Even if patents are issued in respect of pending patent applications, we or our licensor(s) may fail to maintain these patents, may determine not to pursue litigation against entities that are infringing upon these patents, or may pursue such enforcement less aggressively than we ordinarily would. Without adequate protection for the intellectual property that we own or license, others may be able to offer substantially identical products for sale, which could unfavorably affect our competitive business position and harm our business prospects. Even if issued, patents may be challenged, invalidated, or circumvented, which could limit our ability to stop competitors from marketing similar products or limit the length of the term of patent protection that we may have for our potential products.

Filing, prosecuting, maintaining and defending patents on drug product candidates in all countries throughout the world could be prohibitively expensive for us, and our intellectual property rights in some non-U.S. countries can have a

different scope and strength than do those in the United States. In addition, the laws of certain non-U.S. countries do not protect intellectual property rights to the same extent as U.S. federal and state laws do. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing drugs made using our inventions in and into the United States or non-U.S. jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own drugs and further, may export otherwise infringing drugs to non-U.S. jurisdictions where we have patent protection, but where enforcement rights are not as strong as those in the United States. These drugs may compete with our drug product candidates and our patent rights or other intellectual property rights may not be effective or adequate to prevent them from competing.

Many U.S.-based companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of some countries do not favor the enforcement of patents, trade secrets and other intellectual property, particularly those relating to biopharmaceutical products, which could make it difficult in those jurisdictions for us to stop the infringement or misappropriation of our patents or other intellectual property rights, or the marketing of competing drugs in violation of our proprietary rights. Proceedings to enforce our patent and other intellectual property rights in non-U.S. jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business.

Furthermore, such proceedings could put our patents at risk of being invalidated, held unenforceable or interpreted narrowly, could put our patent applications at risk of not issuing, and could provoke third parties to assert claims of infringement or misappropriation against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop.

If we are unable to protect the confidentiality of our proprietary information and know-how, the value of our technology and potential products could be adversely affected.

In addition to our licensed technology, we rely, and will continue to rely, upon, among other things, unpatented proprietary technology, processes, trade secrets, trademarks, and know-how. Any involuntary disclosure to or misappropriation by third parties of our confidential or proprietary information could enable competitors to duplicate or surpass our technological achievements, potentially eroding our competitive position in our market. We seek to protect confidential or proprietary information in part by confidentiality agreements with our employees, consultants and third parties. While we require all of our employees, consultants, advisors and any third parties who have access to our proprietary know-how, information and technology to enter into confidentiality agreements, we cannot be certain that this know-how, information and technology will not be disclosed or that competitors will not otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. These agreements may be terminated or breached, and we may not have adequate remedies for any such termination or breach. Furthermore, these agreements may not provide meaningful protection for our trade secrets and know-how in the event of unauthorized use or disclosure. To the extent that any of our staff was previously employed by other pharmaceutical, medical technology or biotechnology companies, those employers may allege violations of trade secrets and other similar claims in relation to their former employee's therapeutic development activities for us. Any dispute involving such employees may result in liabilities to us.

If we fail to comply with our obligations in the agreements under which we license development or commercialization rights to products or technology from third parties, we could lose license rights that are important to our business.

We hold an exclusive license from Einstein to intellectual property relating to certain patent rights, relating to our core technology platform for the engineering of biologics to control T cell activity, precision, immune-modulatory drug product candidates, and two supporting technologies that enable the discovery of costimulatory signaling molecules (ligands) and T cell targeting peptides. This license imposes various developmental milestone obligations on us. If we fail to comply with any obligations under the license agreement and fail to cure such noncompliance, Einstein will have the right to terminate the agreement and our license. The existing patent applications or future patents to which we have rights based on our agreements with Einstein may be too specific and narrowly construed to prevent third parties from developing or designing around the protection provided by these patents. Additionally, we may lose our rights to the patents and patent applications we license in the event of termination of the license agreement. There is no assurance that we will be successful in meeting all of the milestones in the future on a timely basis or that this license agreement will not be terminated for other reasons, depriving us of significant rights. The termination of this license agreement would have a material adverse effect on our financial condition, results of operations, and prospects.

If we are unable to patent and protect the intellectual property used in our potential products, others may be able to copy our innovations, which may impair our ability to compete effectively in our markets.

The strength of our anticipated patents will involve complex legal and scientific matters and can be uncertain. As described above under “Business – Our Intellectual Property,” we own or license a number of pending patent applications. Our anticipated patents may be challenged or fail to result in issued patents and anticipated patents may be too specific and narrowly construed to prevent third parties from developing or designing around the protections provided by our intellectual property and in that event we may lose competitive advantage and our business may suffer. Further, the patent and patent applications that we license or have filed may fail to result in issued patents or the claims may need to be amended. Even after amendment, a patent may not issue. In that event, we may not obtain the exclusive use of the intellectual property that we seek, and we may lose competitive advantage, which could result in harm to our business.

Litigation or third-party claims of intellectual property infringement or challenges to the validity of our anticipated patents would require us to use resources to protect our technology and may prevent or delay our development, regulatory approval or commercialization of our drug product candidates.

If we are the target of claims by third parties asserting that our potential products or intellectual property infringe upon the rights of others, we may be forced to incur substantial expenses or divert substantial employee resources from our business.

If successful, those claims could result in our having to pay substantial damages or could prevent us from developing one or more drug product candidates. Further, if a patent infringement suit is brought against us or our collaborators, we or they could be forced to stop or delay research, development, manufacturing or sales of the product or product candidate that is the subject of the suit.

If we or our collaborators experience patent infringement claims, or if we elect to avoid potential claims others may be able to assert, we or our collaborators may choose to seek, or be required to seek, a license from the third party and would most likely be required to pay license fees or royalties or both. These licenses may not be available on acceptable terms, or at all. Even if we or our collaborators were able to obtain a license, the rights may be nonexclusive, which would give our competitors access to the same intellectual property. Ultimately, we could be prevented from commercializing a product, or be forced to cease some aspect of our business operations if, as a result of actual or threatened patent infringement claims, we or our collaborators are unable to enter into license agreements on acceptable terms or at all. This could harm our business significantly. The cost to us of any litigation or other proceeding, regardless of its merit, and even if resolved in our favor, could be substantial. Some of our competitors may be able to bear the costs of such litigation or proceedings more effectively than we can because of their having greater financial and human resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace. Intellectual property litigation and other proceedings may, regardless of their merit, also absorb significant management time and employee resources.

Although we are not currently aware of any litigation or other proceedings or third-party claims of intellectual property infringement, the biotechnology and pharmaceutical industries are characterized by many suits regarding patents and other intellectual property rights. Other parties may in the future allege that our activities infringe upon their patents or that we are employing their proprietary technology without authorization. We may not have identified all the patents, patent applications or published literature that affect our business either by blocking our ability to commercialize our potential products, by preventing the patentability of one or more aspects of our potential products or those of our licensor or by covering the same or similar technologies that may affect our ability to market our potential products. In addition, even in the absence of litigation, we may need to obtain licenses from third parties to advance our research or allow commercialization of our drug product candidates, and we have done so from time to time. We may fail to obtain future licenses at a reasonable cost or on reasonable terms, if at all. In that event, we may be unable to further develop and commercialize one or more of our drug product candidates, which could harm our business significantly.

Some intellectual property that we have in-licensed may have been discovered through government funded programs and thus may be subject to federal regulations such as “march-in” rights, certain reporting requirements and a preference for U.S.-based companies. Compliance with such regulations may limit our exclusive rights and limit our ability to contract with non-U.S. manufacturers.

The majority of the intellectual property rights we have licensed are generated through the use of U.S. government funding and are therefore subject to certain federal regulations. As a result, the U.S. government may have certain rights to

intellectual property embodied in our current or future drug product candidates pursuant to the Bayh-Dole Act of 1980, or Bayh-Dole Act. These U.S. government rights in certain inventions developed under a government-funded program include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government has the right to require us to grant exclusive, partially exclusive, or non-exclusive licenses to any of these inventions to a third party if it determines that: (i) adequate steps have not been taken to commercialize the invention; (ii) government action is necessary to meet public health or safety needs; or (iii) government action is necessary to meet requirements for public use under federal regulations (also referred to as “march-in rights”). The U.S. government also has the right to take title to these inventions if we, or the applicable licensor, fail to disclose the invention to the government and fail 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 or the applicable licensor to expend substantial resources. In addition, the U.S. government requires that any products embodying the subject invention or produced through the use of the subject invention be manufactured substantially in the United States. The manufacturing preference requirement can be waived if the owner of the intellectual property can show that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. This preference for U.S. manufacturers may limit our ability to contract with non-U.S. product manufacturers for products covered by such intellectual property. To the extent any of our current or future intellectual property is generated through the use of U.S. government funding, the provisions of the Bayh-Dole Act may similarly apply.

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

Patents have a limited lifespan. In the U.S., if all maintenance fees are timely paid, the normal statutory term of a patent is generally 20 years from its earliest U.S. non-provisional filing date. Various extensions may be available, but the life of a patent, and the protection it affords, is limited. Further, normal statutory patent terms may be limited in the U.S. in the event there is a determination that the claims in different patents are directed to obvious variants of the same invention, which can negatively impact the normal statutory patent term. Even if patents covering our drug product candidates are obtained, once the patent life has expired for a product candidate, we may be open to competition from competitive medications, including generic medications. Given the amount of time required for the development, testing and regulatory review of new drug product candidates, patents protecting such drug product candidates might expire before or shortly after such drug product candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing drug product candidates similar or identical to ours.

Depending upon the timing, duration and conditions of any FDA marketing approval of our drug product candidates, one or more of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, referred to as the Hatch-Waxman Amendments, and similar legislation in the European Union. The Hatch-Waxman Amendments permit a patent term extension of up to five years for a patent covering an approved product as compensation for effective patent term lost during product development and the FDA regulatory review process. However, we may not receive an extension if we fail to exercise due diligence during the testing phase or regulatory review process, fail to apply within applicable deadlines, fail to apply prior to expiration of relevant patents or otherwise fail to satisfy applicable requirements. Moreover, the length of the extension could be less than we request. Only one patent per approved product can be extended, the extension cannot extend the total patent term beyond 14 years from approval, and the scope of protection is not the full scope of the claims but is instead limited to the approved drug, a method for using it or a method for manufacturing it may be extended. If we are unable to obtain patent term extension or the term of any such extension is less than we request, the period during which we can enforce our patent rights for the applicable product candidate will be shortened and our competitors may obtain approval to market competing products sooner. As a result, our revenue from applicable products could be reduced. Further, if this occurs, our competitors may take advantage of our investment in development and trials by referencing our clinical and preclinical data and launch their product earlier than might otherwise be the case, and our competitive position, business, financial condition, results of operations, and prospects could be materially harmed.

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

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

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

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

Risks Related to Government Regulation

Even if we complete the necessary preclinical studies and clinical trials, the marketing approval process is expensive, time-consuming, and uncertain and may prevent us from obtaining approvals for the commercialization of any of our drug product candidates. If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals, we will not be able to commercialize, or will be delayed in commercializing, our drug product candidates, and our ability to generate revenue will be materially impaired.

Any of our drug product candidates and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale, and distribution, are subject to comprehensive regulation by the FDA and other regulatory authorities in the United States and by comparable authorities in other countries. Failure to obtain marketing approval for a product candidate will prevent us from commercializing the product candidate in a given jurisdiction. We have not received approval to market any drug product candidates from regulatory authorities in any jurisdiction. We have only limited experience in filing and

supporting the applications necessary to gain marketing approvals and expect to rely on third-party CROs to assist us in this process. Securing regulatory approval requires the submission of extensive preclinical and clinical data and supporting information to the various regulatory authorities for each therapeutic indication to establish the biologic product candidate's safety, purity, and potency. Securing regulatory approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the relevant regulatory authority. Any of our drug product candidates may not be effective, may be only moderately effective, or may prove to have undesirable or unintended side effects, toxicities, or other characteristics that may preclude our obtaining marketing approval or prevent or limit commercial use.

Further, the process of obtaining marketing approvals, both in the United States and abroad, is expensive, may take many years if additional clinical trials are required, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. Changes in marketing approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application. For example, in December 2022, with the passage of FDORA, Congress required sponsors to develop and submit a diversity action plan for each Phase 3 clinical trial or any other "pivotal study" of a new drug or biological product. These plans are meant to encourage the enrollment of more diverse patient populations in late-stage clinical trials of FDA-regulated products. Further, on January 31, 2022, the new Clinical Trials Regulation (EU) No 536/2014 became effective in the European Union and replaced the prior Clinical Trials Directive 2001/20/EC. We have not previously secured authorization to conduct clinical studies in the EU pursuant to this new regulation and, accordingly, there is a risk that we may be delayed in commencing such studies.

In addition, under the PREA, a BLA or supplement to a BLA for certain biological products must contain data to assess the safety and effectiveness of the biological product in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective, unless the sponsor receives a deferral or waiver from the FDA. A deferral may be granted for several reasons, including a finding that the product or therapeutic candidate is ready for approval for use in adults before pediatric trials are complete or that additional safety or effectiveness data needs to be collected before the pediatric trials begin. The applicable legislation in the EU also requires sponsors to either conduct clinical trials in a pediatric population in accordance with a Pediatric Investigation Plan approved by the Pediatric Committee of the EMA, or to obtain a waiver or deferral from the conduct of these studies by the Pediatric Committee of the EMA. For any of our drug product candidates for which we are seeking regulatory approval in the U.S. or the EU, we cannot guarantee that we will be able to obtain a waiver or alternatively complete any required studies and other requirements in a timely manner, or at all, which could result in associated reputational harm and subject us to enforcement action.

Finally, the FDA and comparable authorities in other countries have substantial discretion in the approval process and may refuse to accept any application or may decide that our data is insufficient for approval and require additional preclinical, clinical, or other studies. In addition, varying interpretations of the data obtained from preclinical and clinical testing could delay, limit, or prevent marketing approval of a product candidate. Any marketing approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

If we experience delays in obtaining approval or if we fail to obtain approval of any of our drug product candidates, the commercial prospects for those drug product candidates may be harmed, and our ability to generate revenues will be materially impaired.

We are subject to regulation in respect of our research and federal funding.

Because our licensor has conducted research under federal grants and we may conduct further research under federal grants, we will be subject to federal regulation in how we conduct our research and the agreement terms relating to those grants. There are also ethical guidelines promulgated by various governments and research institutions that we are required to follow in respect of our research. These guidelines are orientated towards research and experimentation involving humans and animals. Failure to follow the regulations, agreement terms and accepted scientific practices would jeopardize our grants and our results and the use of the results in further research and approval circumstances. Because our licensor has used federal funding, the government retains a "march-in" right in connection with these grants, which is the right to grant additional licenses to practice inventions developed from grant funding.

In December 2023, the National Institute of Standards and Technology, or NIST, released for public comment a Draft Interagency Guidance Framework for Considering the Exercise of March-In Rights, or the Draft Framework. The Draft Framework sets forth the factors that an agency may consider when deciding whether to exercise march-in rights pursuant to

the Bayh-Dole Act and includes a first-ever specification that price can be a factor in determining that a drug or other taxpayer-funded invention is not accessible to the public. NIST is currently seeking public comments on the proposed Draft Framework. The potential inclusion of price as a factor in a march-in determination and the exercise of “march-in” rights by the federal government could result in decreased demand for our future products, which could have a material adverse effect on our results of operations and financial condition. In addition, any failure to comply with applicable laws or regulations could harm our business and divert our management’s attention.

Failure to obtain marketing approval in foreign jurisdictions would prevent any of our drug product candidates from being marketed in such jurisdictions, which, in turn, would materially impair our ability to generate revenue.

In order to market and sell any of our drug product candidates in the European Union and many other foreign jurisdictions, we or our collaborators must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain FDA approval. The regulatory approval process outside the United States generally includes all of the same or similar risks associated with obtaining FDA approval. In addition, in many countries outside the United States, it is required that the product be approved for reimbursement before the product can be approved for sale in that country. We may not obtain approvals from regulatory authorities outside the United States on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one regulatory authority outside the United States does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA. We may not be able to file for marketing approvals and may not receive necessary approvals to commercialize our drug product candidates in any jurisdiction, which would materially impair our ability to generate revenue.

Additionally, we could face heightened risks with respect to seeking marketing approval in the UK as a result of the withdrawal of the UK from the EU, commonly referred to as Brexit. A trade and cooperation agreement that outlines the future trading relationship between the UK and the EU was agreed to in December 2020 and entered into force on May 1, 2021. As of January 1, 2021, the Medicines and Healthcare products Regulatory Agency, or the MHRA, became responsible for supervising medicines and medical devices in Great Britain, comprising England, Scotland and Wales under domestic law, whereas Northern Ireland will continue to be subject to EU rules under the Northern Ireland Protocol (as amended by the so-called Windsor Framework relating to Northern Ireland agreed in February 2023). The MHRA relies on the Human Medicines Regulations 2012 (SI 2012/1916) (as amended), or the HMR, as the basis for regulating medicines. The HMR has incorporated into the domestic law of the body of EU law instruments governing medicinal products that pre-existed prior to the UK’s withdrawal from the EU. Since a significant proportion of the regulatory framework for pharmaceutical products in the UK covering the quality, safety, and efficacy of pharmaceutical products, clinical trials, marketing authorization, commercial sales, and distribution of pharmaceutical products is derived from EU directives and regulations, Brexit may have a material impact upon the regulatory regime with respect to the development, manufacture, importation, approval and commercialization of our drug product candidates in the UK. For example, the UK is no longer covered by the centralized procedures for obtaining EU-wide marketing authorization from the EMA, and a separate marketing authorization will be required to market our drug product candidates in the UK.

From January 1, 2024 on, a new international recognition procedure, or IRP, applies which intends to facilitate approval of pharmaceutical products in the UK. The IRP is open to applicants that have already received an authorization for the same product from one of MHRA’s specified Reference Regulators, or RRs. The RRs notably include EMA and regulators in the EEA member states for approvals in the EU centralized procedure and mutual recognition procedure as well as the FDA. However, the concrete functioning of the IRP is currently unclear. Any delay in obtaining, or an inability to obtain, any marketing approvals, as a result of Brexit or otherwise, may force us to restrict or delay efforts to seek regulatory approval in the UK for our drug product candidates, which could significantly and materially harm our business.

We expect that we will be subject to additional risks in commercializing any of our drug product candidates that receive marketing approval outside the United States, including tariffs, trade barriers and regulatory requirements; economic weakness, including inflation, or political instability in particular foreign economies and markets; compliance with tax, employment, immigration and labor laws for employees living or traveling abroad; foreign currency fluctuations, which could result in increased operating expenses and reduced revenue, and other obligations incident to doing business in another country; and workforce uncertainty in countries where labor unrest is more common than in the United States.

We may seek orphan drug designation for one or more of our drug product candidates, but even if such designation is granted, we may be unable to maintain any benefits associated with orphan drug designation, including market exclusivity that prevents the FDA or the EMA from approving other competing products.

Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug or biologic intended to treat a rare disease or condition. A similar regulatory scheme governs approval of orphan products by the EMA in the European Union. Generally, if a product candidate with an orphan drug designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the FDA or the EMA from approving another marketing application for the same product for the same therapeutic indication for that time period. The applicable period is seven years in the United States and ten years in the European Union. The exclusivity period in the European Union can be reduced to six years if a product no longer meets the criteria for orphan drug designation, in particular if the product is sufficiently profitable so that market exclusivity is no longer justified.

In order for the FDA to grant orphan drug exclusivity to one of our products, the agency must find that the product is indicated for the treatment of a condition or disease with a patient population of fewer than 200,000 individuals annually in the United States. The FDA may conclude that the condition or disease for which we seek orphan drug exclusivity does not meet this standard. Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different products can be approved for the same condition. In addition, even after an orphan drug is approved, the FDA can subsequently approve the same product for the same condition if the FDA concludes that the later product is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care. Orphan drug exclusivity may also be lost if the FDA or EMA determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the product to meet the needs of the patients with the rare disease or condition.

The FDA and Congress may further reevaluate the Orphan Drug Act and its regulations and policies. This may be particularly true in light of a decision from the Court of Appeals for the 11th Circuit in September 2021 finding that, for the purpose of determining the scope of exclusivity, the term “same disease or condition” means the designated “rare disease or condition” and could not be interpreted by the Agency to mean the “indication or use.” Although there have been legislative proposals to overrule this decision, they have not been enacted into law. On January 23, 2023, the FDA announced that, in matters beyond the scope of that court order, FDA will continue to apply its existing regulations tying orphan-drug exclusivity to the uses or indications for which the orphan drug was approved. We do not know if, when or how the FDA may change the orphan drug regulations and policies in the future, and it is uncertain how any changes might affect our business. Depending on what changes the FDA or Congress may make to its orphan drug regulations and policies, our business could be adversely impacted.

If approved, our drug product candidates that are licensed and regulated as biologics may face competition from biosimilars approved through an abbreviated regulatory pathway.

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, was enacted as part of the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively the PPACA, to establish an abbreviated pathway for the approval of biosimilar and interchangeable biological products. The regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as “interchangeable” based on its similarity to an approved biologic. Under the BPCIA, a reference biological product is granted 12 years of data exclusivity from the time of first licensure of the product, and the FDA will not accept an application for a biosimilar or interchangeable product based on the reference biological product until four years after the date of first licensure of the reference product. In addition, the licensure of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. During this 12-year period of exclusivity, another company may still develop and receive approval of a competing biologic, so long as its BLA does not rely on the reference product, sponsor’s data or submit the application as a biosimilar application. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning are subject to uncertainty, and any new policies or processes adopted by the FDA could have a material adverse effect on the future commercial prospects for our biological products.

We believe that any of the product candidates we develop as a biological product under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider the subject product candidates to be reference products for competing products, potentially creating the opportunity for biosimilar competition sooner than anticipated. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of the reference products in a way that is similar to traditional generic substitution for non-biological products will depend on a number of marketplace and regulatory factors that are still

developing. Nonetheless, the approval of a biosimilar to our drug product candidates would have a material adverse impact on our business due to increased competition and pricing pressure.

We may seek fast track designation or breakthrough therapy and priority review programs for our drug product candidates. Even if our drug product candidates receive one or more of these designations, the product candidate may not be subject to a faster review process nor does any such designation assure approval of our drug product candidates.

We aim to benefit from the FDA's fast track, breakthrough therapy and priority review programs. However, our drug product candidates may not receive an FDA fast track designation, breakthrough therapy designation, or priority review. Without fast track designation, submitting a BLA, and getting through the regulatory process to gain marketing approval is a lengthy process. Under fast track designation, the FDA may initiate review of sections of a fast track drug's BLA before the application is complete. However, the FDA's time period goal for reviewing an application does not begin until the last section of the BLA is submitted. On October 3, 2022, we received fast track designation for CUE-101 for the treatment of R/M HPV+ HNSCC as a monotherapy and in combination with KEYTRUDA.

The FDA has also established breakthrough therapy designation, which is for a product that is intended, either alone or in combination with one or more other products, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. The FDA may take certain actions with respect to breakthrough therapies, including holding meetings with the sponsor throughout the development process; providing timely advice to the sponsor regarding development and approval; involving more senior staff in the review process; assigning a cross-disciplinary project lead for the review team; and taking other steps to design the clinical trials in an efficient manner. We may seek breakthrough therapy designation for one or more of our drug product candidates, but there can be no assurance that we will receive such designation.

Under the FDA's policies, a product candidate is eligible for priority review, or review within a six-month time frame from the time a complete BLA is accepted for filing, if the product candidate provides a significant improvement compared to marketed drugs in the treatment, diagnosis or prevention of a disease. A fast track or breakthrough therapy designated drug product candidate would ordinarily meet the FDA's criteria for priority review.

The FDA has broad discretion with respect to whether or not to grant these designations to a product candidate, so even if we believe a particular product candidate is eligible for such designation or status, the FDA may decide not to grant it. Moreover, any such designation does not necessarily mean a faster regulatory review process or necessarily confer any advantage with respect to licensure compared to conventional FDA procedures. As a result, while we may seek and receive these designations for our drug product candidates, we may not experience a faster development process, review or approval compared to conventional FDA procedures. In addition, the FDA may withdraw these designations if it believes that the designation is no longer supported by data from our clinical development program. A delay in the review process or in the approval of our potential products would delay revenue, if any, from their potential sales and would increase the capital necessary to fund these product development programs.

We are also currently participating in Project Optimus, an initiative of the Oncology Center of Excellence at the FDA. This project focuses on dose optimization and dose selection in oncology drug development, and whether the current paradigm based on cytotoxic chemotherapeutics leads to doses and schedules of molecularly targeted therapies that provide more toxicity without additional efficacy, among other things. By participating in Project Optimus, we have the opportunity to meet with the FDA's Oncology Review Divisions early in our development programs, well before conducting trials intended for registration, to discuss dose-finding and dose optimization. The program thus allows us to develop strategies for dose finding and dose optimization that leverages nonclinical and clinical data in dose selection, including randomized evaluations of a range of doses in trials, with the objective of performing these studies as early as possible in the development program to bring promising new therapies to patients. There is no assurance, however, that our involvement in this program will lead to early discussions with the FDA or expedited studies leading to optimization of dose selection for our candidate products.

We may seek approval from the FDA or comparable foreign regulatory authorities to use accelerated development pathways for our drug product candidates. If we are not able to use such pathways, we may be required to conduct additional clinical trials beyond those that are contemplated, which would increase the expense of obtaining, and delay the receipt of, necessary marketing approvals, if we receive them at all. In addition, even if an accelerated approval pathway is available to us, it may not lead to expedited approval of our drug product candidates, or approval at all.

Under the Federal Food, Drug and Cosmetic Act, or the FDCA, and implementing regulations, the FDA may grant accelerated approval to a product candidate to treat a serious or life-threatening condition that provides meaningful therapeutic benefit over available therapies, upon a determination that the product has an effect on a surrogate endpoint or intermediate

clinical endpoint that is reasonably likely to predict clinical benefit. The FDA considers a clinical benefit to be a positive therapeutic effect that is clinically meaningful in the context of a given disease, such as irreversible morbidity or mortality. For the purposes of accelerated approval, a surrogate endpoint is a marker, such as a laboratory measurement, radiographic image, physical sign, or other measure that is thought to predict clinical benefit, but is not itself a measure of clinical benefit. An intermediate clinical endpoint is a clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit measurement of a therapeutic effect that is considered reasonably likely to predict the clinical benefit of a drug. The accelerated approval pathway may be used in cases in which the advantage of a new drug over available therapy may not be a direct therapeutic advantage, but is a clinically important improvement from a patient and public health perspective.

Prior to seeking such accelerated approval, we will continue to seek feedback from the FDA or comparable foreign regulatory agencies and otherwise evaluate our ability to seek and receive such accelerated approval. There can be no assurance that the FDA or foreign regulatory agencies will agree with our surrogate endpoints or intermediate clinical endpoints in any of our clinical trials, or that we will decide to pursue or submit any additional applications for accelerated approval or any other form of expedited development, review or approval. Similarly, there can be no assurance that, after feedback from the FDA or comparable foreign regulatory agencies, we will continue to pursue or apply for accelerated approval or any other form of expedited development, review or approval. Furthermore, for any submission of an application for accelerated approval or application under another expedited regulatory designation, there can be no assurance that such submission or application will be accepted for filing or that any expedited development, review or approval will be granted on a timely basis, or at all.

Finally, there can be no assurance that we will satisfy all FDA requirements, including new provisions that govern accelerated approval. For example, with passage of the FDORA in December 2022, Congress modified certain provisions governing accelerated approval of drug and biologic products. Specifically, the new legislation authorized the FDA to (i) require a sponsor to have its confirmatory clinical trial underway before accelerated approval is awarded; (ii) require a sponsor of a product granted accelerated approval to submit progress reports on its post-approval studies to FDA every six months until the study is completed; and (iii) use expedited procedures to withdraw accelerated approval of an NDA or a BLA after the confirmatory trial fails to verify the product's clinical benefit. Further, FDORA requires the agency to publish on its website "the rationale for why a post-approval study is not appropriate or necessary" whenever it decides not to require such a study upon granting accelerated approval. We will need to fully comply with these and other requirements in connection with the development and approval of any product candidate that qualifies for accelerated approval.

In March 2023, the FDA issued draft guidance that outlines its current thinking and approach to accelerated approval. The FDA indicated that the accelerated approval pathway is commonly used for approval of oncology drugs due to the serious and life-threatening nature of cancer. Although single-arm trials have been commonly used to support accelerated approval, a randomized controlled trial is the preferred approach as it provides a more robust efficacy and safety assessment and allows for direct comparisons to an available therapy. To that end, the FDA outlined considerations for designing, conducting, and analyzing data for trials intended to support accelerated approvals of oncology therapeutics. While this guidance is currently only in draft form and will ultimately not be legally binding even when finalized, we will need to observe the FDA's guidance closely to ensure that our products qualify for accelerated approval.

Accordingly, a failure to obtain and maintain accelerated approval or any other form of expedited development, review or approval for our drug product candidates, or withdrawal of a product candidate, would result in a longer time period until commercialization of such product candidate, could increase the cost of development of such product candidate and could harm our competitive position in the marketplace.

We may in the future, conduct clinical trials for certain of our drug product candidates at sites outside the United States. The FDA may not accept data from trials conducted in such locations and the conduct of trials outside the United States could subject us to additional delays and expense.

We may in the future conduct one or more of our clinical trials with trial sites that are located outside the United States. Although the FDA may accept data from clinical trials conducted outside the United States, acceptance of these data is subject to certain conditions imposed by the FDA. For example, the clinical trial must be well designed and conducted and performed by qualified investigators in accordance with good clinical practice. The FDA must be able to validate the data from the trial through an onsite inspection if necessary. The trial population must also have a similar profile to the U.S. population, and the data must be applicable to the U.S. population and U.S. medical practice in ways that the FDA deems clinically meaningful, except to the extent the disease being studied does not typically occur in the United States. In addition, while these clinical trials are subject to the applicable local laws, the FDA acceptance of the data will be dependent upon its determination that the trials also complied with all applicable U.S. laws and regulations. There can be no assurance that the FDA will accept data from clinical trials conducted outside of the United States. If the FDA does not accept the data from any trial that we

conduct outside the United States, it would likely result in the need for additional trials, which would be costly and time-consuming and delay or permanently halt our development of our drug product candidates.

In addition, the conduct of clinical trials outside the United States could have a significant adverse impact on us or the trial results. Risks inherent in conducting international clinical trials include:

- clinical practice patterns and standards of care that vary widely among countries;
- non-U.S. regulatory authority requirements that could restrict or limit our ability to conduct our clinical trials;
- administrative burdens of conducting clinical trials under multiple non-U.S. regulatory authority schema;
- foreign exchange rate fluctuations; and
- diminished protection of intellectual property in some countries.

To obtain the necessary approval of our potential products, as a precondition, we will need to conduct various preclinical and clinical tests, all of which will be costly and time consuming, and may not provide results that will allow us to seek regulatory approval.

The number of preclinical and clinical tests that will be required for regulatory approval varies depending on the disease or condition to be treated, the method of treatment, the nature of the drug, the jurisdiction in which approval is sought and the applicable regulations. Regulatory agencies can delay, limit or deny approval of a product for many reasons. For example, regulatory agencies may:

- not deem a product candidate to be safe or effective;
- interpret data from preclinical and clinical testing differently than we do;
- not approve the manufacturing processes;
- conclude that our drug product candidate does not meet quality standards for durability, long-term reliability, biocompatibility, compatibility, or safety; and
- change their approval policies or adopt new regulations.

The FDA may make requests or suggestions regarding conduct of any clinical trials, resulting in an increased risk of difficulties or delays in obtaining regulatory approval in the United States. Foreign regulatory agencies may similarly have the ability to influence any clinical trials occurring outside the United States. Any of these occurrences could prove materially harmful to our operations and business.

Even if we, or any collaborators we may have, obtain marketing approvals for any of our drug product candidates, the terms of approvals and ongoing regulation of our products could require the substantial expenditure of resources and may limit how we, or they, manufacture and market our products, which could materially impair our ability to generate revenue.

Any product candidate for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, advertising, and promotional activities for such product, will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, GMP requirements relating to quality control, quality assurance and corresponding maintenance of records and documents, and requirements regarding the distribution of samples to physicians and recordkeeping. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for costly post-marketing testing and surveillance to monitor the safety or efficacy of the product.

Accordingly, assuming we, or any collaborators we may have, receive marketing approval for one or more of our drug product candidates, we, and such collaborators, and our and their contract manufacturers will continue to need to expend time, money, and effort in all areas of regulatory compliance, including manufacturing, production, product surveillance, and quality control. If we and such collaborators are not able to comply with post-approval regulatory requirements, we and such collaborators could have the marketing approvals for our products withdrawn by regulatory authorities and our, or such

collaborators', ability to market any future products could be limited, which could adversely affect our ability to generate revenue and achieve or sustain profitability. Further, the cost of compliance with post-approval regulations may have a negative effect on our business, operating results, financial condition, and prospects.

If we receive regulatory approval for any product candidate, we will be subject to ongoing obligations and continuing regulatory review, which may result in significant additional expense. Our drug product candidates, if approved, could be subject to restrictions or withdrawal from the market, and we may be subject to penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our drug product candidates, when and if approved.

Any drug product candidate for which we obtain marketing approval will also be subject to ongoing regulatory requirements for labeling, packaging, storage, distribution, advertising, promotion, record-keeping and submission of safety and other post marketing information. For example, approved products, manufacturers and manufacturers' facilities are required to comply with extensive FDA requirements, including ensuring that quality control and manufacturing procedures conform to cGMPs. As such, we and our contract manufacturers will be subject to continual review and periodic inspections to assess compliance with cGMPs. Accordingly, we and others with whom we work must continue to expend time, money and effort in all areas of regulatory compliance, including manufacturing, production and quality control. We will also be required to report certain adverse reactions and production problems, if any, to the FDA and to comply with requirements concerning advertising and promotion for our products.

In addition, even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed, may be subject to significant conditions of approval or may impose requirements for costly post-marketing testing and surveillance to monitor the safety or efficacy of the product. The FDA may also require a REMS as a condition of approval of our drug product candidates, which could include requirements for a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools.

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, it may impose restrictions on that product or us. In addition, if any product fails to comply with applicable regulatory requirements, a regulatory agency may:

- issue fines, warning letters, untitled letters or impose holds on clinical trials if any are still ongoing;
- mandate modifications to promotional materials or require provision of corrective information to healthcare practitioners;
- impose restrictions on the product or its manufacturers or manufacturing processes;
- impose restrictions on the labeling or marketing of the product;
- impose restrictions on product distribution or use;
- require post-marketing clinical trials;
- require withdrawal of the product from the market;
- refuse to approve pending applications or supplements to approved applications that we submit;
- require recall of the product;
- require entry into a consent decree, which can include imposition of various fines (including restitution or disgorgement of profits or revenue), reimbursements for inspection costs, required due dates for specific actions and penalties for non-compliance;
- suspend or withdraw marketing approvals;
- refuse to permit the import or export of the product;
- seize or detain supplies of the product; or

- issue injunctions or impose civil or criminal penalties.

Finally, our ability to develop and market new drug products may be impacted by ongoing litigation challenging the FDA's approval of mifepristone. Specifically, on April 7, 2023, the U.S. District Court for the Northern District of Texas stayed the approval by the FDA of mifepristone, a drug product which was originally approved in 2000 and whose distribution is governed by various conditions adopted under a REMS. In reaching that decision, the district court made a number of findings that may negatively impact the development, approval and distribution of drug products in the U.S. Among other determinations, the district court held that plaintiffs were likely to prevail in their claim that FDA had acted arbitrarily and capriciously in approving mifepristone without sufficiently considering evidence bearing on whether the drug was safe to use under the conditions identified in its labeling. Further, the district court read the standing requirements governing litigation in federal court as permitting a plaintiff to bring a lawsuit against the FDA in connection with its decision to approve an NDA or establish requirements under a REMS based on a showing that the plaintiff or its members would be harmed to the extent that FDA's drug approval decision effectively compelled the plaintiffs to provide care for patients suffering adverse events caused by a given drug.

On April 12, 2023, the district court decision was stayed, in part, by the U.S. Court of Appeals for the Fifth Circuit. Thereafter, on April 21, 2023, the U.S. Supreme Court entered a stay of the district court's decision, in its entirety, pending disposition of the appeal of the district court decision in the Court of Appeals for the Fifth Circuit and the disposition of any petition for a writ of certiorari to the U.S. Supreme Court. The Court of Appeals for the Fifth Circuit held oral argument in the case on May 17, 2023 and, on August 16, 2023, issued its decision. The court declined to order the removal of mifepristone from the market, finding that a challenge to the FDA's initial approval in 2000 is barred by the statute of limitations. But the Appeals Court did hold that plaintiffs were likely to prevail in their claim that changes allowing for expanded access of mifepristone that FDA authorized in 2016 and 2021 were arbitrary and capricious. On September 8, 2023, the Justice Department and a manufacturer of mifepristone filed petitions for a writ of certiorari, requesting that asked the U.S. Supreme Court to review the Appeals Court decision. On December 13, 2023, the U.S. Supreme Court granted these petitions for writ of certiorari for the appeals court decision.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any approval that we may have obtained and we may not achieve or sustain profitability. Further, any government investigation of alleged violations of law could require us to expend significant time and resources in response and could generate negative publicity. The occurrence of any event or penalty described above may inhibit our ability to commercialize any drug product candidates we develop and adversely affect our business, financial condition, results of operations, and prospects.

Similar restrictions apply to the approval of our products in the EU. The holder of a marketing authorization is required to comply with a range of requirements applicable to the manufacturing, marketing, promotion and sale of medicinal products. These include: compliance with the EU's stringent pharmacovigilance or safety reporting rules, which can impose post-authorization studies and additional monitoring obligations; the manufacturing of authorized medicinal products, for which a separate manufacturer's license is mandatory; and the marketing and promotion of authorized drugs, which are strictly regulated in the EU and are also subject to EU Member State laws. The failure to comply with these and other EU requirements can also lead to significant penalties and sanctions.

Any regulatory approval to market our products will be limited by indication. If we fail to comply or are found to be in violation of FDA regulations restricting the promotion of our products for unapproved uses, we could be subject to criminal penalties, substantial fines or other sanctions and damage awards.

The regulations relating to the promotion of products for unapproved uses are complex and subject to substantial interpretation by the FDA, EMA, MHRA and other government agencies. In September 2021, the FDA published final regulations which describe the types of evidence that the agency will consider in determining the intended use of a drug product. Physicians may nevertheless prescribe our products off-label to their patients in a manner that is inconsistent with the approved label. We intend to implement compliance and training programs designed to ensure that our sales and marketing practices comply with applicable regulations. Notwithstanding these programs, the FDA or other government agencies may allege or find that our practices constitute prohibited promotion of our products for unapproved uses. We also cannot be sure that our employees will comply with company policies and applicable regulations regarding the promotion of products for unapproved uses.

Notwithstanding the regulatory restrictions on off-label promotion, the FDA and other regulatory authorities allow companies to engage in truthful, non-misleading, and non-promotional scientific communications concerning their products in certain circumstances. For example, in October 2023, the FDA published draft guidance outlining the agency's non-binding policies governing the distribution of scientific information on unapproved uses to healthcare providers. This draft guidance calls for such communications to be truthful, non-misleading, factual, and unbiased and include all information necessary for healthcare providers to interpret the strengths and weaknesses and validity and utility of the information about the unapproved use. In addition, under some relatively recent guidance from the FDA and the Pre-Approval Information Exchange Act, or PIE Act, signed into law as part of the Consolidated Appropriations Act of 2023, companies may also promote information that is consistent with the prescribing information and proactively speak to formulary committee members of payors regarding data for an unapproved drug or unapproved uses of an approved drug. We may engage in these discussions and communicate with healthcare providers, payors and other constituencies in compliance with all applicable laws, regulatory guidance and industry best practices. We will need to carefully navigate the FDA's various regulations, guidance and policies, along with recently enacted legislation, to ensure compliance with restrictions governing promotion of our products.

In recent years, a significant number of pharmaceutical and biotechnology companies have been the target of inquiries and investigations by various federal and state regulatory, investigative, prosecutorial and administrative entities in connection with the promotion of products for unapproved uses and other sales practices, including the Department of Justice and various U.S. Attorneys' Offices, the Office of Inspector General of the HHS, the FDA, the Federal Trade Commission, or the FTC, and various state Attorneys General offices. These investigations have alleged violations of various federal and state laws and regulations, including claims asserting antitrust violations, violations of the FDCA, the False Claims Act, the Prescription Drug Marketing Act and anti-kickback laws and other alleged violations in connection with the promotion of products for unapproved uses, pricing and Medicare and/or Medicaid reimbursement. Many of these investigations originate as "*qui tam*" actions under the False Claims Act. Under the False Claims Act, any individual can bring a claim on behalf of the government alleging that a person or entity has presented a false claim or caused a false claim to be submitted to the government for payment. The person bringing a *qui tam* suit is entitled to a share of any recovery or settlement. *Qui tam* suits, also commonly referred to as "whistleblower suits," are often brought by current or former employees. In a *qui tam* suit, the government must decide whether to intervene and prosecute the case. If it declines, the individual may pursue the case alone.

If the FDA or any other governmental agency initiates an enforcement action against us or if we are the subject of a *qui tam* suit and it is determined that we violated prohibitions relating to the promotion of products for unapproved uses, we could be subject to substantial civil or criminal fines or damage awards and other sanctions such as consent decrees and corporate integrity agreements pursuant to which our activities would be subject to ongoing scrutiny and monitoring to ensure compliance with applicable laws and regulations. Any such fines, awards or other sanctions would have an adverse effect on our revenue, business, financial prospects and reputation.

Inadequate funding for the FDA, the SEC and other government agencies, including from government shutdowns, or other disruptions to these agencies' operations, could hinder their ability to hire and retain key leadership and other personnel, prevent new products and services from being developed or commercialized in a timely manner or otherwise prevent those agencies from performing normal business functions on which the operation of our business may rely, 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, ability to hire and retain key personnel and accept the payment of user fees, and statutory, regulatory and policy changes, which has caused average review times at the agency to fluctuate in recent years. Disruptions at the FDA and other agencies may also slow the time necessary for new product candidates to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. In addition, government funding of the SEC and other government agencies on which our operations may rely, including those that fund research and development activities or enable capital raising 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 product candidates 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 and the SEC, have had to furlough critical FDA, SEC and other government employees and stop critical activities. If a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our business. Separately, in response to the COVID-19 pandemic, a number of companies announced receipt of complete response letters due to the FDA's inability to complete required inspections for their applications. Further, future government shutdowns or other events could impact the SEC, which could

harm our ability to access the public markets and obtain necessary capital in order to properly capitalize and continue our operations.

Accordingly, if a prolonged government shutdown or other disruption occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our business. Future shutdowns or other disruptions could also affect other government agencies such as the SEC, which may also impact our business by delaying review of our public filings, to the extent such review is necessary, and our ability to access the public markets.

Our relationships with healthcare providers, physicians, and third-party payors will be subject to applicable anti-kickback, fraud and abuse, and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, and diminished profits and future earnings.

Healthcare providers, physicians, and third-party payors play a primary role in the recommendation and prescription of any of our drug product candidates for which we obtain marketing approval. Our future arrangements with third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell, and distribute our products for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations include the following:

- the federal healthcare anti-kickback statute prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving, or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order, or recommendation of, any good or service, for which payment may be made under federal and state healthcare programs such as Medicare and Medicaid;
- the federal False Claims Act imposes criminal and civil penalties, including civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, claims for payment or approval from Medicare, Medicaid, or other government payors that are false or fraudulent or making a false statement to avoid, decrease, or conceal an obligation to pay money to the federal government, with potential liability including mandatory treble damages and significant per-claim penalties;
- the federal Health Insurance Portability and Accountability Act of 1996, as further amended by the Health Information Technology for Economic and Clinical Health Act, which imposes certain requirements, including mandatory contractual terms, with respect to safeguarding the privacy, security, and transmission of individually identifiable health information without appropriate authorization by entities subject to the rule, such as health plans, health care clearinghouses, and health care providers;
- the federal false statements statute, which prohibits knowingly and willfully falsifying, concealing, or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items, or services;
- the federal transparency requirements under the federal Physician Payment Sunshine Act, which requires manufacturers of drugs, devices, biologics, and medical supplies to report to the HHS information related to payments and other transfers of value to physicians, other healthcare providers and teaching hospitals, and ownership and investment interests held by physicians and their immediate family members and applicable group purchasing organizations; and
- analogous state laws and regulations, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, and certain state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring drug manufacturers to report information related to payments to physicians and other health care providers or marketing expenditures.

Because of the breadth of these laws and the narrowness of the statutory exceptions and safe harbors available, it is possible that some of our business activities could be subject to challenge under one or more of such laws. If our operations are found to be in violation of any of the laws described above or any other government regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, exclusion from participation in government health

care programs, such as Medicare and Medicaid, imprisonment, and the curtailment or restructuring of our operations, any of which could adversely affect our business, financial condition, results of operations, and prospects.

The provision of benefits or advantages to physicians to induce or encourage the prescription, recommendation, endorsement, purchase, supply, order, or use of medicinal products is prohibited in the European Union. The provision of benefits or advantages to physicians is also governed by the national anti-bribery laws of European Union Member States, such as the UK Bribery Act 2010. Infringement of these laws could result in substantial fines and imprisonment.

Payments made to physicians in certain European Union Member States must be publicly disclosed. Moreover, agreements with physicians often must be the subject of prior notification and approval by the physician's employer, his or her competent professional organization, and/or the regulatory authorities of the individual European Union Member States. These requirements are provided in the national laws, industry codes, or professional codes of conduct applicable in the European Union Member States. Failure to comply with these requirements could result in reputational risk, public reprimands, administrative penalties, fines, or imprisonment.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations, or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal, and administrative penalties, damages, fines, exclusion from government funded healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations. If any of the physicians or other providers or entities with whom we expect to do business are found to be not in compliance with applicable laws, they may be subject to criminal, civil, or administrative sanctions, including exclusions from government funded healthcare programs. Liabilities they incur pursuant to these laws could result in significant costs or an interruption in operations, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

If commercial third-party payors or government payors fail to provide coverage or adequate reimbursement, our revenue and prospects for profitability would be harmed.

There is increasing pressure on biotechnology and pharmaceutical companies to reduce healthcare costs. In the United States, these pressures come from a variety of sources, such as managed care groups and institutional and government purchasers. Increased purchasing power of entities that negotiate on behalf of federal healthcare programs and private sector beneficiaries could increase pricing pressures in the future. Such pressures may also increase the risk of litigation or investigation by the government regarding pricing calculations. The biotechnology and pharmaceutical industries will likely face greater regulation and political and legal actions in the future.

There is increased uncertainty related to the insurance coverage and reimbursement of newly approved products. In the United States, the principal decisions about reimbursement for new products are typically made by the Centers for Medicare & Medicaid Services, or CMS, an agency within HHS, as CMS decides whether and to what extent a new product will be covered and reimbursed under Medicare. Private payors tend to follow CMS to a substantial degree. It is difficult to predict what CMS will decide with respect to reimbursement. Adverse pricing limitations may hinder our ability to recoup our investment in one or more future drug product candidates, even if our future drug product candidates obtain regulatory approval. Adverse pricing limitations prior to approval will also adversely affect us by reducing our commercial potential. Our ability to commercialize any potential products successfully also will depend in part on the extent to which reimbursement for these products and related treatments becomes available from government health administration authorities, private health insurers and other organizations. Government authorities and third-party payors, such as private health insurers, pharmacy benefit managers, and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels.

A significant trend in the U.S. healthcare industry and elsewhere is cost containment. Government authorities and these third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payors are requiring that companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. We cannot be sure that coverage and reimbursement will be available for any product that we commercialize in the future and, if reimbursement is available, what the level of reimbursement will be. Reimbursement may impact the demand for, or the price of, any product for which we obtain marketing approval in the future. If reimbursement is not available or is available only to limited levels, we may not be able to successfully commercialize any product candidate that we successfully develop.

There may be significant delays in obtaining reimbursement for approved products, and coverage may be more limited than the purposes for which the product is approved by the FDA or regulatory authorities in other countries. Moreover, eligibility for reimbursement does not imply that any product will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Interim payments for new products, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Payment rates may vary according to the use of the product and the clinical setting in which it is used, may be based on payments allowed for lower cost products that are already reimbursed and may be incorporated into existing payments for other services. Net prices for products may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of products from countries where they may be sold at lower prices than in the United States. Our inability to promptly obtain coverage and profitable payment rates from both government funded and private payors for future products that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize potential products and our overall financial condition.

Recently enacted and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize our drug product candidates and affect the prices we may obtain for any products that are approved in the United States or foreign jurisdictions.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of our drug product candidates, restrict or regulate post-approval activities and affect our ability to profitably sell any drug product candidates for which we obtain marketing approval. The pharmaceutical industry has been a particular focus of these efforts and have been significantly affected by legislative initiatives. Current laws, as well as other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any FDA approved product.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, or the MMA, changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly and introduced a new reimbursement methodology based on average sales prices for physician-administered drugs. In addition, this legislation provided authority for limiting the number of drugs that will be covered in any therapeutic class. Cost reduction initiatives and other provisions of this legislation could decrease the coverage and price that we receive for any approved products. While the MMA applies only to drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement rates. Therefore, any reduction in reimbursement that results from the MMA may result in a similar reduction in payments from private payors.

In March 2010, the PPACA was signed into law. In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least \$1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. These changes included aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, which went into effect in April 2013 and will remain in effect through 2031 pursuant to the Coronavirus Aid, Relief, and Economic Security Act, or the CARES Act.

The American Taxpayer Relief Act of 2012, among other things, reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws may result in additional reductions in Medicare and other healthcare funding and otherwise affect the prices we may obtain for any of our drug product candidates for which we may obtain regulatory approval or the frequency with which any such product candidate is prescribed or used. Indeed, under current legislation, the actual reductions in Medicare payments may vary up to 4%. The Consolidated Appropriations Act, which was signed into law in December 2022, made several changes to sequestration of the Medicare program. Section 1001 of the Act delays the 4% Statutory Pay-As-You-Go Act of 2010, or PAYGO, sequester for two years, through the end of calendar year 2024. Triggered by enactment of the American Rescue Plan Act of 2021, the 4% cut to the Medicare program would have taken effect in January 2023. The Act's healthcare offset title includes Section 4163, which extends the 2% Budget Control Act of 2011 Medicare sequester for six months into fiscal year 2032 and lowers the payment reduction percentages in fiscal years 2030 and 2031.

Since enactment of the PPACA, there have been, and continue to be, numerous legal challenges and Congressional actions to repeal and replace provisions of the law. For example, with enactment of the Tax Cuts and Jobs Act of 2017, or the TCJA, Congress repealed the "individual mandate." The repeal of this provision, which requires most Americans to carry a minimal level of health insurance, became effective in 2019. Further, on June 17, 2021, the U.S. Supreme Court dismissed an

action challenging the PPACA after finding that the plaintiffs did not have standing to challenge the constitutionality of the law. Litigation and legislation over the PPACA are likely to continue, with unpredictable and uncertain results.

The former administration also took executive actions to undermine or delay implementation of the PPACA, including directing federal agencies with authorities and responsibilities under the PPACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the PPACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. On January 28, 2021, however, the current administration issued a new Executive Order which directs federal agencies to reconsider rules and other policies that limit Americans' access to health care and consider actions that will protect and strengthen that access. Under this Order, federal agencies are directed to re-examine: policies that undermine protections for people with pre-existing conditions, including complications related to COVID-19; demonstrations and waivers under Medicaid and the PPACA that may reduce coverage or undermine the programs, including work requirements; policies that undermine the Health Insurance Marketplace or other markets for health insurance; policies that make it more difficult to enroll in Medicaid and the PPACA; and policies that reduce affordability of coverage or financial assistance, including for dependents. This Executive Order also directs HHS to create a special enrollment period for the Health Insurance Marketplace in response to the COVID-19 pandemic.

The prices of prescription pharmaceuticals in the United States and foreign jurisdictions are subject to considerable legislative and executive actions and could impact the prices we obtain for our products, if approved.

The prices of prescription pharmaceuticals have been the subject of considerable legislative and executive actions in the United States. There have been several recent U.S. congressional inquiries, as well as proposed and enacted state and federal legislation designed to, among other things, bring more transparency to pharmaceutical pricing, review the relationship between pricing and manufacturer patient programs, and reduce the costs of pharmaceuticals under Medicare and Medicaid. In 2020, the White House issued several executive orders intended to lower the costs of prescription products and certain provisions in these orders have been incorporated into regulations. These regulations include an interim final rule implementing a most favored nation model for prices that would tie Medicare Part B payments for certain physician-administered pharmaceuticals to the lowest price paid in other economically advanced countries, effective January 1, 2021. That rule, however, has been subject to a nationwide preliminary injunction and, on December 29, 2021, CMS issued a final rule to rescind it. With issuance of this rule, CMS stated that it will explore all options to incorporate value into payments for Medicare Part B pharmaceuticals and improve beneficiaries' access to evidence-based care.

In addition, in October 2020, HHS and the FDA published a final rule allowing states and other entities to develop a Section 804 Importation Program, or SIP, to import certain prescription drugs from Canada into the United States. That regulation was challenged in a lawsuit by the Pharmaceutical Research and Manufacturers of America, or PhRMA, but the case was dismissed by a federal district court in February 2023 after the court found that PhRMA did not have standing to sue HHS. Nine states (Colorado, Florida, Maine, New Hampshire, New Mexico, North Dakota, Texas, Vermont and Wisconsin) have passed laws allowing for the importation of drugs from Canada. Certain of these states have submitted Section 804 Importation Program proposals and are awaiting FDA approval. On January 5, 2023, the FDA approved Florida's plan for Canadian drug importation.

Further, on November 20, 2020, HHS finalized a regulation removing safe harbor protection for price reductions from pharmaceutical manufacturers to plan sponsors under Part D, either directly or through pharmacy benefit managers, unless the price reduction is required by law. The final rule would eliminate the current safe harbor for Medicare drug rebates and create new safe harbors for beneficiary point-of-sale discounts and pharmacy benefit manager service fees. It originally was set to go into effect on January 1, 2022, but with passage of the Inflation Reduction Act of 2022, or IRA, has been delayed by Congress to January 1, 2032.

More recently, on August 16, 2022, the IRA was signed into law by the President of the United States. The new legislation has implications for Medicare Part D, which is a program available to individuals who are entitled to Medicare Part A or enrolled in Medicare Part B to give them the option of paying a monthly premium for outpatient prescription drug coverage. Among other things, the IRA requires manufacturers of certain drugs to engage in price negotiations with Medicare (beginning in 2026), with prices that can be negotiated subject to a cap; imposes rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation (first due in 2023); and replaces the Part D coverage gap discount program with a new discounting program (beginning in 2025). The IRA permits the Secretary of HHS to implement many of these provisions through guidance, as opposed to regulation, for the initial years.

Specifically, with respect to price negotiations, Congress authorized Medicare to negotiate lower prices for certain costly single-source drug and biologic products that do not have competing generics or biosimilars and are reimbursed under

Medicare Part B and Part D. CMS may negotiate prices for ten high-cost drugs paid for by Medicare Part D starting in 2026, followed by 15 Part D drugs in 2027, 15 Part B or Part D drugs in 2028, and 20 Part B or Part D drugs in 2029 and beyond. This provision applies to drug products that have been approved for at least nine years and biologics that have been licensed for 13 years, but it does not apply to drugs and biologics that have been approved for a single rare disease or condition. Nonetheless, since CMS may establish a maximum price for these products in price negotiations, we would be fully at risk of government action if our products are the subject of Medicare price negotiations. Moreover, given the risk that could be the case, these provisions of the IRA may also further heighten the risk that we would not be able to achieve the expected return on our drug products or full value of our patents protecting our products if prices are set after such products have been on the market for nine years.

The legislation subjects drug manufacturers to civil monetary penalties and a potential excise tax for failing to comply with the legislation by offering a price that is not equal to or less than the negotiated “maximum fair price” under the law or for taking price increases that exceed inflation. The legislation also requires manufacturers to pay rebates for drugs in Medicare Part D whose price increases exceed inflation. The new law also caps Medicare out-of-pocket drug costs at an estimated \$4,000 a year in 2024 and, thereafter beginning in 2025, at \$2,000 a year. In addition, the IRA potentially raises legal risks with respect to individuals participating in a Medicare Part D prescription drug plan who may experience a gap in coverage if they required coverage above their initial annual coverage limit before they reached the higher threshold, or “catastrophic period” of the plan. Individuals requiring services exceeding the initial annual coverage limit and below the catastrophic period, must pay 100% of the cost of their prescriptions until they reach the catastrophic period. Among other things, the IRA contains many provisions aimed at reducing this financial burden on individuals by reducing the co-insurance and co-payment costs, expanding eligibility for lower income subsidy plans, and placing price caps on annual out-of-pocket expenses, each of which could have potential pricing and reporting implications.

On June 6, 2023, Merck & Co. filed a lawsuit against the HHS and CMS asserting that, among other things, the IRA’s Drug Price Negotiation Program for Medicare constitutes an uncompensated taking in violation of the Fifth Amendment of the Constitution. Subsequently, a number of other parties, including the U.S. Chamber of Commerce, Bristol Myers Squibb Company, PhRMA, Astellas, Novo Nordisk, Janssen Pharmaceuticals, Novartis, AstraZeneca and Boehringer Ingelheim, also filed lawsuits in various courts with similar constitutional claims against the HHS and CMS. We expect that litigation involving these and other provisions of the IRA will continue, with unpredictable and uncertain results. Accordingly, while it is currently unclear how the IRA will be effectuated, we cannot predict with certainty what impact any federal or state health reforms will have on us, but such changes could impose new or more stringent regulatory requirements on our activities or result in reduced reimbursement for our products, any of which could adversely affect our business, results of operations and financial condition.

While it is currently unclear how the IRA will be effectuated, we cannot predict with certainty what impact any federal or state health reforms will have on us, but such changes could impose new or more stringent regulatory requirements on our activities or result in reduced reimbursement for our products, any of which could adversely affect our business, results of operations and financial condition.

At the state level, individual states are increasingly aggressive in passing legislation and implementing regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. In addition, regional health care organizations and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other health care programs. These measures could reduce the ultimate demand for our products, once approved, or put pressure on our product pricing. We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our drug product candidates or additional pricing pressures.

In countries outside of the United States, particularly the countries of the European Union, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product. To obtain reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of our drug product candidate to other available therapies. If reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business could be harmed, possibly materially.

Compliance with the HIPAA security, privacy and breach notification regulations may increase our costs.

The HIPAA privacy, security and breach notification regulations, including the expanded requirements under HITECH, establish comprehensive federal standards with respect to the uses and disclosures of protected health information, or PHI, by health plans, healthcare providers and healthcare clearinghouses, in addition to setting standards to protect the confidentiality, integrity and security of PHI. The regulations establish a complex regulatory framework on a variety of subjects, including:

- the circumstances under which uses and disclosures of PHI are permitted or required without a specific authorization by the patient, including but not limited to treatment purposes, activities to obtain payments for our services, and our healthcare operations activities;
- a patient's rights to access, amend and receive an accounting of certain disclosures of PHI;
- requirements to notify individuals if there is a breach of their PHI;
- the contents of notices of privacy practices for PHI;
- administrative, technical and physical safeguards required of entities that use or receive PHI; and
- the protection of computing systems maintaining electronic PHI.

We have implemented practices intended to meet the requirements of the HIPAA privacy, security and breach notification regulations, as required by law. We are required to comply with federal privacy, security and breach notification regulations as well as varying state privacy, security and breach notification laws and regulations, which may be more stringent than federal HIPAA requirements. In addition, for healthcare data transfers from other countries relating to citizens of those countries, we must comply with the laws of those countries. The federal privacy regulations restrict our ability to use or disclose patient identifiable data, without patient authorization, for purposes other than payment, treatment, healthcare operations and certain other specified disclosures such as public health and governmental oversight of the healthcare industry.

HIPAA provides for significant fines and other penalties for wrongful use or disclosure of PHI, including potential civil and criminal fines and penalties. Computer networks are always vulnerable to breach and unauthorized persons may in the future be able to exploit weaknesses in the security systems of our computer networks and gain access to PHI. Additionally, we share PHI with third parties who are legally obligated to safeguard and maintain the confidentiality of PHI. Unauthorized persons may be able to gain access to PHI stored in such third-parties computer networks. Any wrongful use or disclosure of PHI by us or such third parties, including disclosure due to data theft or unauthorized access to our or our third-parties computer networks, could subject us to fines or penalties that could adversely affect our business and results of operations. Although the HIPAA statute and regulations do not expressly provide for a private right of damages, we could also incur damages under state laws to private parties for the wrongful use or disclosure of confidential health information or other private personal information.

Compliance with global privacy and data security requirements could result in additional costs and liabilities to us or inhibit our ability to collect and process data globally, and the failure to comply with such requirements could subject us to significant fines and penalties, which may have a material adverse effect on our business, financial condition or results of operations.

The regulatory framework for the collection, use, safeguarding, sharing, transfer and other processing of information worldwide is rapidly evolving and is likely to remain uncertain for the foreseeable future. Globally, virtually every jurisdiction in which we operate has established its own data security and privacy frameworks with which we must comply. For example, the collection, use, disclosure, transfer, or other processing of personal data regarding individuals in the European Union, including personal health data, is subject to the EU General Data Protection Regulation, or the GDPR, which took effect across all member states of the European Economic Area, or EEA, in May 2018. In the UK, the GDPR is retained in domestic law as the UK GDPR and sits alongside an amended version of the UK Data Protection Act of 2018. The GDPR is wide-ranging in scope and imposes numerous requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates, providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, providing notification of data breaches, and taking certain measures when engaging third-party processors.

The GDPR increases our obligations with respect to clinical trials conducted in the EEA by expanding the definition of personal data to include coded data and requiring changes to informed consent practices and more detailed notices for clinical trial subjects and investigators. In addition, the GDPR also imposes strict rules on the transfer of personal data to countries outside the European Union, including the United States and, as a result, increases the scrutiny that clinical trial sites located in the EEA should apply to transfers of personal data from such sites to countries that are considered to lack an adequate level of data protection, such as the United States. The GDPR also permits data protection authorities to require destruction of improperly gathered or used personal information and/or impose substantial fines for violations of the GDPR, which can be up to four percent of global revenues of the respective group of companies or €20 million, whichever is greater, and it also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the GDPR. In addition, the GDPR provides that European Union member states may make their own further laws and regulations limiting the processing of personal data, including genetic, biometric or health data.

The GDPR places restrictions on the cross-border transfer of personal data from the EU to countries that have not been found by the European Commission to offer adequate data protection legislation. There are ongoing concerns about the ability of companies to transfer personal data from the EU to other countries. In July 2020, the Court of Justice of the EU, or the CJEU, invalidated the EU-U.S. Privacy Shield, one of the mechanisms used to legitimize the transfer of personal data from the EEA to the U.S. The CJEU decision also drew into question the long-term viability of an alternative means of data transfer, the standard contractual clauses, for international transfers of personal data from the EEA. This CJEU decision resulted in increased scrutiny on data transfers and increased our costs of compliance with data privacy legislation as well as our costs of negotiating appropriate privacy and security agreements with our vendors and business partners.

In October 2022, President Biden signed an executive order to implement the EU-U.S. Data Privacy Framework, which serves as a replacement to the EU-U.S. Privacy Shield. The European Commission adopted the adequacy decision on July 10, 2023. The adequacy decision permits U.S. companies who self-certify to the EU-U.S. Data Privacy Framework to rely on it as a valid data transfer mechanism for data transfers from the EU to the U.S. However, some privacy advocacy groups have already suggested that they will be challenging the EU-U.S. Data Privacy Framework. If these challenges are successful, they may not only impact the EU-U.S. Data Privacy Framework, but also further limit the viability of the standard contractual clauses and other data transfer mechanisms. The uncertainty around this issue has the potential to impact our business. Following the withdrawal of the UK from the EU, the UK Data Protection Act of 2018 applies to the processing of personal data that takes place in the UK and includes parallel obligations to those set forth by GDPR. In relation to data transfers, both the UK and the EU have determined, through separate “adequacy” decisions, that data transfers between the two jurisdictions are in compliance with the UK Data Protection Act of 2018 and the GDPR, respectively. The UK and the U.S. have also agreed to a U.S.-UK “Data Bridge”, which functions similarly to the EU-U.S. Data Privacy Framework and provides an additional legal mechanism for companies to transfer data from the UK to the U.S. In addition to the UK, Switzerland is also in the process of approving an adequacy decision in relation to the Swiss-U.S. Data Privacy Framework (which would function similarly to the EU-U.S. Data Privacy Framework and the U.S.-UK Data Bridge in relation to data transfers from Switzerland to the U.S.). Any changes or updates to these developments have the potential to impact our business.

Beyond GDPR, there are privacy and data security laws in a growing number of countries around the world. While many loosely follow GDPR as a model, other laws contain different or conflicting provisions. These laws will impact our ability to conduct our business activities, including both our clinical trials and the sale and distribution of commercial products, through increased compliance costs, costs associated with contracting and potential enforcement actions.

While we continue to address the implications of the recent changes to data privacy regulations, data privacy remains an evolving landscape at both the domestic and international level, with new regulations coming into effect and continued legal challenges, and our efforts to comply with the evolving data protection rules may be unsuccessful. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our practices. We must devote significant resources to understanding and complying with this changing landscape. Failure to comply with laws regarding data protection would expose us to risk of enforcement actions taken by data protection authorities in the EEA and elsewhere and carries with it the potential for significant penalties if we are found to be non-compliant. Similarly, failure to comply with federal and state laws in the U.S. regarding privacy and security of personal information could expose us to penalties under such laws. Any such failure to comply with data protection and privacy laws could result in government-imposed fines or orders requiring that we change our practices, claims for damages or other liabilities, regulatory investigations and enforcement action, litigation and significant costs for remediation, any of which could adversely affect our business. Even if we are not determined to have violated these laws, government investigations into these issues typically require the expenditure of significant resources and generate negative publicity, which could harm our business, financial condition, results of operations or prospects.

We are subject to stringent federal and state privacy laws, information security laws, regulations, policies, and contractual obligations and failure to comply with such requirements could subject us to significant fines and penalties, which may have a material adverse effect on our business, financial condition or results of operations.

We are subject to data privacy and protection laws and regulations at the federal and state levels of government that apply to the collection, transmission, storage and use of personally identifying information, which among other things, impose certain requirements relating to the privacy, security and transmission of personal information. Failure to comply with any of these laws and regulations could result in enforcement actions against us, including fines, claims for damages by affected individuals, damage to our reputation and loss of goodwill, any of which could have a material adverse effect on our business, financial condition, results of operations or prospects.

There are numerous U.S. federal and state laws and regulations related to the privacy and security of personal information. In particular, regulations promulgated pursuant to HIPAA establish privacy and security standards that limit the use and disclosure of individually identifiable health information, or protected health information, and require the implementation of administrative, physical and technological safeguards to protect the privacy of protected health information and to ensure the confidentiality, integrity and availability of electronic protected health information. Determining whether protected health information has been handled in compliance with applicable privacy standards and our contractual obligations can be complex and may be subject to changing interpretation. These obligations may be applicable to some or all of our business activities now or in the future.

If we are unable to properly protect the privacy and security of protected health information, we could be found to have breached our contracts. Further, if we fail to comply with applicable privacy laws, including applicable HIPAA privacy and security standards, we could face civil and criminal penalties. HHS enforcement activity can result in financial liability and reputational harm, and responses to such enforcement activity can consume significant internal resources. In addition, state attorneys general are authorized to bring civil actions seeking either injunctions or damages in response to violations that threaten the privacy of state residents. We cannot be sure how these regulations will be interpreted, enforced or applied to our operations. In addition to the risks associated with enforcement activities and potential contractual liabilities, our ongoing efforts to comply with evolving laws and regulations at the federal and state level may be costly and require ongoing modifications to our policies, procedures and systems.

In 2018, California passed into law the California Consumer Privacy Act, or the CCPA, which took effect on January 1, 2020, and imposed many requirements on businesses that process the personal information of California residents. Many of the CCPA's requirements are similar to those found in the GDPR, including requiring businesses to provide notice to data subjects regarding the information collected about them and how such information is used and shared, and providing data subjects the right to request access to such personal information and, in certain cases, request the erasure of such personal information. The CCPA also affords California residents the right to opt out of "sales" of their personal information. The CCPA contains significant penalties for companies that violate its requirements.

In November 2020, California voters passed a ballot initiative for the California Privacy Rights Act, or the CPRA, which went into effect on January 1, 2023, and significantly expanded the CCPA to incorporate additional GDPR-like provisions including requiring that the use, retention and sharing of personal information of California residents be reasonably necessary and proportionate to the purposes of collection or processing, granting additional protections for sensitive personal information, and requiring greater disclosures related to notice to residents regarding retention of information. The CPRA also created a new enforcement agency – the California Privacy Protection Agency – whose sole responsibility is to enforce the CPRA, which will further increase compliance risk. The provisions in the CPRA may apply to some of our business activities.

In addition to California, eleven other states have passed comprehensive privacy laws similar to the CCPA and CPRA. These laws are either in effect or will go into effect sometime before the end of 2026. Like the CCPA and CPRA, these laws create obligations related to the processing of personal information, as well as special obligations for the processing of "sensitive" data, which includes health data in some cases. Some of the provisions of these laws may apply to our business activities. There are also states that are strongly considering or have already passed comprehensive privacy laws during the 2024 legislative sessions that will go into effect in 2025 and beyond. Other states will be considering similar laws in the future, and Congress has also been debating passing a federal privacy law. There are also states that are specifically regulating health information that may affect our business. For example, the State of Washington passed the My Health My Data Act in 2023 which specifically regulated health information that is not otherwise regulated by the HIPAA rules, and the law also has a private right of action, which further increases the relevant compliance risk. Connecticut and Nevada have also passed similar laws regulating consumer health data, and more states are considering such legislation in 2024. These laws may impact our

business activities, including our identification of research subjects, relationships with business partners and ultimately the marketing and distribution of our products.

Given the breadth and depth of changes in data protection obligations, complying with the GDPR's requirements is rigorous and time intensive and requires significant resources and a review of our technologies, systems and practices, as well as those of any third-party collaborators, service providers, contractors or consultants that process or transfer personal data collected in the European Union. The GDPR and other changes in laws or regulations associated with the enhanced protection of certain types of sensitive data, such as healthcare data or other personal information from our clinical trials, could require us to change our business practices and put in place additional compliance mechanisms, may interrupt or delay our development, regulatory and commercialization activities, and could lead to government enforcement actions, private litigation and significant fines and penalties against us, all of which could increase our cost of doing business and have a material adverse effect on our business, financial condition or results of operations. Similarly, failure to comply with federal and state laws regarding privacy and security of personal information could expose us to fines and penalties under such laws. Even if we are not determined to have violated these laws, government investigations into these issues typically require the expenditure of significant resources and generate negative publicity, which could harm our reputation and our business.

Further, we cannot assure you that our third-party service providers with access to our or our customers', suppliers', trial patients' and employees' personally identifiable and other sensitive or confidential information in relation to which we are responsible will not breach contractual obligations imposed by us, or that they will not experience data security breaches or attempts thereof, which could have a corresponding effect on our business, including putting us in breach of our obligations under privacy laws and regulations and/or which could in turn adversely affect our business, results of operations and financial condition. We cannot assure you that our contractual measures and our own privacy and security-related safeguards will protect us from the risks associated with the third-party processing, storage and transmission of such information.

Our employees, principal investigators, consultants, and commercial partners may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements and insider trading.

We are exposed to the risk of fraud or other misconduct by our employees, principal investigators, consultants, and partners. Misconduct by these parties could include intentional failures to comply with FDA regulations or the regulations applicable in the European Union and other jurisdictions, provide accurate information to the FDA, the European Commission, and other regulatory authorities, comply with healthcare fraud and abuse laws and regulations in the United States and abroad, report financial information or data accurately, or disclose unauthorized activities to us. In particular, sales, marketing, and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws and regulations restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs, and other business arrangements. Such misconduct also could involve the improper use of information obtained in the course of clinical trials or interactions with the FDA or other regulatory authorities, which could result in regulatory sanctions and cause serious harm to our reputation. We have adopted a code of conduct applicable to all of our employees, but it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from government investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, financial condition, results of operations, and prospects, including the imposition of significant fines or other sanctions.

Laws and regulations governing any international operations we may have in the future may preclude us from developing, manufacturing and selling certain drug product candidates outside of the United States and require us to develop and implement costly compliance programs.

We are subject to numerous laws and regulations in each jurisdiction outside the United States in which we operate. The creation, implementation and maintenance of international business practices compliance programs is costly and such programs are difficult to enforce, particularly where reliance on third parties is required.

The Foreign Corrupt Practices Act, or FCPA, prohibits any U.S. individual or business from paying, offering, authorizing payment or offering of anything of value, directly or indirectly, to any foreign official, political party or candidate for the purpose of influencing any act or decision of the foreign entity in order to assist the individual or business in obtaining or retaining business. The FCPA also obligates companies whose securities are listed in the United States to comply with certain accounting provisions requiring the company to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and to devise and maintain an adequate system of internal

accounting controls for international operations. The anti-bribery provisions of the FCPA are enforced primarily by the Department of Justice. The SEC is involved with enforcement of the books and records provisions of the FCPA.

Compliance with the FCPA is expensive and difficult, particularly in countries in which corruption is a recognized problem. In addition, the FCPA presents particular challenges in the pharmaceutical industry, because, in many countries, hospitals are operated by the government, and doctors and other hospital employees are considered foreign officials. Certain payments to hospitals in connection with clinical trials and other work have been deemed to be improper payments to government officials and have led to FCPA enforcement actions.

Various laws, regulations and executive orders also restrict the use and dissemination outside of the United States, or the sharing with certain non-U.S. nationals, of information classified for national security purposes, as well as certain products and technical data relating to those products. Our expansion outside of the United States has required, and will continue to require, us to dedicate additional resources to comply with these laws, and these laws may preclude us from developing, manufacturing, or selling certain drugs and drug product candidates outside of the United States, which could limit our growth potential and increase our development costs. The failure to comply with laws governing international business practices may result in substantial penalties, including suspension or debarment from government contracting. Violation of the FCPA can result in significant civil and criminal penalties. Indictment alone under the FCPA can lead to suspension of the right to do business with the U.S. government until the pending claims are resolved. Conviction of a violation of the FCPA can result in long-term disqualification as a government contractor. The termination of a government contract or relationship as a result of our failure to satisfy any of our obligations under laws governing international business practices would have a negative impact on our operations and harm our reputation and ability to procure government contracts. The SEC also may suspend or bar issuers from trading securities on U.S. exchanges for violations of the FCPA's accounting provisions.

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

Our business operations will subject us to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations may involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also may produce hazardous waste products. We expect to generally contract with third parties for the disposal of these materials and wastes. However, we cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties. In addition, we may be required to incur substantial costs to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or production efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions and we may not have sufficient (or any) insurance to cover any such costs.

Risks Related to Our Financial Results, Our Need for Financing and Owning Our Common Stock

We anticipate future losses and negative cash flow, and it is uncertain if or when we will become profitable.

We do not expect to generate any commercial revenues until we successfully complete development of one or more potential products and we are able to successfully commercialize them through sales and licensing, which we expect will take a number of years, if ever. We have not yet demonstrated our ability to generate commercial revenue, and we may never be able to produce commercial revenues or operate on a profitable basis. As a result, we have incurred losses since our inception and expect to experience operating losses and negative cash flow for the foreseeable future. Our drug product candidates may never be approved or become commercially viable. Even if we and our collaborators are able to commercialize our technology, which may include licensing, we may never recover our research and development expenses.

We will need substantial additional financing to support our growth and ongoing operations. Additional capital may be difficult to obtain, restrict our operations, require us to relinquish rights to our technologies or drug product candidates, encumber our assets and result in ongoing debt service cost, or result in additional dilution to our stockholders.

Our business will require additional capital for implementation of our long-term business plan and product development and commercialization. As we require additional funds, we may seek to fund our operations through the sale of additional equity securities, debt financing and/or strategic collaboration agreements. We cannot be sure that additional financing from any of these sources will be available when needed or that, if available, the additional financing will be obtained on favorable terms. Our ability to raise additional funds may be adversely impacted by general economic conditions, both inside and outside the U.S., including disruptions to, and instability and volatility in, the credit and financial markets in the U.S. and worldwide, heightened inflation, interest rate and currency rate fluctuations, and economic slowdown or recession as well as concerns related to pandemic events and spread of disease, such as the COVID-19 pandemic, and geopolitical events, including civil or political unrest. In addition, market instability and volatility, high levels of inflation and interest rate fluctuations may increase our cost of financing or restrict our access to potential sources of future liquidity.

Our future funding requirements will depend on many factors, including, but not limited to:

- the progress, timing, scope and costs of our clinical trials, including the ability to timely enroll patients in our current and future clinical trials;
- the outcome, timing and cost of regulatory approvals by the FDA and comparable regulatory authorities, including the potential that the FDA or comparable regulatory authorities may require that we perform more studies than those that we currently expect;
- the number and characteristics of drug product candidates that we may in-license and develop;
- our ability to successfully commercialize our drug product candidates, if approved;
- the amount of sales and other revenues from drug product candidates that we may commercialize, if any, including the selling prices for such potential products and the availability of adequate third-party reimbursement;
- selling and marketing costs associated with our potential products, including the cost and timing of expanding our marketing and sales capabilities;
- the terms and timing of any potential future collaborations, licensing or other arrangements that we may establish;
- cash requirements of any future acquisitions and/or the development of other drug product candidates;
- the costs of operating as a public company;
- the cost and timing of completion of commercial-scale, outsourced manufacturing activities;
- the time and cost necessary to respond to technological and market developments;
- any disputes which may occur between us and our employees, collaborators, including Einstein, LG Chem and Ono, or other prospective business partners; and
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights.

If we raise additional funds by selling shares of our common stock or other equity-linked securities, the ownership interest of our current stockholders will be diluted. We may seek to access the public or private capital markets whenever conditions are favorable, even if we do not have an immediate need for additional capital at that time. If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams or drug product candidates or to grant licenses on terms that may not be acceptable to us. If we raise additional funds through debt financing, we may have to grant a security interest on our assets to the future lenders, our debt service costs may be substantial, and the lenders may have a preferential position in connection with any future bankruptcy or liquidation involving the company. Our pledge of our assets as collateral to secure our obligations under our loan and security agreement, as amended, or the Loan Agreement, with First Citizens Bank (as defined below) (and formerly with Silicon Valley Bank, or SVB), may limit our ability to obtain additional debt financing. Under the Loan Agreement, we are also restricted from incurring future debt, granting liens, making investments, making acquisitions, distributing dividends on our common stock and selling assets and making certain other uses of our cash, without First Citizens Bank's consent, subject in each case to certain exceptions.

If we are unable to raise additional capital when needed, we may be required to curtail the development of our technology or materially curtail or reduce our operations. We could be forced to sell or dispose of our rights or assets. Any inability to raise adequate funds on commercially reasonable terms could have a material adverse effect on our business, results of operation and financial condition, including the possibility that a lack of funds could cause our business to fail and the Company to dissolve and liquidate with little or no return to investors.

Our recurring losses from operations raise substantial doubt regarding our ability to continue as a going concern.

We have incurred significant losses since our inception and have never generated revenue or profit from product sales, and it is possible we will never generate revenue or profit from product sales. As of December 31, 2023, we had cash and cash equivalents of \$48.5 million. Based on our current operating plans, we believe we will have sufficient funds to meet our obligations into the first quarter of 2025. However, we will need to raise additional capital to fund our future operations and remain as a going concern. There can be no assurance that we will be able to obtain additional funding, including through a combination of equity offerings, collaborations, and other strategic alliances, or other sources on acceptable terms, if at all. To the extent that we raise additional capital through future equity offerings, the ownership interest of common stockholders will be diluted, which dilution may be significant. We cannot guarantee that we will be able to obtain any or sufficient additional funding or that such funding, if available, will be obtainable on terms satisfactory to us. In the event that we are unable to obtain any or sufficient additional funding, there can be no assurance that we will be able to continue as a going concern, and we will be forced to delay, reduce or discontinue our product development programs or consider other various strategic alternatives.

Moreover, these factors raise substantial doubt about our ability to continue as a going concern. Substantial doubt about our ability to continue as a going concern may materially and adversely affect the price per share of our common stock, and it may be more difficult for us to obtain financing. If existing or potential collaborators decline to do business with us or potential investors decline to participate in any future financings due to such concerns, our ability to increase our cash position may be limited. The perception that we may not be able to continue as a going concern may cause others to choose not to deal with us due to concerns about our ability to meet our contractual obligations.

We hold a portion of our cash and cash equivalents that we use to meet our working capital and operating expense needs in deposit accounts, and our liquidity and operations could be adversely affected if a financial institution holding such funds fails.

We hold a portion of our cash and cash equivalents that we use to meet our working capital and operating expense needs in deposit accounts at multiple financial institutions. The balances held in these accounts typically exceed the Federal Deposit Insurance Corporation, or FDIC, standard deposit insurance limit of \$250,000 per depositor and per institution. If a financial institution in which we hold such funds fails or is subject to significant adverse conditions in the financial or credit markets, we could be subject to a risk of loss of all or a portion of such uninsured funds or be subject to a delay in accessing all or a portion of our funds. Any such loss or lack of access to these funds could adversely impact our short-term liquidity and ability to meet our operating expense obligations, including payroll obligations.

For example, on March 10, 2023, SVB was closed and the FDIC was appointed receiver for the bank. The FDIC created a successor bridge bank, and all deposits and loans of SVB were transferred to the bridge bank under a systemic risk exception approved by the United States Department of the Treasury, the Federal Reserve and the FDIC. On March 27, 2023, First Citizens Bank & Trust Company, or First Citizens Bank, assumed all of SVB's deposits and certain other liabilities and acquired substantially all of SVB's loans and certain other assets from the FDIC. Access to and availability of deposits was delayed, though ultimately, in that case, restored. If financial institutions in which we may hold funds for working capital and operating expenses were to fail, we cannot provide any assurances that the applicable governmental agencies would take action to protect our uninsured deposits or make deposits available in a similar manner.

We also maintain investment accounts with financial institutions in which we hold our marketable securities and, if access to the funds we use for working capital and operating expenses is impaired, we may not be able to open new operating accounts or to sell investments or transfer funds from our investment accounts to new operating accounts in a timely manner sufficient to meet our operating expense obligations. In addition, to the extent that the financial institutions with which we hold securities fail or are associated with banks that fail, there may be delays or other access restrictions with respect to such securities, similar to those described above for deposit accounts.

We have a loan agreement that requires us to meet certain operating covenants and place restrictions on our operating and financial flexibility.

On February 15, 2022, we entered into the Loan Agreement with SVB, which was later assumed by First Citizens Bank, pursuant to which we have borrowed \$10.0 million. The Loan Agreement was amended in April 2023. The Loan Agreement is secured by substantially all of our properties, rights and assets, except for our intellectual property, which is subject to a negative pledge, and certain other customary exclusions. Because of the security interest, First Citizens Bank's rights to repayment from a liquidation of the assets subject to that security interest would be senior to the rights of other creditors.

The Loan Agreement includes customary covenants including covenants requiring us to maintain our corporate existence and governmental approvals, deliver certain financial reports and maintain insurance coverage as well as a requirement that we maintain in our accounts at First Citizens Bank unrestricted and unencumbered cash equal to the lesser of all of our cash or \$20,000,000. Additionally, we are restricted in our ability to transfer collateral, incur additional indebtedness, engage in mergers or acquisitions, pay dividends or make other distributions, make investments, create liens, sell assets and agree to a change in control. Upon the occurrence of an event of default, which includes our failure to satisfy our payment obligations under the Loan Agreement, the breach of certain of these covenants under the Loan Agreement, or the occurrence of a material adverse change in our business, First Citizens Bank is entitled to accelerate amounts due under the Loan Agreement and dispose the collateral as permitted under applicable law. Any declaration by First Citizens Bank of an event of default could significantly harm our business and prospects and could cause the price of our common stock to decline.

We are a “smaller reporting company,” and the reduced disclosure requirements applicable to smaller reporting companies may make our common stock less attractive to investors.

We are a smaller reporting company, and we will remain a smaller reporting company until the fiscal year following the determination that our voting and non-voting shares of common stock held by non-affiliates is \$250 million or more measured on the last business day of our second fiscal quarter, or our annual revenues are less than \$100 million during the most recently completed fiscal year and our voting and non-voting shares of common stock held by non-affiliates is \$700 million or more measured on the last business day of our second fiscal quarter. Smaller reporting companies have reduced disclosure obligations, such as an ability to provide simplified executive compensation information and only two years of audited financial statements.

We have elected to take advantage of certain of the reduced reporting obligations. Investors may find our common stock less attractive as a result of our reliance on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

Our stock price can be volatile and fluctuate significantly, and our stockholders may have difficulty selling their shares and/or suffer substantial losses.

Our common stock is currently listed on the Nasdaq Capital Market under the symbol “CUE.” The price of our common stock has fluctuated, and is likely to continue to fluctuate, significantly in response to market and other factors, some of which are beyond our control, including those listed in this “Item 1A. Risk Factors” section and other, unknown factors. Our stock price may be affected by many factors, including:

- setbacks with respect to our research and development programs;
- announcements of therapeutic innovations or new products by us or our competitors;
- adverse actions taken by regulatory agencies with respect to our clinical trials;
- any adverse changes to our relationship with collaborators;
- results of internal and external studies and clinical trials;
- results of our business development efforts;
- variations in the level of expenses related to our existing drug product candidates or preclinical and clinical development programs;
- any intellectual property infringement actions in which we may become involved;
- variations in our results of operations;
- press reports, whether or not true, about our business;
- additions to or departures of our management;

- sales or perceived potential sales of additional shares of our common stock;
- sales of our common stock by us, our executive officers and directors or our stockholders in the future; and
- general economic and market conditions and overall fluctuations in the U.S. equity markets.

Any of these factors may result in large and sudden changes in the volume and trading price of our common stock. In addition, the stock market, in general, and small pharmaceutical and biotechnology companies have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors beyond our control may negatively affect the market price of our common stock, regardless of our actual operating performance, and cause the price of our common stock to decline rapidly and unexpectedly.

We may be subject to securities litigation, which is expensive and could divert management attention.

The price of our common stock can be volatile, and in the past companies that have experienced volatility in the market price of their common stock have been subject to an increased incidence of securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

If securities or industry analysts do not publish research reports about our business, or if they issue an adverse opinion about our business, the price of our securities and trading volume could decline.

The trading market for our securities is influenced by the research and reports that industry or securities analysts publish about us or our business. There can be no assurance that existing analysts will continue to cover us or that new analysts will begin to cover us. There is also no assurance that any covering analyst will provide favorable coverage. Although we have obtained analyst coverage, if one or more of the analysts who cover us issues an adverse opinion about our company, the price of our securities would likely decline. If one or more of these analysts ceases research coverage of us or fails to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause the price of our securities or trading volume to decline.

We have not paid dividends in the past and have no immediate plans to pay dividends.

We plan to reinvest all of our earnings, to the extent we have earnings, in order to further develop our technology and drug product candidates and to cover operating costs. We do not plan to pay any cash dividends with respect to our securities in the foreseeable future. We cannot assure you that we would, at any time, generate sufficient surplus cash that would be available for distribution to the holders of our common stock as a dividend. In addition, our ability to pay cash dividends is currently restricted by the terms of the Loan Agreement, and future debt financing arrangements may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock.

Our ability to use net operating loss carryforwards and research and development tax credits to reduce future tax payments may be limited or restricted.

We have generated significant net operating loss carryforwards, or NOLs, and research and development tax credits, or R&D credits, as a result of our incurrence of losses and our conduct of research activities since inception. We generally are able to carry NOLs and R&D credits forward to reduce our tax liability in future years. However, our ability to utilize the NOLs and R&D credits is subject to the rules of Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code, respectively. Those sections generally restrict the use of NOLs and R&D credits after an “ownership change.” An ownership change occurs if, among other things, the stockholders (or specified groups of stockholders) who own or have owned, directly or indirectly, 5% or more of a corporation’s common stock or are otherwise treated as 5% stockholders under Section 382 of the Code and the United States Treasury Department regulations promulgated thereunder increase their aggregate percentage ownership of that corporation’s stock by more than 50 percentage points over the lowest percentage of the stock owned by these stockholders over the applicable testing period. In the event of an ownership change, Section 382 imposes an annual limitation on the amount of taxable income a corporation may offset with NOL carryforwards and Section 383 imposes an annual limitation on the amount of tax a corporation may offset with business credit (including the R&D credit) carryforwards.

We may have experienced an “ownership change” within the meaning of Section 382 in the past and there can be no assurance that we will not experience additional ownership changes in the future. As a result, our NOLs and business credits (including the R&D credit) may be subject to limitations and we may be required to pay taxes earlier and in larger amounts than would be the case if our NOLs or R&D credits were freely usable. There is also a risk that due to regulatory changes, such as suspensions on the use of NOLs, or other unforeseen reasons, our existing NOLs and R&D credit carryforwards could expire or otherwise become unavailable to offset future income tax liabilities. In addition, state NOLs generated in one state cannot be used to offset income generated in another state. For these reasons, even if we attain profitability, we may be unable to use a material portion of our NOLs and other tax attributes.

We incur significant costs as a result of being a public company and our management is required to devote substantial time to meet compliance obligations.

As a public company, and particularly as we are no longer an emerging growth company, we incur significant legal, accounting and other expenses. We are subject to reporting requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, as well as rules subsequently implemented by the SEC that impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. In addition, there are significant corporate governance and executive compensation-related provisions in the Dodd-Frank Wall Street Reform and Protection Act that increase public companies’ legal and financial compliance costs, make some activities more difficult, time-consuming or costly and may also place undue strain on personnel, systems and resources. Our management and other personnel devote a substantial amount of time to these compliance initiatives. In addition, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified people to serve on our board of directors, our board committees or as executive officers.

Our charter documents and Delaware law may inhibit a takeover that stockholders consider favorable.

Provisions of our amended and restated certificate of incorporation, or the Certificate of Incorporation, and our amended and restated bylaws, or the Bylaws, and applicable provisions of Delaware law may delay or discourage transactions involving an actual or potential change in control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. The provisions in our Certificate of Incorporation and Bylaws:

- authorize our board of directors to issue preferred stock without stockholder approval and to designate the rights, preferences and privileges of each class; if issued, such preferred stock would increase the number of outstanding shares of our common stock and could include terms that may deter an acquisition of us;
- limit who may call stockholder meetings;
- do not provide for cumulative voting rights;
- provide that all vacancies on our board of directors may be filled only by the affirmative vote of a majority of directors then in office, even if less than a quorum, or by a sole remaining director;

- provide that stockholders must comply with advance notice procedures with respect to stockholder proposals and the nomination of candidates for director;
- provide that stockholders may only amend our Certificate of Incorporation and Bylaws upon a supermajority vote of stockholders; and
- provide that the Court of Chancery of the State of Delaware will be the exclusive forum for certain legal claims.

In addition, Section 203 of the Delaware General Corporation Law may limit our ability to engage in any business combination with a person who beneficially owns 15% or more of our outstanding voting stock unless certain conditions are satisfied. This restriction lasts for a period of three years following the time such person came to beneficially own 15% or more of our outstanding voting stock. These provisions may have the effect of entrenching our management team and may deprive you of the opportunity to sell your shares to potential acquirers at a premium over prevailing prices. This potential inability to obtain a control premium could reduce the price of our common stock.

Our Certificate of Incorporation provides, subject to certain exceptions, that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for certain stockholder litigation matters, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, employees or stockholders.

Our Certificate of Incorporation provides that, subject to limited exceptions and unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for all "internal corporate claims." "Internal corporate claims" mean claims, including claims in the right of the corporation, (i) that are based upon a violation of a duty by a current or former director or officer or stockholder in such capacity or (ii) as to which Title 8 of the Delaware Code confers jurisdiction upon the Court of Chancery, except for, as to each of (i) through (ii) above, any claim as to which the Court of Chancery determines that there is an indispensable party not subject to the jurisdiction of the Court of Chancery (and the indispensable party does not consent to the personal jurisdiction of the Court of Chancery within ten days following such determination), which is vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery, or for which the Court of Chancery does not have subject matter jurisdiction.

The choice of forum provisions will not apply to claims arising under the Securities Act of 1933, as amended, or the Securities Act, the Exchange Act, or any other claim for which federal courts have exclusive jurisdiction.

Any person or entity purchasing or otherwise acquiring any interest in shares of our common stock shall be deemed to have notice of and to have consented to the provisions of our Certificate of Incorporation described above. This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or any of our directors, officers, other employees or stockholders which may discourage lawsuits with respect to such claims. Alternatively, if a court were to find the choice of forum provision that will be contained in our Certificate of Incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could materially adversely affect our business, financial condition and results of operations.

If we are unable to implement and maintain effective internal control over financial reporting, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our securities may decrease.

As a public company, we are required to maintain internal control over financial reporting and to report any material weaknesses in such internal controls. Section 404 of the Sarbanes-Oxley Act requires that we evaluate and determine the effectiveness of our internal control over financial reporting and provide a management report on our internal control over financial reporting. Until such time as we are no longer a "smaller reporting company" with less than \$100 million in annual revenue, our auditors will not be required to attest as to our internal control over financial reporting.

If we are unable to comply with the requirements of Section 404 in a timely manner, if we are unable to assert that our internal control over financial reporting is effective or, once required, provide an attestation report from our independent registered public accounting firm, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our common stock could decrease. We could also become subject to stockholder or other third-party litigation as well as investigations by the stock exchange on which our securities are listed, the SEC or other regulatory authorities, which could require additional financial and management resources and could result in fines, trading suspensions or other remedies.

If a significant number of our total outstanding shares are sold into the market, the market price of our common stock could drop significantly, even if our business is performing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that holders of a large number of shares intend to sell shares, could reduce the market price of our common stock. Our outstanding shares of common stock may be freely sold in the public market at any time to the extent permitted by Rules 144 and 701 under the Securities Act or to the extent such shares have already been registered under the Securities Act and are held by non-affiliates of ours.

In November 2022, we completed a private placement of shares of our common stock, pre-funded warrants to purchase shares of our common stock and warrants to purchase shares of our common stock (or pre-funded warrants to purchase common stock in lieu thereof) to several accredited investors. We filed a registration statement covering the resale of these shares by the purchasers in this private placement, and agreed to keep such registration statements effective until the date the shares covered by the registration statement have been sold or can be resold without restriction under Rule 144 of the Securities Act.

We currently have on file with the SEC a universal shelf registration statement which allows us to offer and sell up to \$300 million of registered common stock, preferred stock, debt securities, warrants, subscription rights and/or units from time to time pursuant to one or more offerings at prices and terms to be determined at the time of sale. In addition, we have also entered into an Open Market Sale Agreement with Jefferies LLC, as sales agent, pursuant to which we may offer and sell shares of our common stock under such registration statement with an aggregate offering price of up to \$55.6 million under an “at-the-market” offering program. To date, we have sold \$40.4 million of securities pursuant to the Open Market Sale Agreement.

In addition, we have filed registration statements registering all shares of common stock that we may issue under our equity compensation plans. These shares can be freely sold in the public market upon issuance, subject to black-out periods and volume limitations applicable to affiliates.

Item 1B. Unresolved Staff Comments

Not applicable.

Item 1C. Cybersecurity.

Cybersecurity Risk Management and Strategy

We have policies, procedures, and processes for assessing, identifying, and managing cybersecurity risks, which are built into our overall information technology function and are designed to help protect our information assets and operations from internal and external cyber threats as well as secure our networks and systems. Such processes include procedural and technical safeguards, response plans, and routine review of our policies and procedures to identify risks and improve our practices. Our security incident response plan is designed to help coordinate our response to, and recovery from, any cybersecurity incidents, and includes processes to assess the severity of, escalate, contain, investigate, and remediate such incidents as well as to comply with applicable legal obligations.

We engage certain external parties to enhance our cybersecurity processes and strategies. Depending on the nature of the services provided, the sensitivity and quantity of information processed, and the identity of the service provider, we evaluate the security and risk posture of such providers according to the perceived level of risk and in accordance with industry standard best practices.

The Audit Committee of the board of directors provides direct oversight over cybersecurity risk and provides regular updates to the board of directors regarding such oversight. The Audit Committee regularly meets with members of management responsible for data privacy, technology, and information security risks to discuss these risks, risk management activities, incident response plans, best practices, the effectiveness of our security measures, and other related matters.

Our Senior Director of Information Technology and Cyber Security, who reports to our Chief Financial Officer, leads the operational oversight of company-wide cybersecurity strategy, policy, standards, and processes and works across relevant departments to assess and help prepare us and our employees to address cybersecurity risks. Specific cybersecurity related

responsibilities of the Senior Director of Information Technology and Cyber Security include overseeing our processes and strategies for the detection, mitigation, and remediation of cybersecurity incidents. Our Senior Director of Information Technology and Cyber Security has over 25 years of diverse experience in information technology, including management roles at managed service providers, enabling him to effectively oversee cybersecurity risks and threats.

In an effort to deter and detect cyber threats, we provide all employees, including any part-time employees, with a data protection, cybersecurity, and incident response and prevention training program designed to educate employees on the importance of identifying and reporting all potential data security incidents immediately. The training covers timely and relevant topics, including social engineering, phishing, password protection, confidential data protection, asset use, and mobile security. We also use technology-based tools to mitigate cybersecurity threats and risks and to bolster our employee-based cybersecurity programs.

We do not believe that there are currently any known risks from cybersecurity threats that are reasonably likely to materially affect us or our business strategy, results of operations or financial condition. Despite our cybersecurity efforts, we may not be successful in preventing or mitigating a cybersecurity incident that could have a material adverse effect on us. See Part I, Item 1A, Risk Factors, in this Annual Report for a discussion of cybersecurity risks. We maintain cyber insurance coverage; however, such insurance may not be sufficient in type or amount to cover us against claims related to security breaches, cyber-attacks, and other related breaches.

Item 2. Properties

Our principal office is located in Boston, Massachusetts. In March 2022, we entered into a License Agreement pursuant to which we relocated our corporate headquarters from Cambridge, Massachusetts to Boston, Massachusetts. We currently lease approximately 13,000 square feet of office and laboratory space under a lease that expires in April 2026. We use this space as our principal executive offices and for general office, research and development, and laboratory uses. The monthly rental rate was \$209,700 until April 2023, when it increased to \$218,088. In April 2024, it will increase to \$226,812 and in April 2025 will increase to \$235,884 for the remainder of the term through April 2026. We also lease additional laboratory space consisting of one procedure and two holding rooms. The monthly payments due under this lease agreement were \$59,153 until November 2023, when they increased to \$61,519 for the remainder of the lease term which expires on December 1, 2024.

Item 3. Legal Proceedings

We are not currently a party to any pending legal proceedings that we believe will have a material adverse effect on our business or financial conditions. We may, however, be subject to various claims and legal actions arising in the ordinary course of business from time to time.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Common Stock

Our shares of common stock have been listed on the Nasdaq Capital Market under the symbol “CUE” since January 2, 2018. Prior to that date, there was no public trading market for our common stock.

As of March 25, 2024, there were approximately 86 registered holders of our common stock.

Dividend Policy

We have never paid cash dividends on our securities and we do not anticipate paying any cash dividends on our shares of common stock in the foreseeable future. In addition, our ability to pay cash dividends is currently restricted by the terms of the Loan Agreement, and future debt financing arrangements may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. We intend to retain any future earnings for reinvestment in our business. Any future determination to pay cash dividends will be at the discretion of our board of directors, and will be dependent upon our financial condition, results of operations, capital requirements and such other factors as our board of directors deems relevant.

Recent Sales of Unregistered Securities

During the period covered by this Annual Report on Form 10-K, we did not issue any unregistered equity securities other than pursuant to transactions previously disclosed in our Current Reports on Form 8-K.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion of our financial condition and results of operations should be read in conjunction with the financial statements and the related notes thereto included elsewhere in this Annual Report on Form 10-K.

Overview

We are a clinical-stage biopharmaceutical company developing a novel series of T cell engagers, termed Immuno-STAT™ (*Selective Targeting and Alteration of T Cells*), that are engineered to selectively engage and modulate disease-relevant T cells while avoiding the deleterious side effects of non-selective, systemic immune activation. This unique property of selectivity provides Immuno-STATs with the potential for providing superior clinical efficacy along with favorable tolerability. We believe that Immuno-STATs, as described below, build upon our core expertise in rational protein engineering to emulate nature's signals, or "cues", for selective T cell modulation. We believe our proprietary Immuno-STAT platform, as described below, will enable us to enhance the potential of the patient's own immune system to restore health while avoiding the negative side effects of broad indiscriminate immune activation, in the case of cancer, and broad immune suppression, in the case of autoimmune disease. Our selective immune modulation approach may be deployed for treating cancer, autoimmune diseases and chronic infections. In addition to the selective modulation of T cell activity, we believe core features of Immuno-STATs offer differentiated competitive advantages, including modularity, manufacturability, and convenient administration enabling the versatility to treat a broad range of disease.

The core framework of an Immuno-STAT molecule has a stabilized peptide human leukocyte antigen, or pHLA, component that selectively engages T cells harboring the T cell receptors, or TCRs, for binding to the tumor-specific peptide-HLA complex. In addition, Immuno-STATs contain activating signals, including modified interleukin 2, or IL-2, in the case of the CUE-100 series, the first series from our biologics platform, that can be selectively delivered to tumor-specific T cells. We believe Immuno-STATs provide an attractive solution for generation of a therapeutic index for immune activation signals, such as IL-2. The unique property of Immuno-STATs as TCR-selective engagers provides core strategic advantages and differentiation from other classes of non-specific T cell engagers, due to the targeting of specific TCRs.

Our drug product candidates are in various stages of clinical and preclinical development. The emerging preliminary clinical data for CUE-101 and CUE-102 bolsters our belief that we have developed a potential breakthrough approach for modulating cancer-specific T cells directly in the patient's body. However, our activities are also subject to significant risks and uncertainties. We have not yet commenced any commercial revenue-generating operations, have limited cash flows from operations, and will need to access substantial additional capital to fund our growth and ongoing business operations.

Plan of Operation

Our technology is in the development phase. We believe that our platforms have the potential for creating a diverse pipeline of promising drug product candidates addressing multiple medical indications. We intend to maximize the value and probability of commercialization of our Immuno-STAT drug product candidates by focusing on researching, testing, optimizing, conducting pilot studies, performing early-stage clinical development and potentially partnering, where appropriate, for more extensive, later stages of clinical development, as well as seeking extensive patent protection and intellectual property development.

Since we are a development-stage company, the majority of our business activities to date have been, and our planned future activities will be, devoted to furthering research and development.

A fundamental part of our corporate development strategy is to establish strategic partnerships with leading pharmaceutical or biotechnology organizations that will allow us to more fully exploit the potential of our technology platform in the areas of oncology and autoimmune disease and accelerate and expand our CUE-100 series pipeline, such as our collaborations described below under the headings "Collaboration Agreement with LG Chem" and "Collaboration and Option Agreement with Ono."

Critical Accounting Estimates and Significant Judgments

Our management's discussion and analysis of our financial condition and results of operations is based on our financial statements, which have been prepared in accordance with generally accepted accounting principles in the United States, or U.S. GAAP. The preparation of our financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of our financial statements, and the reported revenue and expenses during the reported periods. We evaluate these estimates and judgments,

including those described below, on an ongoing basis. We base our estimates on historical experience, known trends and events, contractual milestones and 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.

While our significant accounting policies are more fully described in Note 2 to our consolidated financial statements appearing elsewhere in this Form 10-K, we believe that the estimates, assumptions and judgments involved in the following accounting policies may have the greatest potential impact on the financial statements, so we consider these to be our critical accounting policies and estimates. There were no material changes to our critical accounting policies and estimates during the year ended December 31, 2023.

Revenue Recognition

We recognize collaboration revenue under certain of our license and collaboration agreements that are within the scope of Accounting Standards Codification, or ASC, Topic 606, *Revenue from Contracts with Customers*. Our contracts with customers typically include promises related to licenses to intellectual property and research and development services. If the license to our intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, we recognize revenue from non-refundable, up-front fees allocated to the license when the license is transferred to the licensee and the licensee is able to use and benefit from the license. For licenses that are bundled with other promises, we utilize judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, up-front fees. Our contracts may include options to acquire additional goods and/or services.

The terms of our arrangements with customers typically include the payment of one or more of the following: (i) non-refundable, up-front payment, and pass through costs related to research activities, (ii) development, regulatory and commercial milestone payments, (iii) future options and (iv) royalties on net sales of licensed products. Accordingly, the transaction price is generally comprised of a fixed fee due at contract inception and variable consideration in the form of pass through costs and milestone payments due upon the achievement of specified events and tiered royalties earned when customers recognize net sales of licensed products. We measure the transaction price based on the amount of consideration to which we expect to be entitled in exchange for transferring the promised goods and/or services to the customer. We utilize the “expected value method” method to estimate the amount of variable consideration, to predict the amount of consideration to which we will be entitled for our one open contract. Amounts of variable consideration are included in the transaction price to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Milestone payments that are not within our control or the licensee's control, such as those dependent upon receipt of regulatory approval, are not considered to be probable of achievement until the triggering event occurs. At the end of each reporting period, we reevaluate the probability of achievement of each milestone and any related constraint, and, if necessary, adjust its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenue and net loss in the period of adjustment.

For arrangements that include sales-based royalties, including milestone payments based upon the achievement of a certain level of product sales, we recognize revenue upon the later of: (i) when the related sales occur or (ii) when the performance obligation to which some or all of the payment has been allocated has been satisfied (or partially satisfied). To date, we have not recognized any development, regulatory or commercial milestones or royalty revenue resulting from any of our collaboration arrangements. Consideration that would be received for optional goods and/or services is excluded from the transaction price at contract inception.

Research and Development Costs

Research and development expenses consist primarily of compensation costs, fees paid to consultants, outside service providers and organizations (including research institutes at universities), facility costs, and development and clinical trial costs with respect to our drug product candidates.

Research and development expenses incurred under contracts are expensed ratably over the life of the underlying contracts, unless the achievement of milestones, the completion of contracted work, or other information indicates that a different pattern of performance is more appropriate. Other research and development expenses are charged to operations as incurred.

Nonrefundable advance payments are recognized as an expense as the related services are performed. We evaluate whether we expect the services to be rendered at each quarter end and year end reporting date. If we do not expect the services to be rendered, the advance payment is charged to expense. Nonrefundable advance payments for research and development services are included in prepaid and other current assets on the balance sheet. To the extent that a nonrefundable advance payment is for contracted services to be performed within 12 months from the reporting date, such advance is included in current assets; otherwise, such advance is included in non-current assets.

We evaluate the status of our research and development agreements and contracts, and the carrying amount of the related assets and liabilities, at each quarter end and year end reporting date, and adjust the carrying amounts and their classification on the balance sheet as appropriate.

Stock-Based Compensation

We periodically issue stock-based awards to officers, directors, employees, Scientific and Clinical Advisory Board members, and consultants for services rendered. Such issuances vest and expire according to terms established at the issuance date.

Stock-based payments to officers, directors, employees, Scientific and Clinical Advisory Board members and consultants, including grants of employee stock options, are recognized in the financial statements based on their grant date fair values. Stock option grants, which are generally time-vested, are measured at the grant date fair value and charged to operations on a straight-line basis over the service period, which generally approximates the vesting term. We also grant performance-based awards periodically to our officers. We recognize compensation costs related to performance awards over the requisite service period if and when we conclude that it is probable that the performance condition will be achieved.

The fair value of stock options and restricted stock units is determined utilizing the Black-Scholes option-pricing model, which is affected by several variables, including the risk-free interest rate, the expected dividend yield, the life of the equity award, the exercise price of the stock option as compared to the fair value of the common stock on the grant date, and the estimated volatility of the common stock over the term of the equity award.

The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant. Until we have established a trading history for our common stock that approximates the expected term of the options, estimated volatility is based on the average historical volatility of comparable public companies in a similar industry. The expected dividend yield is based on the current yield at the grant date; we have never declared or paid dividends and have no plans to do so for the foreseeable future. As permitted by Staff Accounting Bulletin No. 107, due to our limited trading history and option activity, management utilizes the simplified method to estimate the expected term of options at the date of grant. The exercise price is determined based on the fair value of our common stock at the date of grant. We account for forfeitures as they occur.

We recognize the fair value of stock-based compensation in general and administrative expenses and in research and development expenses in the consolidated statements of operations and comprehensive loss, depending on the type of services provided by the recipient of the equity award.

Income Taxes

We account for income taxes under an asset and liability approach for financial accounting and reporting for income taxes. Accordingly, we recognize deferred tax assets and liabilities for the expected impact of differences between the financial statements and the tax basis of assets and liabilities.

We account for uncertainties in income tax law under a comprehensive model for the financial statement recognition, measurement, presentation and disclosure of uncertain tax positions taken or expected to be taken in income tax returns as prescribed by GAAP. The tax effects of a position are recognized only if it is “more-likely-than-not” to be sustained by the taxing authority as of the reporting date. If the tax position is not considered “more-likely-than-not” to be sustained, then no benefits of the position are recognized.

We record a valuation allowance to reduce our deferred tax assets to the amount that is more likely than not to be realized. In the event we were to determine that we would be able to realize our deferred tax assets in the future in excess of its recorded amount, an adjustment to the deferred tax assets would be credited to operations in the period such determination was made. Likewise, should we determine that we would not be able to realize all or part of our deferred tax assets in the future, an adjustment to the deferred tax assets would be charged to operations in the period such determination was made.

We are subject to U.S. federal and Massachusetts state income taxes. As our net operating losses have yet to be utilized, all previous tax years remain open to examination by federal and state taxing authorities in which we currently operate.

We recognize interest accrued relative to unrecognized tax benefits in interest expense and penalties in operating expense.

For the years ended December 31, 2023 and 2022, there is no provision for income taxes in the U.S. because we have historically incurred net operating losses and maintain a full valuation allowance against our net deferred assets. The reported amount of income tax expense for the years differs from the amount that would result from applying domestic federal statutory tax rates to pretax losses primarily because of changes in valuation allowance.

We recognize interest accrued relative to unrecognized tax benefits in interest expense and penalties in operating expense. During the years ended December 31, 2023 and 2022, we did not recognize any income tax related interest and penalties. We did not have any accruals for income tax related interest and penalties at December 31, 2023 and 2022.

Recent Accounting Pronouncements and Adopted Standards

A discussion of recent accounting pronouncements is included in Note 2 to the consolidated financial statements in this Annual Report on Form 10-K.

Significant Contracts and Agreements Related to Research and Development Activities

Einstein License Agreement

On January 14, 2015, we entered into a license agreement, as amended and restated on July 31, 2017, and as amended on October 30, 2018, or the Einstein License, with Albert Einstein College of Medicine, or Einstein, for certain patent rights, or the Patents, relating to our core technology platform for the engineering of biologics to control T cell activity, precision, immune-modulatory drug product candidates, and two supporting technologies that enable the discovery of costimulatory signaling molecules (ligands) and T cell targeting peptides.

We hold an exclusive worldwide license, with the right to sublicense, import, make, have made, use, provide, offer to sell, and sell all products, processes and services that use the Patents, including certain technology received from Einstein related thereto, which we refer to as the Licensed Products. Under the Einstein License, we are required to:

- Pay royalties and amounts based on a certain percentage of proceeds, as defined in the Einstein License, from sales of Licensed Products and sublicense agreements.
- Pay escalating annual maintenance fees, which are non-refundable, but are creditable against the amount due to Einstein for royalties.
- Make significant payments based upon the achievement of certain milestones, as defined in the Einstein License. As of December 31, 2023, two of these milestones had been achieved, as we had filed an IND in 2019, and initiated the investigator sponsored Phase 1b neoadjuvant clinical trial for CUE-101 in 2021.
- Incur minimum product development costs per year and meet certain diligence obligations until the first commercial sale of the first Licensed Product.

We were in compliance with our obligations under the Einstein License at December 31, 2023 and 2022.

The Einstein License expires upon the expiration of the last obligation to make royalty payments to Einstein which may be due with respect to certain Licensed Products, unless terminated earlier under the provisions thereof. The Einstein License includes certain termination provisions that will be triggered if we fail to meet our obligations thereunder.

We account for the costs incurred in connection with the Einstein License in accordance with ASC 730, *Research and Development*. For the years ended December 31, 2023 and 2022, costs incurred with respect to the Einstein License were \$7,000 and \$0, respectively. Such costs are included in research and development costs in our consolidated statements of operations and comprehensive loss.

Pursuant to the Einstein License, we issued to Einstein 671,572 shares of our common stock in connection with the consummation of the initial public offering of our common stock on December 27, 2017.

See “Our License Agreement with Einstein” under Part I, Item 1 of the Annual Report on Form 10-K for additional discussion of the Einstein License.

Collaboration Agreement with LG Chem

Effective November 6, 2018, we entered into a Collaboration, License and Option Agreement, or the LG Chem Collaboration Agreement, with LG Chem Ltd., or LG Chem, related to the development of Immuno-STATs focused in the field of oncology.

Pursuant to the LG Chem Collaboration Agreement, we granted LG Chem an exclusive license to develop, manufacture and commercialize our lead product, CUE-101, as well as Immuno-STATs that target T cells against two additional cancer antigens, or the Drug Product Candidates, in Australia, Japan, Republic of Korea, Singapore, Malaysia, Vietnam, Thailand, Philippines, Indonesia, China (including Macau and Hong Kong) and Taiwan, which we refer to collectively as the LG Chem Territory. We retain rights to develop and commercialize all assets included in the LG Chem Collaboration Agreement in the United States and in global markets outside of the LG Chem Territory. Under the LG Chem Collaboration Agreement, we will engineer the selected Immuno-STATs for up to three alleles, which are expected to include the predominant alleles in the LG Chem Territory, thereby enhancing our market reach by providing for greater patient coverage of populations in global markets, while LG Chem will establish a chemistry, manufacturing and controls, or CMC, process for the development and commercialization of selected Drug Product Candidates. In addition, LG Chem has the option to select one additional Immuno-STAT for an oncology target, or an Additional Immuno-STAT, for an exclusive worldwide development and commercialization license. On December 18, 2019, we and LG Chem entered into a global license and collaboration agreement, which was amended on November 5, 2020. We refer to such agreement, as amended, as the Global License and Collaboration Agreement. The Global License and Collaboration Agreement supersedes the provisions of the LG Chem Collaboration Agreement related to LG Chem’s option for an Additional Immuno-STAT, which agreement provided for effectiveness if and when LG Chem exercised its option, other than certain select provisions including the length of the option period and representations, warranties and covenants of the parties. On April 30, 2021, LG Chem’s option pursuant to the Global License and Collaboration Agreement expired.

Under the terms of the LG Chem Collaboration Agreement, LG Chem paid us a \$5.0 million non-refundable, non-creditable upfront payment and purchased approximately \$5.0 million of shares of our common stock at a price per share equal to a 20% premium to the volume weighted-average closing price per share over the 30 trading day period immediately prior to the effective date of the LG Chem Collaboration Agreement. We are also eligible to receive additional aggregate payments of up to approximately \$400.0 million if certain research, development, regulatory and commercial milestones are successfully achieved. On May 16, 2019, we earned a \$2.5 million milestone payment for the FDA’s acceptance of the IND for our lead drug product candidate, CUE-101, pursuant to the LG Chem Collaboration Agreement. On December 7, 2020, we earned a \$1.25 million milestone payment on the selection of a preclinical candidate pursuant to the LG Chem Collaboration Agreement. On November 23, 2021, we earned a \$3.0 million milestone payment for the selection of a Drug Product Candidate. In addition, the LG Chem Collaboration Agreement also provides that LG Chem will pay us tiered single-digit royalties on net sales of commercialized Drug Product Candidates, or Collaboration Products, in the LG Chem Territory on a product-by-product and country-by-country basis, until the later of expiration of patent rights in a country, the expiration of regulatory exclusivity in such country, or ten years after the first commercial sale of a Collaboration Product in such country, subject to certain royalty step-down provisions set forth in the LG Chem Collaboration Agreement.

Pursuant to the LG Chem Collaboration Agreement, the parties will share research costs related to Collaboration Products, and LG Chem will provide CMC process development for selected Drug Product Candidates and potentially additional downstream manufacturing capabilities, including clinical and commercial supply for Collaboration Products. In return for performing CMC process development, LG Chem is eligible to receive low-single digit percentage royalty payments on the sales of Collaboration Products sold in all countries outside the LG Chem Territory. For the years ended December 31, 2023 and 2022, we recognized revenue of approximately \$324,000 and approximately \$1,245,000, respectively, related to the LG Chem Collaboration Agreement. As of December 31, 2023, we had recorded approximately \$19.9 million in collaboration revenue related to this agreement since the agreement was entered into. The majority of the research phase of the LG Chem Collaboration Agreement was substantially complete on March 31, 2022.

The LG Chem Collaboration Agreement includes various representations, warranties, covenants, indemnities and other customary provisions. LG Chem may terminate the LG Chem Collaboration Agreement for convenience or change of control of us on a program-by-program, product-by-product or country-by-country basis, or in its entirety, at any time

following the notice period set forth in the LG Chem Collaboration Agreement. Either party may terminate the LG Chem Collaboration Agreement, in its entirety or on a program-by-program, product-by-product or country-by-country basis, in the event of an uncured material breach. The LG Chem Collaboration Agreement is also terminable by either party (i) upon the bankruptcy, insolvency or liquidation of the other party or (ii) for certain activities involving the challenge of certain patents controlled by the other party. Unless earlier terminated, the LG Chem Collaboration Agreement will expire on a product-by-product and country-by-country basis upon the expiration of the applicable royalty term.

To date, LG Chem has selected one additional cancer antigen, WT1, which is the focus of the CUE-102 research program. We are currently developing two Collaboration Products with LG Chem pursuant to this agreement.

See “Our Collaboration Agreement with LG Chem” under Part I, Item 1 of the Annual Report on Form 10-K for additional discussion of the LG Chem Collaboration Agreement.

Collaboration Agreement with Ono

On February 22, 2023, we entered into a strategic collaboration agreement, or the Ono Collaboration and Option Agreement, with Ono Pharmaceutical Co., Ltd., or Ono, to further develop CUE-401 and provide dedicated resources and capabilities to help advance CUE-401 toward the clinic. Under the terms of the Ono Collaboration and Option Agreement, Ono paid us an upfront payment and agreed to fully fund all research activities related to CUE-401 through a specified option period. During this option period, we will be responsible for the research and development of CUE-401. Upon Ono’s exercise of its option to license CUE-401, we will receive an option exercise payment and be eligible for development and commercial milestone payments up to an aggregate of approximately \$220 million, as well as tiered royalties on sales. Upon any such exercise, Ono will receive worldwide rights to develop and commercialize CUE-401, with us retaining a 50% co-development and co-commercialization right in the United States. Our decision to elect the co-development and co-commercialization option may be made within 30 days of Ono’s option exercise to license CUE-401. The amount paid by Ono to us for the option exercise and future milestone payments will vary based upon our decision to exercise the co-development and co-commercialization option.

Under the terms of the Ono Collaboration and Option Agreement, we will perform research activities related to CUE-401 through a specified option period of 24 months, or the Research Term. During this Research Term, we will be responsible for the execution of scientific investigation, nonclinical, preclinical, and clinical drug research and development activities designed to progress CUE-401 toward a potential IND and regulatory approval, collectively referred to as R&D. Ono is responsible for the funding of R&D activities performed by us. Per the Ono Collaboration and Option Agreement, as consideration for the R&D activities performed by us, Ono (i) has made a one-time, non-refundable, non-creditable upfront payment of \$3.0 million to us in March 2023, and (ii) will reimburse us for all costs incurred in conducting research, including (a) pass through costs from third party contractors and (b) full time employee salaries capped at \$2.1 million in the first 18 months of the Research Term. The term of the Ono Collaboration and Option Agreement extends until the expiration of the Research Term which cannot exceed a 24-month period. We have forecasted that we will be able to complete the R&D activities in the first 18 months of the Research Term based on the initial research and development plans we have established.

Aside from the \$3.0 million upfront payment and funding related to pass through costs, we do not believe that any variable consideration should be included in the transaction price as of December 31, 2023. Such assessment considered the application of the constraint to ensure that estimates of variable consideration would be included in the transaction price only to the extent we have a high degree of confidence that revenue would not be reversed in a subsequent reporting period. We will re-evaluate the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as other changes in circumstances occur. As of December 31, 2023, we recognized revenue of approximately \$5,166,000 related to the Ono Collaboration and Option Agreement and recorded short-term research and development liabilities of approximately \$2,112,000 on our balance sheet.

See “Our Collaboration Agreement with Ono” under Part I, Item 1 of the Annual Report on Form 10-K for additional discussion of the Ono Collaboration and Option Agreement.

Results of Operations

Collaboration Revenue

We have not yet generated commercial revenue from product sales. To date, we have generated revenue from collaboration agreements with Merck Sharp & Dohme Corp. (which terminated in December 2022), LG Chem, and Ono. Collaboration revenue may vary from period to period depending on the progress of our work in connection with our collaboration agreements.

Operating Expenses

We generally recognize operating expenses as they are incurred in two general categories, general and administrative expenses and research and development expenses. Our operating expenses also include non-cash components related to depreciation and amortization of property and equipment and stock-based compensation, which are allocated, as appropriate, to general and administrative expenses and research and development expenses.

General and administrative expenses consist of salaries and related expenses for executive, legal, finance, human resources, information technology and administrative personnel, as well as professional fees, insurance costs, and other general corporate expenses. We expect general and administrative expenses to increase in future periods as we incur additional expenses related to our operation as a public company which requires our compliance with certain regulatory and legal procedures. We expect activities supporting our operations including legal, accounting, insurance, employee compensation and other expenses to increase.

Research and development expenses consist primarily of compensation expenses, fees paid to consultants, outside service providers and organizations (including research institutes at universities), facility expenses, and development and clinical trial expenses with respect to our drug product candidates. We charge research and development expenses to operations as they are incurred. We expect research and development expenses to increase in the future as we continue to advance the clinical development of CUE-101 and CUE-102, including our ongoing and planned clinical trials, and develop potential future drug product candidates based on our technology and research. We also believe that rising inflation, supply chain disruptions and labor shortages may also contribute to increased research and development costs.

Years Ended December 31, 2023 and 2022

Our consolidated statements of operations and comprehensive loss for the years ended December 31, 2023 and 2022, as discussed herein are presented below.

	Years Ended December 31,	
	2023	2022
	(in thousands)	
Collaboration revenue	\$ 5,490	\$ 1,245
Operating expenses (income):		
General and administrative	16,680	16,169
Research and development	40,802	38,578
Loss (gain) on fixed asset disposal and right-of-use asset termination	157	(277)
Total operating expenses	57,639	54,470
Loss from operations	(52,149)	(53,225)
Other income (expense):		
Interest income	2,661	928
Interest expense	(1,245)	(713)
Total other income (expense), net	1,416	215
Net loss	\$ (50,733)	\$ (53,010)
Unrealized gain (loss) from available-for-sale securities	96	(96)
Comprehensive loss	\$ (50,637)	\$ (53,106)
Net loss per common share – basic and diluted	\$ (1.11)	\$ (1.49)
Weighted average common shares outstanding – basic and diluted	45,754,794	35,649,134

Collaboration Revenue

Collaboration revenue totaled approximately \$5,490,000 and \$1,245,000 for the years ended December 31, 2023 and 2022, respectively. This increase of approximately \$4,245,000 was due to the Ono Collaboration and Option Agreement executed in February 2023. All collaboration revenue recognized in the year ended December 31, 2023 was related to the performance of services under our collaboration agreements with Ono and LG Chem, including a \$3.0 million upfront payment received in 2023 pursuant to the Ono Collaboration and Option Agreement, and pass through costs related to research activities. All collaboration revenue recognized in the year ended December 31, 2022 was related to the performance of services under our collaboration agreement with LG Chem.

General and Administrative

General and administrative expenses totaled approximately \$16,680,000 and \$16,169,000 for the years ended December 31, 2023 and 2022, respectively. This increase of approximately \$511,000 was due primarily to increases in professional and consulting fees, and employee and board compensation, offset by decreases in stock-based compensation, rent expense, and other business expenses related to the ongoing management of the company.

General and administrative expenses for the year ended December 31, 2023 included expenses related to professional and consulting fees of approximately \$5,801,000, employee and board compensation of \$5,238,000, stock-based compensation of \$3,687,000, rent expense of \$716,000, and other general and administrative expenses totaling \$1,238,000.

General and administrative expenses for the year ended December 31, 2022 included expenses related to employee and board compensation of \$4,766,000, professional and consulting fees of approximately \$4,676,000, stock-based compensation of \$4,615,000, rent expense of \$899,000, and other general and administrative expenses totaling \$1,213,000.

Research and Development

Research and development expenses totaled approximately \$40,802,000 and \$38,578,000 for the years ended December 31, 2023 and 2022, respectively. This increase of approximately \$2,224,000 was due primarily to increases in clinical development costs and research and laboratory expenses, offset by decreases in employee costs and rent expense.

Research and development expenses for the year ended December 31, 2023 included expenses related to research and laboratory expenses of \$11,003,000, employee and Scientific and Clinical Advisory Board compensation of approximately \$9,879,000, clinical expenses of \$9,584,000, stock-based compensation of \$4,493,000, rent expense of \$2,705,000, and other research and development related expenses totaling \$3,138,000.

Research and development expenses for the year ended December 31, 2022 included expenses related to employee and Scientific and Clinical Advisory Board compensation of approximately \$10,087,000, research and laboratory expenses of \$9,966,000, clinical expenses of \$6,690,000, stock-based compensation of \$4,881,000, rent expense of \$3,283,000, and other research and development related expenses totaling \$3,671,000.

Loss (Gain) on Fixed Asset Disposal and Right-of-use Asset Termination

Loss on fixed asset disposal was approximately \$157,000 for the year ended December 31, 2023. This loss related to lab equipment disposals. Gain on right-of-use asset termination was approximately \$277,000 for the year ended December 31, 2022. This gain related to the termination of our operating lease agreement for our laboratory and office space in Cambridge, Massachusetts at 21 Erie Street, effective on April 30, 2022, and the termination of our lease agreement for additional procedure and holding rooms in Cambridge, Massachusetts effective December 6, 2022.

Interest Income

Interest income was approximately \$2,661,000 for the year ended December 31, 2023, as compared to approximately \$928,000 for the year ended December 31, 2022. The increase in interest income was due to an increase in interest rates in 2023. Interest income for the year ended December 31, 2023 included approximately \$2,065,000 in income from cash equivalents, approximately \$361,000 of income from our operating sweep account, and approximately \$234,000 from amortization/accretion on investments, compared to approximately \$437,000 in income resulting from amortization of discounts received on certain of our marketable securities, approximately \$170,000 of interest income from our operating sweep account, and approximately \$321,000 from amortization/accretion on investments for the year ended December 31, 2022.

Interest Expense

Interest expense was approximately \$1,245,000 and \$713,000 for the years ended December 31, 2023 and 2022, respectively. This increase of \$532,000 was primarily due to cash paid for interest expense of approximately \$1,003,000 related to the proceeds from borrowings under our Loan and Security Agreement, as amended, or the Loan Agreement, with First Citizens Bank & Trust Company, or First Citizens Bank (and formerly with Silicon Valley Bank, or SVB), as well as

approximately \$130,000 in interest expense related to accretion of final payment, and amortization of deferred issuance costs of \$37,000.

Net Loss

As a result of the foregoing, our net loss was approximately \$50,733,000 for the year ended December 31, 2023, as compared to approximately \$53,010,000 for the year ended December 31, 2022.

Liquidity and Capital Resources

We have financed our working capital requirements primarily through private and public offerings of equity securities, cash received from Merck Sharp & Dohme Corp., LG Chem, and Ono under the respective collaboration agreements and borrowings under the Loan Agreement. At December 31, 2023 and December 31, 2022, we had cash, cash equivalents and marketable securities totaling approximately \$48,514,000 and approximately \$76,289,000, respectively, available to fund our ongoing business activities. Additional information concerning our financial condition and results of operations is provided in the financial statements included in this Annual Report on Form 10-K.

The amounts that we actually spend for any specific purpose may vary significantly and will depend on a number of factors, including, but not limited to, our research and development activities and programs, clinical testing, regulatory approval, market conditions, and changes in or revisions to our business strategy and technology development plans.

On May 9, 2023, we filed a registration statement on Form S-3, which was declared effective on May 26, 2023 (File No. 333-271786), to register for sale from time to time up to \$300.0 million of our common stock, preferred stock, debt securities, warrants, subscription rights and/or units in one or more offerings.

In October 2021, we entered into an open market sale agreement, or the October 2021 ATM Agreement, with Jefferies LLC, or Jefferies, to sell shares of our common stock for aggregate gross proceeds of up to \$80.0 million, from time to time, through an "at-the-market" equity offering program under which Jefferies acts as sales agent. The October 2021 ATM Agreement will terminate upon the earliest of (a) the sale of \$80.0 million of shares of our common stock pursuant to the October 2021 ATM Agreement or (b) the termination of the October 2021 ATM Agreement by us or Jefferies. During the year ended December 31, 2023, we sold 4,006,966 shares of common stock under the October 2021 ATM Agreement for proceeds of approximately \$13.4 million, net of commission paid, but excluding transaction expense. As of December 31, 2023, we had sold an aggregate of 7,600,373 shares of common stock under the October 2021 ATM Agreement for proceeds of \$37.0 million, net of commission paid, but excluding transaction expenses.

On February 15, 2022, we entered into the Loan Agreement, pursuant to which we have borrowed \$10.0 million. The Loan Agreement was amended in April 2023. The term loans under the Loan Agreement, or the Term Loans, bear interest at a floating rate per annum equal to the greater of (A) the prime rate (as published in the money rates section of The Wall Street Journal) plus 2.25% and (B) 5.50%. On the first calendar day of each month, we will be required to make monthly interest payments and commencing on June 30, 2023, we began repayment of the Term Loans in (i) 30 consecutive installments of principal plus monthly payments of accrued interest if the additional term loans are not advanced and (ii) 24 months if the additional term loans are advanced. All outstanding principal and accrued and unpaid interest under the Term Loans and all other outstanding obligations with respect to the Term Loans are due and payable in full on December 1, 2025.

The Loan Agreement permits voluntary prepayment of all, but not less than all, of the Term Loans, subject to a prepayment premium except if the facility is refinanced with another First Citizens Bank facility. Such prepayment premium would be 2.00% of the principal amount of the Term Loans if prepaid on or after the first anniversary of the date on which we entered the Loan Agreement but prior to the second anniversary of the date on which we entered the Loan Agreement, and 1.00% of the principal amount of the Term Loan if prepaid on or after the second anniversary of the date on which we entered the Loan Agreement. Upon prepayment or repayment in full of the Term Loans, we will be required to pay a one-time final payment fee equal to 5.00% of the original principal amount of any funded Term Loans being repaid. The Loan Agreement also requires us to maintain in our accounts at the Lender unrestricted and unencumbered cash equal to the lesser of all of our cash or \$20,000,000.

On March 10, 2023, Silicon Valley Bank, or SVB, was closed and the Federal Deposit Insurance Company, or FDIC, was appointed receiver for the bank. The FDIC created a successor bridge bank, and all deposits of SVB were transferred to the bridge bank under a systemic risk exception approved by the U.S. Department of the Treasury, the Federal Reserve and the FDIC. On March 27, 2023, First Citizens Bank assumed all of SVB's deposits and certain other liabilities and acquired substantially all of SVB's loans and certain other assets from the FDIC. First Citizens Bank continues to hold our Term Loans

under the same existing terms and covenants which were in place with SVB. The vast majority of our cash and cash equivalents reside in custodial accounts at US Bank for which SVB Asset Management is the advisor.

On November 14, 2022, we entered into securities purchase agreements with accredited investors pursuant to which, on November 16, 2022, we issued and sold to such investors in a private placement an aggregate of 7,656,966 shares of common stock and, in lieu of shares of common stock to certain investors, pre-funded warrants, or Pre-Funded Warrants, to purchase an aggregate of 1,531,440 shares of common stock, and, in each case, accompanying warrants, or Warrants, to purchase an aggregate of up to 9,188,406 additional shares of common stock (or Pre-Funded Warrants in lieu thereof) at a price of \$3.265 per share and accompanying Warrant (or \$3.2649 per Pre-Funded Warrant and accompanying Warrant), or the PIPE Financing. The exercise price of the Warrants is \$3.93 per share, or if exercised for a Pre-Funded Warrant in lieu thereof, \$3.9299 per Pre-Funded Warrant. The Warrants are exercisable at any time after they are issued and ending on the fifth anniversary of the closing. The Pre-Funded Warrants are exercisable at any time after they are issued and will not expire. We received aggregate gross proceeds from the PIPE Financing of approximately \$30 million, before deducting placement agent fees and offering expenses of \$2.6 million. Piper Sandler & Co. acted as lead placement agent and Public Ventures LLC acted as co-placement agent for the PIPE Financing.

If we issue additional equity securities to raise funds, the ownership percentage of our existing stockholders would be reduced. New investors may demand rights, preferences or privileges senior to those of existing holders of our common stock. If we issue debt securities, we may be required to grant security interests in our assets, could have substantial debt service obligations, and lenders may have a senior position (compared to stockholders) in any potential future bankruptcy or liquidation. Additionally, corporate collaboration and licensing arrangements may require us to incur non-recurring and other charges, give up certain rights relating to our intellectual property and research and development activities, increase our near and long-term expenditures, issue securities that dilute our existing stockholders, issue debt which may require liens on our assets and which will increase our monthly expense obligations, or disrupt our management and business.

Cash Flows

Based on our current plans and forecasted expenses, we believe that our existing cash and cash equivalents, as of December 31, 2023, will enable us to fund our operations into the first quarter of 2025. However, we will need to raise additional capital to fund our future operations and remain as a going concern. We expect to finance our future cash needs through a combination of equity offerings, collaborations, and other strategic alliances. Volatility in capital markets and general economic conditions in the United States may be a significant obstacle to raising the required funds and, as a result, we may be unable to secure the necessary funding on acceptable terms. This raises substantial doubt about our ability to continue as a going concern.

The following table summarizes our changes in cash, cash equivalents, and restricted cash for the year ended December 31, 2023 and 2022:

	December 31,	
	2023	2022
	(in thousands)	
Net cash provided by (used in):		
Operating activities	\$ (39,961)	\$ (41,806)
Investing activities	25,002	(24,610)
Financing activities	11,860	53,659
Net decrease in cash, cash equivalents, and restricted cash	\$ (3,099)	\$ (12,757)

Operating Activities

During the year ended December 31, 2023, we used cash of approximately \$39,961,000 in operating activities, as compared to approximately \$41,806,000 of cash used in operating activities during the year ended December 31, 2022. Cash used during the year ended December 31, 2023 consisted primarily of our net loss of approximately \$50,733,000, and decreases of approximately \$2,788,000 in operating lease liabilities, \$1,641,000 in accounts receivable, \$401,000 in prepaid expense and other current assets, and \$234,000 in amortization of premium/discount on purchased securities. Cash used was partially offset by increases of approximately \$8,180,000 in stock-based compensation expense, \$2,880,000 in operating lease right-of-use asset amortization, \$2,112,000 in research and development contract liabilities, \$770,000 in accounts payable, \$588,000 in accrued expenses, \$556,000 in depreciation and amortization, \$426,000 in deposits, \$157,000 on loss on disposal of fixed asset, \$130,000 in accretion of final repayment of the Term Loans, and \$37,000 in amortization of debt issuance costs.

Cash used during the year ended December 31, 2022 consisted primarily of our net loss of approximately \$53,010,000 and decreases of approximately \$1,071,000 in accrued expenses, \$735,000 in operating lease liability, \$645,000 in research and development contract liabilities, \$395,000 in deposits, \$321,000 in amortization of premium/discount on purchased securities, and \$277,000 on gain on right-of-use asset modification. Cash used was partially offset by increases of approximately \$9,496,000 in stock-based compensation expense, \$3,085,000 in accounts receivable, \$922,000 in depreciation and amortization, \$884,000 operating lease right-of-use asset, \$109,000 in accretion of final repayment of the Term Loans, \$83,000 in accounts payable, \$34,000 in prepaid expense and other current assets, \$31,000 in amortization of debt issuance costs, and \$4,000 on loss on disposal of fixed asset.

Investing Activities

During the year ended December 31, 2023, our investing activities provided approximately \$25,002,000 in cash, compared to cash used in investing activities of approximately \$24,610,000 during the year ended December 31, 2022. Cash provided during the year ended December 31, 2023 consisted of approximately \$25,000,000 for the redemption of marketable securities, and cash received for the sale of fixed assets of approximately \$2,000.

Cash used during the year ended December 31, 2022 consisted primarily of approximately \$29,445,000 for the purchase of marketable securities, and purchases of property and equipment of \$171,000, offset by \$5,000,000 for the redemption of marketable securities, and the cash received for the sale of fixed assets of approximately \$6,000.

Financing Activities

During the year ended December 31, 2023, we generated cash from financing activities of approximately \$11,860,000, compared to approximately \$53,659,000 during the year ended December 31, 2022. Cash generated during the year ended December 31, 2023 consisted primarily of cash proceeds from the common stock sold through the October 2021 ATM Agreement of approximately \$13,387,000, net of commissions and fees, and cash proceeds from the exercise of stock options of \$473,000, offset by \$2,000,000 for the repayment of the Term Loans.

Cash generated during the year ended December 31, 2022 consisted primarily of cash proceeds from the common stock sold through the October 2021 ATM Agreement of approximately \$16,599,000, net of commissions and fees, cash proceeds from the sale of common stock in the PIPE Financing of \$22,702,000, net of fees, cash proceeds from the sale of pre-funded warrants in the PIPE Financing of \$4,700,000, net of fees, and \$10,000,000 of proceeds from borrowing under the Term Loans, offset by restricted stock awards net of taxes withheld of \$200,000 and \$142,000 for the payment of debt issuance costs.

Funding Requirements

We expect our expenses to increase in connection with our ongoing activities, particularly as we continue the research and development of our Immuno-STAT platform, continue ongoing and initiate new clinical trials of and seek marketing approval for our drug product candidates. In addition, we expect to incur additional costs associated with operating as a public company. Our expenses will also increase if, and as, we:

- continue the clinical development of our CUE-100 series, including CUE-101 and CUE-102;
- leverage our programs to advance our other drug product candidates into preclinical and clinical development;
- seek regulatory approvals for any drug product candidates for which we successfully complete clinical trials;
- seek to discover and develop additional drug product candidates in the CUE-100 series, including Neo-STATs;
- establish a sales, marketing, medical affairs and distribution infrastructure to commercialize any drug product candidates for which we may obtain marketing approval and intend to commercialize on our own or jointly;
- hire additional clinical, quality control and scientific personnel;
- expand our manufacturing, quality, operational, financial and management systems;
- increase personnel, including personnel to support our clinical development, manufacturing and commercialization efforts and our operations as a public company;

- maintain, expand and protect our intellectual property portfolio;
- acquire or in-license other drug product candidates and technologies; and
- incur additional legal, accounting and other expenses in operating as a public company.

In the first quarter of 2022, we prioritized our strategic focus on our CUE-101 and CUE-102 oncology programs in our CUE-100 series. We believe that the data generated from our ongoing clinical trials provides a sound basis for our objective of establishing strategic partnerships to enhance our capacity for further clinical development of these programs, particularly through registration. We are actively seeking third party support through partnerships and collaborations, or alternative funding structures, to more fully exploit the potential of our technology platform in the areas of oncology and autoimmune disease, accelerate and expand our CUE-100 series pipeline including the further development of CUE-103 and our Neo-STAT and RDI-STAT programs, as well as our CUE-300 and CUE-400 series. In 2022, we also took proactive steps to decrease our office and lab footprint and to restructure our research and development functions in support of prioritized corporate objectives and strategies. These steps have realized cost savings to date that have been allocated to our key programs.

As discussed in Note 1 of the Notes to the Consolidated Financial Statements under Accounting Standards Update, or ASU, 2014-15, Presentation of Financial Statements—Going Concern (Subtopic 205-40), or, ASC 205-40, we have the responsibility to evaluate whether conditions or events raise substantial doubt about our ability to meet our future financial obligations as they become due within one year after the date the financial statements are issued. Under ASC 205-40, this evaluation initially cannot take into consideration the potential mitigating effects of plans that have not been fully implemented as of the date the financial statements are issued. Since we currently believe that our existing cash and cash equivalents, as of December 31, 2023, will enable us to fund our operations into the first quarter of 2025, we have determined that this cash runway of less than 12 months from the date of issuance of our financial statements included in this Annual Report on Form 10-K, along with our accumulated deficit, history of losses, and future expected losses meet the ASC 205-40 standard for raising substantial doubt about our ability to continue as a going concern within one year of the issuance date of our financial statements included in this Annual Report on Form 10-K. While we have plans in place to mitigate this risk, which primarily consist of raising additional capital through a combination of equity offerings, collaborations, and other strategic alliances, and, depending on the availability and level of additional financings, and cash expenditure reduction, there is no guarantee that we will be successful in these mitigation efforts.

We will need to raise additional capital or incur additional indebtedness to continue to fund our operations in the future. Our ability to raise additional funds will depend on financial, economic and market conditions, many of which are outside of our control, and we may be unable to raise financing when needed, or on terms favorable to us. If we are unable to raise additional funds when needed, we may be required to delay, reduce or eliminate our product development or future commercialization efforts, or grant rights to develop and market drug product candidates that we would otherwise prefer to develop and market ourselves, which could adversely affect our business prospects, and we may be unable to continue our operations. Because of numerous risks and uncertainties associated with the research, development and commercialization of our drug product candidates, we are unable to estimate the exact amount of our working capital requirements. Factors that may affect our planned future capital requirements and accelerate our need for additional working capital include the following:

- the progress, timing, scope and costs of our clinical trials, including the ability to timely enroll patients in our ongoing, planned and potential future clinical trials;
- the outcome, timing and cost of regulatory approvals by the FDA and other comparable regulatory authorities, including the potential that the FDA or other comparable regulatory authorities may require that we perform more studies than those that we currently expect;
- the number and characteristics of drug product candidates that we may in-license and develop;
- our ability to successfully commercialize our drug product candidates, if approved;
- the amount of sales and other revenues from drug product candidates that we may commercialize, if any, including the selling prices for such potential products and the availability of adequate third-party reimbursement;
- selling and marketing costs associated with our potential products, including the cost and timing of expanding our marketing and sales capabilities;
- the terms and timing of any potential future collaborations, licensing or other arrangements that we may establish;

- cash requirements of any future acquisitions and/or the development of other drug product candidates;
- the costs of operating as a public company;
- the cost and timing of completion of commercial-scale, outsourced manufacturing activities;
- the time and cost necessary to respond to technological and market developments;
- any disputes which may occur between us and our employees, collaborators, including Einstein, LG Chem and Ono, or other prospective business partners; and
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights.

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

Until such time, if ever, as we can generate substantial product revenue, we expect to finance our cash needs through a combination of public or private equity offerings, debt financings, collaborations, strategic partnerships or marketing, distribution or licensing arrangements with third parties and grants from organizations and foundations. If we raise additional funds by selling shares of our common stock or other equity-linked securities, the ownership interest of our current stockholders will be diluted. We may seek to access the public or private capital markets whenever conditions are favorable, even if we do not have an immediate need for additional capital at that time. If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams or drug product candidates or to grant licenses on terms that may not be acceptable to us. If we raise additional funds through debt financing, we may have to grant a security interest on our assets to the future lenders, our debt service costs may be substantial, and the lenders may have a preferential position in connection with any future bankruptcy or liquidation.

If we are unable to raise additional capital when needed, we may be required to curtail the development of our technology or materially curtail or reduce our operations. We could be forced to sell or dispose of our rights or assets. Any inability to raise adequate funds on commercially reasonable terms could have a material adverse effect on our business, results of operation and financial condition, including the possibility that a lack of funds could cause our business to fail, dissolve and liquidate with little or no return to investors.

Principal Commitments

Leased Facilities

On March 28, 2022, we entered into a License Agreement, or the License, with MIL 40G, LLC, or the Licensor, pursuant to which we lease approximately 13,000 square feet of office, research and development and laboratory space located at 40 Guest Street, Boston, Massachusetts 02135, or the Premises. We relocated our corporate headquarters to the Premises in April 2022. On March 28, 2022, we terminated our operating lease agreement for laboratory and office space in Cambridge, Massachusetts at 21 Erie Street, or the Laboratory and Office Lease, with an effective termination date of April 30, 2022. We performed an analysis of the accounting implications of this termination based on ASC 360 Impairments and Abandonments guidance. For the year ended December 31, 2022, we recorded an adjustment to decrease the right-of-use asset and lease liability of approximately \$8,124,000 and \$8,382,000, respectively, and recorded a gain on right-of-use asset included in the consolidated statement of operations and other comprehensive loss of approximately \$258,000.

We recognized a right of use asset of approximately \$9,056,000 and an operating lease liability of approximately \$9,056,000 which were recorded as of the Term Commencement Date (as defined below) related to the License.

The term of the License commenced on April 15, 2022, or the Term Commencement Date, and expires on April 14, 2026, or the Term. The License has a monthly rental rate of \$200,700 for the first year of the Term, \$208,728 for the second year of the Term, \$217,077 for the third year of the Term and \$225,760 for the remainder of the Term. Pursuant to the License, we prepaid two months of rent and a security deposit. The Licensor is obligated under the License to provide certain services to us, including providing certain gases, chemicals and equipment to the Premises' laboratory space, IT support, security, office support and health and safety training. The Licensor has the right to terminate the License for Cause (as defined in the License).

On May 3, 2022, we entered into the First Amendment to the License, or the First Amendment, with the Licensor, pursuant to which the License was expanded to include an additional room effective July 15, 2022. In consideration of the First Amendment, the security deposit was increased from \$225,760 to \$235,884 effective July 15, 2022. Upon execution of the First Amendment, we prepaid three months of rent, two of which will be held in escrow and credited against future rent payments and the other of which was applied to the first month's rent. Effective July 15, 2022, the monthly rental rate under the First Amendment increased to \$209,700 from \$200,700. During the year ended December 31, 2022, we recognized a right of use asset of approximately \$369,000 and a short and long term operating lease liability of approximately \$100,300 and \$260,600, respectively, using the weighted average discount rate of 8%, which were recorded as of the Term Commencement Date related to the License.

On May 31, 2022, we entered into an operating lease for additional laboratory space at 40 Guest Street, Boston, Massachusetts for the period from December 1, 2022, through December 1, 2024, or the 40G Additional Laboratory Lease. The 40G Additional Laboratory Lease contains escalating payments during the lease period. The monthly rental rate under the 40G Additional Laboratory Lease is \$59,152 for the first 12 months and \$61,519 for the remainder of the term. Under the terms of this lease agreement, we prepaid three months of rent, two of which will be held in escrow and credited against future rent payments and the other of which was applied to the first month's rent. During the year ended December 31, 2022, we recognized a right of use asset of approximately \$1,307,000 and a short and long term operating lease liability of approximately \$712,000, and \$535,000, respectively, using the weighted average discount rate of 10%, which were recorded as of the Term Commencement Date related to the 40G Additional Laboratory Lease.

On September 9, 2022, we terminated our lab space lease in Cambridge, Massachusetts with MIL 21E, LLC with an effective termination date of December 6, 2022. We performed an analysis of the accounting implications of this termination based on ASC 360 Impairments and Abandonments guidance. During the year ended December 31, 2022, we recorded an entry to remove the remaining lease liability and right of use asset of \$963,000 and \$945,000, respectively. The difference between the carrying amounts of the right of use asset and lease liability of \$19,000 was recorded to gain on right of use asset termination and included in the consolidated statement of operations.

For the year ended December 31, 2023, we recorded approximately \$512,000 in interest expense to the lease liability.

At December 31, 2023, we recorded approximately \$6,323,000 to operating lease right-of-use asset, and approximately \$3,368,000 and \$3,162,000 to the short-term and long-term operating lease liability, respectively. At December 31, 2022, we recorded approximately \$9,203,000 to operating lease right-of-use asset, and approximately \$3,300,000 and \$6,018,000 to the short-term and long-term operating lease liability, respectively. As of December 31, 2023 and 2022, a security deposit of approximately \$595,000 was included in deposits on the consolidated balance sheet related to the 40G Additional Laboratory Lease.

Manufacturing Agreement with Catalent

We have entered into agreements with Catalent Pharma Solutions, LLC or Catalent, for Catalent to provide us with contracted manufacturing services related to the manufacture of CUE-401 materials and CUE-101 late stage process optimization. Work related to these services began in 2023, and at December 31, 2023, work totaling approximately \$8,105,000 is still to be performed.

Einstein License Agreement

Our commitments with respect to the Einstein License are summarized above at "Significant Contracts and Agreements Related to Research and Development Activities."

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

As a smaller reporting company, as defined by Rule 12b-2 of the Exchange Act, we are not required to provide the information under this item.

Item 8. Financial Statements and Supplementary Data.

Our financial statements and the related notes, together with the Report of Independent Registered Public Accounting Firm thereon, are set forth beginning on page F-1 of this Annual Report on Form 10-K.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.***Evaluation of Disclosure Controls and Procedures***

As of the end of the period covered by this report, management performed, with the participation of our principal executive and principal financial officers, an evaluation of the effectiveness of 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 that 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 our principal executive officer and principal financial officer, to allow timely decisions regarding required disclosures. Based on the evaluation, our principal executive and principal financial officers concluded that, as of December 31, 2023, our disclosure controls and procedures were effective.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as such term is defined in Rule 13a-15(f) of the Exchange Act. Management evaluated the effectiveness of our internal control over financial reporting using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control Integrated Framework (the 2013 Framework). Based on this assessment, our management concluded that, as of December 31, 2023, our internal control over financial reporting was effective based on those criteria. All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. There were no changes in our internal control over financial reporting during the fiscal quarter ended December 31, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

As a non-accelerated filer and a "smaller reporting company", as defined in Rule 12b-2 under the Exchange Act, our independent registered public accounting firm is not required to issue an attestation report on the internal control over financial reporting.

Item 9B. Other Information.**(b) Director and Officer Trading Arrangements**

None of our directors or officers adopted or terminated a Rule 10b5-1 trading arrangement or a non-Rule 10b5-1 trading arrangement (as defined in Item 408(c) of Regulation S-K) during the quarterly period covered by this report.

Item 9C. Disclosure Regarding Foreign Jurisdictions That Prevent Inspections.

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this Item 10 is incorporated by reference to our Definitive Proxy Statement on Schedule 14A relating to our 2024 annual meeting of stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

Item 11. Executive Compensation

The information required by this Item 11 (other than the information required by Item 402(v) of Regulation S-K) is incorporated by reference to our Proxy Statement on Schedule 14A relating to our 2024 annual meeting of stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholders Matters.

The information required by this Item 12 is incorporated by reference to our Proxy Statement on Schedule 14A relating to our 2024 annual meeting of stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item 13 is incorporated by reference to our Proxy Statement on Schedule 14A relating to our 2024 annual meeting of stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

Item 14. Principal Accountant Fees and Services

The information required by this Item 14 is incorporated by reference to our Proxy Statement on Schedule 14A relating to our 2024 annual meeting of stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

	Page
<u>Reports of Independent Registered Public Accounting Firm PCAOB #49</u>	F-2
<u>Consolidated Balance Sheets at December 31, 2023 and 2022</u>	F-4
<u>Consolidated Statements of Operations and Comprehensive Loss for the years ended December 31, 2023 and 2022</u>	F-5
<u>Consolidated Statements of Stockholders' Equity for the years ended December 31, 2023 and 2022</u>	F-6
<u>Consolidated Statements of Cash Flows for the years ended December 31, 2023 and 2022</u>	F-7
<u>Notes to the Consolidated Financial Statements</u>	F-8

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Cue Biopharma, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Cue Biopharma, Inc. and its subsidiary (the Company) as of December 31, 2023 and 2022, the related consolidated statements of operations and comprehensive loss, stockholders' equity and cash flows for the years then ended, and the related notes to the consolidated financial statements (collectively, the financial statements). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2023 and 2022, and the results of its operations and its cash flows for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

The Company's Ability to Continue as a Going Concern

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the financial statements, the Company has suffered recurring losses and used cash in operations in each of the two years ended December 31, 2023 and 2022. This raises substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to these matters also are described in Note 1. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Accruals for Clinical Trials

As discussed in Note 2 to the financial statements, the Company accounts for the research and development costs relating to clinical trials based on estimates of costs incurred through the balance sheet date. This process involves reviewing the status of open contracts and purchase orders, communicating with vendors and internal personnel to identify services that have been performed, estimating the associated costs incurred and recording accruals or prepayments as appropriate. The Company's accrual for contract services costs relating to its clinical trials totaled \$1.57 million at December 31, 2023, as disclosed in Note 7.

We identified the accruals for costs of clinical trials to be a critical audit matter because auditing the Company's accruals is complex as the information necessary to make an estimate is accumulated from multiple sources and there may be delays in invoicing from clinical study sites and other vendors, or payments may depend on factors such as the achievement of clinical trial milestones. Additionally, in certain circumstances, it requires judgment, as the timing and pattern of vendor invoicing may not correspond to the level of services provided.

Our audit procedures to test the accrual for clinical trials expense included, among others:

- o Tested the accuracy and completeness of the underlying data used in the estimates and evaluated the reasonableness of assumptions used by management on a test basis
- o Inspected certain contracts with third parties and related information received by the Company to test proper recording of costs incurred to date, contract service periods, and services and/or deliverables to be provided within each contract.
- o Corroborated the progress of research and development activities through discussion with the Company's research and development personnel, specifically those who oversee the projects, and confirmations with the third parties.
- o Tested subsequent invoices received from third parties and cash disbursements to assess completeness of recorded accruals.

/s/ RSM US LLP

We have served as the Company's auditor since 2018.

Boston, Massachusetts
March 28, 2024

CUE BIOPHARMA, INC.
CONSOLIDATED BALANCE SHEETS
(in thousands, except shares and per share amounts)

	December 31,	
	2023	2022
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 48,514	\$ 51,614
Marketable securities	—	24,675
Accounts receivable	1,698	57
Prepaid expenses and other current assets	1,242	841
Total current assets	51,454	77,187
Property and equipment, net	795	1,499
Operating lease right-of-use asset	6,323	9,203
Deposits	2,690	3,116
Restricted cash	151	150
Other long term assets	117	128
Total assets	<u>\$ 61,530</u>	<u>\$ 91,283</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 3,501	\$ 2,731
Accrued expenses	4,137	3,554
Research and development contract liability, current portion	2,112	—
Operating lease liabilities, current portion	3,368	3,300
Current portion of long-term debt, net	3,963	1,963
Total current liabilities	17,081	11,548
Operating lease liabilities, net of current portion	3,162	6,018
Long-term debt, net	4,202	8,035
Total liabilities	<u>\$ 24,445</u>	<u>\$ 25,601</u>
Commitments and contingencies (Note 15)		
Stockholders' equity:		
Preferred stock, \$0.001 par value, authorized – 10,000,000 shares; issued and outstanding – none	—	—
Common stock, \$0.001 par value; authorized – 100,000,000 shares; issued and outstanding – 47,215,116 shares and 43,042,548 shares at December 31, 2023 and 2022, respectively	47	43
Additional paid-in capital	338,228	316,192
Accumulated other comprehensive income (loss)	—	(96)
Accumulated deficit	(301,190)	(250,457)
Total stockholders' equity	37,085	65,682
Total liabilities and stockholders' equity	<u>\$ 61,530</u>	<u>\$ 91,283</u>

See accompanying notes to consolidated financial statements.

CUE BIOPHARMA, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(in thousands, except shares and per share amounts)

	Years Ended December 31,	
	2023	2022
Collaboration revenue	\$ 5,490	\$ 1,245
Operating expenses (income):		
General and administrative	16,680	16,169
Research and development	40,802	38,578
Loss (gain) on fixed asset disposal and right-of-use asset termination	157	(277)
Total operating expenses	57,639	54,470
Loss from operations	(52,149)	(53,225)
Other income (expense):		
Interest income	2,661	928
Interest expense	(1,245)	(713)
Total other income (expense), net	1,416	215
Net loss	\$ (50,733)	\$ (53,010)
Unrealized gain (loss) from available-for-sale securities	96	(96)
Comprehensive loss	\$ (50,637)	\$ (53,106)
Net loss per common share – basic and diluted	\$ (1.11)	\$ (1.49)
Weighted average common shares outstanding – basic and diluted	45,754,794	35,649,134

See accompanying notes to consolidated financial statements.

CUE BIOPHARMA, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands, except shares and per share amounts)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Gain (Loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Par Value				
Balance, December 31, 2021	32,202,496	\$ 32	\$ 262,907	—	\$ (197,447)	\$ 65,492
Issuance of common stock from ATM offering, net of sales agent commission and fees	3,117,220	3	16,595	—	—	16,598
Issuance of common stock and pre-funded warrants, net of issuance costs	7,656,966	8	27,394	—	—	27,402
Stock-based compensation	—	—	9,496	—	—	9,496
Issuance of common stock upon exercise of warrants, net	9,549	—	—	—	—	—
Restricted stock awards released	98,335	—	—	—	—	—
Restricted stock awards withheld at vesting to cover taxes	(42,018)	—	(200)	—	—	(200)
Unrealized loss from available-for-sale securities	—	—	—	(96)	—	(96)
Net loss	—	—	—	—	(53,010)	(53,010)
Balance, December 31, 2022	43,042,548	\$ 43	\$ 316,192	\$ (96)	\$ (250,457)	\$ 65,682
Issuance of common stock from ATM offering, net of sales agent commission and fees	4,006,966	4	13,383	—	—	13,387
Stock-based compensation	—	—	8,180	—	—	8,180
Exercise of stock options	165,602	—	473	—	—	473
Unrealized gain from available-for-sale securities	—	—	—	96	—	96
Net loss	—	—	—	—	(50,733)	(50,733)
Balance, December 31, 2023	47,215,116	\$ 47	\$ 338,228	\$ —	\$ (301,190)	\$ 37,085

See accompanying notes to consolidated financial statements.

CUE BIOPHARMA, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Years Ended December 31,	
	2023	2022
Cash flows from operating activities:		
Net loss	\$ (50,733)	\$ (53,010)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	556	922
Stock-based compensation	8,180	9,496
Decrease in the carrying amount of right-of-use assets	2,880	884
Amortization of premium/discount on purchased securities	(234)	(321)
Gain on right-of-use asset modification	—	(277)
Loss on disposal of fixed asset	157	4
Amortization of debt issuance costs	37	31
Accretion of final payment of term loan	130	109
Changes in operating assets and liabilities:		
Account receivable	(1,641)	3,085
Prepaid expenses and other current assets	(401)	34
Deposits	426	(395)
Accounts payable	770	83
Accrued expenses	588	(1,071)
Research and development contract liability	2,112	(645)
Operating lease liability	(2,788)	(735)
Net cash used in operating activities	(39,961)	(41,806)
Cash flows from investing activities:		
Purchases of property and equipment	—	(171)
Cash received from sale of fixed asset	2	6
Redemption of marketable securities	25,000	5,000
Purchases of marketable securities	—	(29,445)
Net cash provided by (used in) investing activities	25,002	(24,610)
Cash flows from financing activities:		
Proceeds from ATM offering, net of sales agent commission and fees	13,387	16,598
Proceeds from common stock issuance, net of transaction costs	—	22,702
Proceeds from pre-funded warrant issuance, net of transaction costs	—	4,700
Proceeds from borrowing under term loan	—	10,000
Payment of term loan	(2,000)	-
Proceeds from the exercise of stock options	473	-
Payment of debt issuance costs	—	(141)
Restricted stock awards withheld at vesting to cover taxes	—	(200)
Net cash provided by financing activities	11,860	53,659
Net decrease in cash, cash equivalents, and restricted cash	(3,099)	(12,757)
Cash, cash equivalents, and restricted cash at beginning of year	51,764	64,521
Cash, cash equivalents, and restricted cash at end of year	<u>\$ 48,665</u>	<u>\$ 51,764</u>
Supplemental disclosures of cash flow information:		
Purchases of property and equipment in accounts payable or accrued expenses	\$ —	\$ 57
Cash paid for interest	\$ 1,003	\$ 570
Right-of-use asset and lease liability (new lease)	\$ —	\$ 10,733
Operating lease modification	\$ —	\$ 8,083

See accompanying notes to consolidated financial statements.

CUE BIOPHARMA, INC.

NOTES TO FINANCIAL STATEMENTS Years Ended December 31, 2023 and 2022

1. Organization and Basis of Presentation

Cue Biopharma, Inc. (the "Company") is a clinical-stage biopharmaceutical company engineering a novel class of injectable therapeutics to selectively engage and modulate targeted, disease relevant T cells directly within the patient's body. The Company's vision is to translate nature's signals, or "cues", into protein therapeutics by generating a new class of T cell engagers for selective modulation of disease specific T cells. The Company's corporate office and research facilities are located in Boston, Massachusetts.

The accompanying financial statements have been prepared on a going concern basis, which contemplates the realization of assets and satisfaction of liabilities and commitments in the normal course of business. The Company is in the development stage and has incurred recurring losses and negative cash flows from operations since inception. As of December 31, 2023, the Company had cash and cash equivalents of approximately \$48.5 million. Management believes that current cash and cash equivalents on hand at December 31, 2023 are sufficient to fund operations into the first quarter of 2025; however, the future viability of the Company is dependent on its ability to raise additional capital to finance its operations and to fund research and development costs in order to seek approval for commercialization of its drug product candidates. The Company is exploring raising additional capital through a combination of equity offerings, collaborations, and other strategic alliances, and, depending on the availability and level of additional financings, and cash expenditure reduction, there is no guarantee that we will be successful in these mitigation efforts. The Company's failure to raise capital as and when needed would have a negative impact on its financial condition and its ability to pursue its business strategies as this capital is necessary for the Company to perform the research and development activities required to develop and commercialize the Company's drug product candidates in order to generate future revenue streams. Therefore, management has determined that the Company's accumulated deficit, history of losses, negative cash flows from operations and future expected losses raise substantial doubt about the Company's ability to continue as a going concern within one year of the issuance date of these financial statements.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements for the years ended December 31, 2023 and 2022, have been prepared in accordance with the rules and regulations of the Securities and Exchange Commission (the "SEC") and Generally Accepted Accounting Principles in the United States ("U.S. GAAP") for financial information, which prescribes elimination of all significant intercompany accounts and transactions in the accounts of the Company and its wholly owned subsidiary, Cue Biopharma Securities Corp., which was incorporated in the Commonwealth of Massachusetts in December 2018. In the opinion of management, these financial statements reflect all adjustments which are necessary for a fair statement of the Company's financial position and results of its operations, as of and for the periods presented.

Public Offerings

In October 2021, the Company entered into an open market sale agreement (the "October 2021 ATM Agreement") with Jefferies LLC ("Jefferies"), as agent, to sell shares of the Company's common stock for aggregate gross proceeds of up to \$80 million, from time to time, through an at-the-market equity offering program. The October 2021 ATM Agreement will terminate upon the earliest of (a) the sale of \$80 million of shares of the Company's common stock pursuant to the October 2021 ATM Agreement or (b) the termination of the October 2021 ATM Agreement by the Company or Jefferies. During the year ended December 31, 2023, the Company sold 4,006,966 shares of common stock under the October 2021 ATM Agreement for proceeds of approximately \$13.4 million, net of commission paid, but excluding transaction expense. As of December 31, 2023, the Company sold an aggregate of 7,600,373 shares of common stock under the October 2021 ATM Agreement for proceeds of approximately \$37.0 million, net of commission paid, but excluding transaction expenses, since its inception.

Issuance of Securities through a Private Placement

On November 14, 2022, the Company entered into securities purchase agreements with accredited investors pursuant to which, on November 16, 2022, the Company issued and sold to such investors in a private placement an aggregate of

7,656,966 shares of common stock and, in lieu of shares of common stock to certain investors, pre-funded warrants ("Pre-Funded Warrants") to purchase an aggregate of 1,531,440 shares of common stock, and, in each case, accompanying warrants ("Warrants") to purchase an aggregate of up to 9,188,406 additional shares of common stock (or Pre-Funded Warrants in lieu thereof) at a price of \$3.265 per share and accompanying Warrant (or \$3.2649 per Pre-Funded Warrant and accompanying Warrant), (such financing, the "PIPE Financing"). The exercise price of the Warrants is \$3.93 per share, or if exercised for a Pre-Funded Warrant in lieu thereof, \$3.9299 per Pre-Funded Warrant. The Warrants are exercisable at any time after they are issued and ending on the fifth anniversary of the closing. The Pre-Funded Warrants are exercisable at any time after they are issued and will not expire. The Company received aggregate gross proceeds from the PIPE Financing of approximately \$30 million, before deducting placement agent fees and offering expenses of approximately \$2.6 million. Piper Sandler & Co. acted as lead placement agent and Public Ventures LLC acted as co-placement agent for the PIPE Financing.

The Warrants are classified as a component of permanent equity because they are freestanding financial instruments that are legally detachable and separately exercisable from the shares of common stock with which they were issued, are immediately exercisable, do not embody an obligation for the Company to repurchase its shares, and permit the holders to receive a fixed number of shares of common stock upon exercise. In addition, the Warrants do not provide any guarantee of value or return at December 31, 2023, the weighted average exercise price is \$3.93 and the weighted average contractual life is five years. The Pre-Funded Warrants do not have an expiration date.

The Pre-Funded Warrants met the permanent equity criteria classification. The Pre-Funded Warrants are classified as a component of permanent equity because they are freestanding financial instruments that are legally detachable and separately exercisable from the shares of common stock with which they were issued, are immediately exercisable, do not embody an obligation for the Company to repurchase its shares, and permit the holders to receive a fixed number of shares of common stock upon exercise. In addition, the Pre-Funded Warrants do not provide any guarantee of value or return.

Consolidation

The accompanying consolidated financial statements include the Company and its wholly owned subsidiary, Cue Biopharma Securities Corp. The Company has eliminated all intercompany transactions.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of expenses during the reporting period. Significant estimates include estimates related to collaboration revenue, the accounting for potential liabilities and accrued expenses, the assumptions utilized in valuing stock-based compensation issued for services, the realization of deferred tax assets, and the useful life with respect to long-lived assets and intangibles. Actual results could differ from those estimates.

Cash Concentrations

The Company maintains its cash balances with financial institutions in federally insured accounts and may periodically have cash balances in excess of insurance limits. The Company maintains its accounts with financial institutions with a high credit rating. The Company has not experienced any losses to date from our deposits with these financial institutions and believes that it is not exposed to any significant credit risk on cash.

Cash and Cash Equivalents

The Company considers all highly liquid investments with a maturity of three months or less at the date of purchase to be cash equivalents. The Company currently invests available cash in money market funds.

Marketable Securities

Marketable securities consist of investments with original maturities greater than ninety days and less than one year from the balance sheet date. The Company classifies all of its investments as available-for-sale securities. Accordingly, these investments are recorded at fair value, which is based on quoted market prices. Unrealized gains and losses are recognized and determined on a specific identification basis and are included in other comprehensive loss. Realized gains and losses are determined on a specific identification basis and are included in other income on the consolidated statement of operations and other comprehensive loss. Amortization and accretion of discounts and premiums is recorded in interest income. At December 31, 2023, the Company has invested available cash in money market funds, and at December 31, 2022 the Company invested available cash in U.S. Treasury securities.

Restricted Cash

The Company had approximately \$150,000 in restricted cash deposited with separate commercial banks to collateralize company credit cards as of December 31, 2023 and 2022.

Property and Equipment

Property and equipment is recorded at cost. Major improvements are capitalized, while maintenance and repairs are charged to expense as incurred. Gains and losses from dispositions of property and equipment are included in income and expense when realized. Amortization of leasehold improvements is provided using the straight-line method over the shorter of the lease term or the useful life of the underlying assets. Depreciation of property and equipment is provided using the straight-line method over the following estimated useful lives:

Laboratory equipment	5 years
Computer equipment	3 years
Furniture and fixtures	3-8 years

The Company recognizes depreciation and amortization expense in general and administrative expenses and in research and development expenses in the Company's consolidated statements of operations and comprehensive loss, depending on how each category of property and equipment is utilized in the Company's business activities.

Trademark

Trademark consists of the Company's right, title and interest to the CUE BIOLOGICS Mark, and any derivative mark incorporating CUE, throughout the world, together with all associated goodwill and common law rights appurtenant thereto, including, but not limited to, any right, title and interest in any corporate name, company name, business, name, trade name, dba, domain name, or other source identifier incorporating CUE.

The Company has classified the trademark as a component of other long-term assets, having a useful life of 15 years. The Company evaluates the status of this intangible asset for amortization and impairment at each quarter end and year end reporting date. The Company recorded \$11,000 in amortization related to the trademark at December 31, 2023 and 2022.

Debt Issuance Costs

Debt issuance costs are deferred and presented as a reduction to long-term debt. Debt issuance costs are amortized using the effective interest rate method over the term of the loan. Amortization of deferred debt issuance costs are included in interest expense in the consolidated statements of operations and comprehensive loss.

Revenue Recognition

The Company recognizes collaboration revenue under certain of the Company's license and collaboration agreements that are within the scope of Accounting Standards Codification ("ASC"), Topic 606, *Revenue from Contracts with Customers* ("ASC 606"). The Company's contracts with customers typically include promises related to licenses to intellectual property and research and development services. If the license to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenue from non-refundable, up-front fees allocated to the license when the license is transferred to the licensee and the licensee is able to use and benefit from the license. For licenses that are bundled with other promises, the Company utilizes judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, up-front fees. Accordingly, the transaction price is generally comprised of a fixed fee due at contract inception and variable consideration in the form of milestone payments due upon the achievement of specified events and tiered royalties earned when customers recognize net sales of licensed products. The Company measures the transaction price based on the amount of consideration to which it expects to be entitled in exchange for transferring the promised goods and/or services to the customer. The Company utilizes the "expected value method" method to estimate the amount of variable consideration, to predict the amount of consideration to which it will be entitled for its one open contract. Amounts of variable consideration are included in the transaction price to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. At the inception of each arrangement that includes development and regulatory milestone payments, the Company evaluates whether

the associated event is considered probable of achievement and estimates the amount to be included in the transaction price using the expected value method.

Research and Development Expenses

Research and development expenses consist primarily of compensation costs, fees paid to consultants, outside service providers and organizations (including research institutes at universities), facility costs, and development and clinical trial costs with respect to the Company's drug product candidates.

Research and development expenses incurred under contracts are expensed ratably over the life of the underlying contracts, unless the achievement of milestones, the completion of contracted work, or other information indicates that a different pattern of performance is more appropriate. Other research and development expenses are charged to operations as incurred.

Nonrefundable advance payments are recognized as an expense as the related services are performed. The Company evaluates whether it expects the services to be rendered at each quarter end and year end reporting date. If the Company does not expect the services to be rendered, the advance payment is charged to expense. Nonrefundable advance payments for research and development services are included in prepaid and other current assets on the balance sheet. To the extent that a nonrefundable advance payment is for contracted services to be performed within 12 months from the reporting date, such advance is included in current assets; otherwise, such advance is included in non-current assets.

The Company evaluates the status of its research and development agreements and contracts, and the carrying amount of the related assets and liabilities, at each quarter end and year end reporting date, and adjusts the carrying amounts and their classification on the balance sheet as appropriate.

Patent Expenses

The Company is the exclusive worldwide licensee of, and has patent applications pending for, numerous domestic and foreign patents. Due to the significant uncertainty associated with the successful development of one or more commercially viable drug product candidates based on the Company's research efforts and any related patent applications, all patent costs, including patent-related legal fees, filing fees and other costs are charged to general and administrative expense as incurred. For the years ended December 31, 2023 and 2022, patent expenses were approximately \$2,473,000 and \$2,142,000, respectively.

Licensing Fees and Costs

Licensing fees and costs consist primarily of costs relating to the acquisition of the Company's license agreement (the "Einstein License Agreement") with the Albert Einstein College of Medicine ("Einstein"), including related royalties, maintenance fees, milestone payments and product development costs. Licensing fees and costs are charged to research and development expense as incurred.

Long-Lived Assets

The Company reviews long-lived assets, consisting of property and equipment, for impairment when events or changes in circumstances indicate the carrying value of these assets may exceed their current fair values. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized for the amount by which the carrying amount of the asset exceeds the fair value of the assets. Assets to be disposed of are separately presented in the balance sheet and reported at the lower of the carrying amount or fair value less costs to sell and are no longer depreciated. The Company has not historically recorded any impairment to its long-lived assets. In the future, if events or market conditions affect the estimated fair value to the extent that a long-lived asset is impaired, the Company will adjust the carrying value of these long-lived assets in the period in which the impairment occurs. During the year ended December 31, 2023, the Company sold furniture and fixtures and lab equipment with an acquisition cost of \$41,000 and collected cash of \$2,000 and disposed of gross assets of approximately \$1,289,000. The Company recorded a loss on the sale and disposal of fixed assets of \$157,000, which is presented in other income on the consolidated statement of operations and other comprehensive loss. During the year ended December 31, 2022, the Company sold furniture and fixtures and lab equipment with an acquisition cost of \$43,000 and collected cash of \$6,200. The Company recorded a loss on the sale of fixed assets of \$4,000, which is presented in other income on the consolidated statement of operations and other comprehensive loss.

Leases

The Company accounts for leases under ASC 842 Leases, which requires a lessee to record a right-of-use asset and a corresponding lease liability for most lease arrangements on the balance sheet. Under the standard, disclosure of key information about leasing arrangements to assist users of the financial statements with assessing the amount, timing and uncertainty of cash flows arising from leases are required.

Stock-Based Compensation

The Company periodically issues stock-based awards to officers, directors, employees, Scientific and Clinical Advisory Board members and consultants for services rendered. Such issuances vest and expire according to terms established at the issuance date.

Stock-based payments to officers, directors, employees, Scientific and Clinical Advisory Board members and consultants, including grants of employee stock options, are recognized in the financial statements based on their grant date fair values. Stock option grants, which are generally time-vested, are measured at the grant date fair value and charged to operations on a straight-line basis over the service period, which generally approximates the vesting term. The Company also grants performance-based awards periodically to officers of the Company. The Company recognizes compensation costs related to performance awards over the requisite service period if and when the Company concludes that it is probable that the performance condition will be achieved.

The fair value of stock options and restricted stock units is determined utilizing the Black-Scholes option-pricing model, which is affected by several variables, including the risk-free interest rate, the expected dividend yield, the life of the equity award, the exercise price of the stock option as compared to the fair value of the common stock on the grant date, and the estimated volatility of the common stock over the term of the equity award.

The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant. Until the Company has established a trading history for its common stock that approximates the expected term of the options, estimated volatility is based on the average historical volatility of comparable public companies in a similar industry. The expected dividend yield is based on the current yield at the grant date; the Company has never declared or paid dividends and has no plans to do so for the foreseeable future. As permitted by Staff Accounting Bulletin No. 107, due to the Company's limited trading history and option activity, management utilizes the simplified method to estimate the expected term of options at the date of grant. The exercise price is determined based on the fair value of our common stock at the date of grant. The Company accounts for forfeitures as they occur.

The Company recognizes the fair value of stock-based compensation in general and administrative expenses and in research and development expenses in the Company's consolidated statements of operations and comprehensive loss, depending on the type of services provided by the recipient of the equity award.

Income Taxes

The Company accounts for income taxes under an asset and liability approach for financial accounting and reporting for income taxes. Accordingly, the Company recognizes deferred tax assets and liabilities for the expected impact of differences between the financial statements and the tax basis of assets and liabilities.

The Company accounts for uncertainties in income tax law under a comprehensive model for the financial statement recognition, measurement, presentation and disclosure of uncertain tax positions taken or expected to be taken in income tax returns as prescribed by U.S. GAAP. The tax effects of a position are recognized only if it is "more-likely-than-not" to be sustained by the taxing authority as of the reporting date. If the tax position is not considered "more-likely-than-not" to be sustained, then no benefits of the position are recognized.

The Company records a valuation allowance to reduce its deferred tax assets to the amount that is more likely than not to be realized. In the event the Company was to determine that it would be able to realize its deferred tax assets in the future in excess of its recorded amount, an adjustment to the deferred tax assets would be credited to operations in the period such determination was made. Likewise, should the Company determine that it would not be able to realize all or part of its deferred tax assets in the future, an adjustment to the deferred tax assets would be charged to operations in the period such determination was made.

The Company is subject to U.S. federal and Massachusetts state income taxes. As the Company's net operating losses have yet to be utilized, all previous tax years remain open to examination by federal and state taxing authorities in which the Company currently operates.

For the years ended December 31, 2023 and 2022, there is no provision for income taxes in the U.S. because the Company has historically incurred net operating losses and maintains a full valuation allowance against its net deferred assets. The reported amount of income tax expense for the years differs from the amount that would result from applying domestic federal statutory tax rates to pretax losses primarily because of changes in valuation allowance.

The Company recognizes interest accrued relative to unrecognized tax benefits in interest expense and penalties in operating expense. During the years ended December 31, 2023 and 2022, the Company did not recognize any income tax related interest and penalties. The Company did not have any accruals for income tax related interest and penalties at December 31, 2023 and 2022.

Comprehensive Income (Loss)

Components of comprehensive income or loss, including net income or loss, are reported in the financial statements in the period in which they are recognized. Other comprehensive income or loss is defined as the change in equity during a period from transactions and other events and circumstances from non-owner sources. Net income (loss) and other comprehensive income (loss) are reported net of any related tax effect to arrive at comprehensive income (loss). Comprehensive income (loss) includes net income (loss) as well as changes in stockholders' equity that result from transactions and economic events other than those with stockholders. The Company's only element of other comprehensive income (loss) in periods presented was unrealized gain or loss on available-for-sale securities.

Earnings (Loss) Per Share

The Company's computation of earnings (loss) per share ("EPS") for the respective periods includes basic and diluted EPS. Basic EPS is measured as the income (loss) attributable to common stockholders divided by the weighted average number of common shares outstanding for the period. Diluted EPS is similar to basic EPS but presents the dilutive effect on a per share basis of potential common shares that would result from the exercise of outstanding stock options and warrants as if they had been exercised at the beginning of the periods presented, or issuance date, if later. Potential common shares that have an anti-dilutive effect (i.e., those that increase income per share or decrease loss per share) are excluded from the calculation of diluted EPS. Basic and diluted loss per common share is the same for all periods presented because all outstanding stock options and warrants are anti-dilutive.

Per ASC 260-10-45-13, shares issuable for little to no consideration should be included in the number of outstanding shares used for basic EPS. The Financial Accounting Standards Board ("FASB") proposed that warrants or options exercisable for little to no cost (sometimes referred to as "penny warrants") be included in the denominator of basic EPS (and therefore diluted EPS) once there were no further vesting conditions or contingencies associated with them. The Company included 1,531,440 pre-funded warrants in the denominator of basic EPS at December 31, 2023.

At December 31, 2023 and 2022, the Company excluded the outstanding securities summarized below, which entitled the holders thereof to acquire shares of common stock, from its calculation of EPS, as their effect would have been anti-dilutive.

	December 31,	
	2023	2022
Common stock warrants	10,719,846	10,719,846
Common stock options	10,800,379	6,740,122
Total	21,520,225	17,459,968

Fair Value of Financial Instruments

The authoritative guidance with respect to fair value established a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three levels and requires that assets and liabilities carried at fair value be classified and disclosed in one of three categories, as presented below.

Level 1. Observable inputs such as quoted prices in active markets for an identical asset or liability that the Company has the ability to access as of the measurement date. Financial assets and liabilities utilizing Level 1 inputs include active exchange-traded securities and exchange-based derivatives.

Level 2. Inputs, other than quoted prices included within Level 1, which are directly observable for the asset or liability or indirectly observable through corroboration with observable market data. Financial assets and liabilities utilizing Level 2 inputs include fixed income securities, non-exchange-based derivatives, mutual funds, and fair-value hedges.

Level 3. Unobservable inputs in which there is little or no market data for the asset or liability which requires the reporting entity to develop its own assumptions. Financial assets and liabilities utilizing Level 3 inputs include infrequently traded non-exchange-based derivatives and commingled investment funds and are measured using present value pricing models.

The Company determines the level in the fair value hierarchy within which each fair value measurement falls in its entirety, based on the lowest level input that is significant to the fair value measurement in its entirety. In determining the appropriate levels, the Company performs an analysis of the assets and liabilities at each reporting period end.

The Company had approximately \$39,148,000 in cash equivalents and \$0 in short-term marketable securities that were measured and recorded at fair value on the Company's balance sheet at December 31, 2023. The Company had approximately \$45,423,000 in cash equivalents and \$24,675,000 in short-term marketable securities that were measured and recorded at fair value on the Company's balance sheet at December 31, 2022.

The carrying value of financial instruments (consisting of cash, a certificate of deposit, debt, accounts payable, accrued compensation and accrued expenses) is considered to be representative of their respective fair values due to the short-term nature of those instruments.

Recent Accounting Pronouncements

In June 2016, the FASB issued Accounting Standards Update ("ASU") No. 2016-13, *Financial Instruments- Credit Losses: Measurement of Credit Losses on Financial Instruments* (Topic 326) (CECL). The new standard requires entities to measure all expected credit losses for financial assets held at the reporting date based on historical experience, current conditions and reasonable and supportable forecasts. The new standard is effective for annual reporting periods beginning after December 15, 2022, including interim reporting periods within each annual reporting period for smaller reporting companies. The Company adopted ASU 2016-13 but there was no financial impact to the Company's consolidated financial statements for the years ended December 31, 2023 and 2022.

In December 2023, the FASB issued ASU No. 2023-09, *Income Taxes* (Topic 740): *Improvements to Income Tax Disclosures* ("ASU 2023-09"). The guidance in ASU 2023-09 improves the transparency of income tax disclosures by greater disaggregation of information in the rate reconciliation and income taxes paid disaggregated by jurisdiction. The standard is effective for public companies for fiscal years beginning after December 15, 2024, with early adoption permitted. The Company is currently evaluating the impact that the adoption of ASU 2023-09 may have on its consolidated financial statements.

Management does not believe that any other recently issued, but not yet effective, authoritative guidance, if currently adopted, would have a material impact on the Company's financial statement presentation or disclosures.

3. Fair Value

The Company accounts for its financial assets and liabilities using fair value measurements. The authoritative accounting guidance defines fair value, establishes a framework for measuring fair value under U.S. GAAP and enhances disclosures about fair value measurements. Fair value is defined as the exchange price that would be received for an asset or

paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date.

The following table presents information about the Company's assets that are measured at fair value on a recurring basis as of December 31, 2023 and 2022 and indicate the level of the fair value hierarchy utilized to determine such fair value:

**Fair Value Measurements as of
December 31, 2023**

<i>(In thousands)</i>	Level 1	Level 2	Level 3	Fair Value
Cash equivalents	\$ 39,148	\$ —	\$ —	\$ 39,148
Marketable securities	—	—	—	—
Total	\$ 39,148	\$ —	\$ —	\$ 39,148

**Fair Value Measurements as of
December 31, 2022**

<i>(In thousands)</i>	Level 1	Level 2	Level 3	Fair Value
Cash equivalents	\$ 45,423	\$ —	\$ —	\$ 45,423
Marketable securities	24,675	—	—	24,675
Total	\$ 70,098	\$ —	\$ —	\$ 70,098

As of December 31, 2023, the Company reported approximately \$39,148,000 and \$0 in cash equivalents and marketable securities, respectively. The Company measures the cash equivalents that are invested in money market funds using Level 1 inputs for identical securities. The Company measures the fair value of marketable securities that are invested in U.S. Treasury securities using Level 2 inputs and primarily relies on quoted prices in active markets for similar marketable securities. As of December 31, 2022, the Company reported approximately \$45,423,000 and \$24,675,000 in cash equivalents and marketable securities, respectively. During the years ended December 31, 2023 and 2022, there were no transfers between Level 2 and Level 3.

4. Marketable Securities

As of December 31, 2023, the Company did not hold any marketable securities. The fair value of the Company's marketable securities was \$24,675,000 at December 31, 2022. The following table presents the Company's marketable securities at December 31, 2022:

December 31, 2022

<i>(In thousands)</i>	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. Treasury Securities	\$ 24,771	\$ —	\$ (96)	\$ 24,675

At December 31, 2023, the Company did not have marketable securities. At December 31, 2022, the Company's marketable securities consisted of \$24,771,000 of investments that matured within 12 months and the Company recorded an unrealized loss on investments of \$96,000 for the year ended December 31, 2022.

5. Property and Equipment, Net

Property and equipment, net as of December 31, 2023 and 2022 consisted of the following:

	December 31,	
	2023	2022
	(in thousands)	
Laboratory equipment	\$ 4,069	\$ 5,246
Furniture and fixtures	81	81
Computer equipment	143	296
Leasehold-Improvements	118	118
Total property and equipment	4,411	5,741
Less accumulated depreciation	(3,616)	(4,242)
Property and equipment, net	\$ 795	\$ 1,499

Depreciation expense for the year ended December 31, 2023 was included in the consolidated statements of operations and comprehensive loss as follows, excluding trademark amortization of \$11,000. Depreciation expense for the year ended December 31, 2022 was included in the consolidated statements of operations and comprehensive loss as follows, excluding trademark amortization of \$11,000 and amortization of capitalized license expenses of \$80,000.

	Years Ended December 31,	
	2023	2022
	(in thousands)	
General and administrative	\$ 19	\$ 15
Research and development	526	816
Depreciation total	\$ 545	\$ 831

During the year ended December 31, 2023, the Company sold fully depreciated lab equipment with an acquisition cost of \$41,000 and collected cash of \$2,000, and disposed of gross assets of \$1,289,000. The Company recorded a loss on the sale of fixed assets of \$157,000, which is presented in operating expenses on the consolidated statements of operations and comprehensive loss. During the year ended December 31, 2022, the Company sold furniture and fixtures and lab equipment with an acquisition cost of \$43,000 and collected cash of \$6,000, and recorded a loss on the sale of fixed assets of \$4,000.

6. Loan with First Citizens Bank (formerly with Silicon Valley Bank)

On February 15, 2022 (the "Closing Date"), the Company entered into a Loan and Security Agreement (the "Loan Agreement"), with Silicon Valley Bank, as lender ("SVB"). The Company drew \$10,000,000 in term loans under the Loan Agreement (the "Term Loans") on the Closing Date. The Loan Agreement was amended in April 2023.

The Term Loans bear interest at a floating rate per annum equal to the greater of (A) the prime rate (as published in the money rates section of The Wall Street Journal) plus 2.25% and (B) 5.50%. The Term Loans were interest only from the Closing Date through June 30, 2023, after which the Company is required to pay 30 equal monthly installments of principal. At December 31, 2023, the interest rate was 10.75% which is based on the prime rate plus 2.25%.

The Term Loans may be prepaid in full prior to February 15, 2024 with payment of a 2.00% prepayment premium, on or after which they may be prepaid in full with payment of a 1.00% prepayment premium. Upon prepayment or repayment in full of the Term Loans, the Company will be required to pay a one-time final payment fee equal to 5.00% of the original principal amount of any funded Term Loans being repaid. This one-time final payment fee is recorded to interest expense using the effective interest method over the period of the Term Loans in the consolidated statements of operation and other comprehensive loss.

The Term Loans and related obligations under the Loan Agreement are secured by substantially all of the Company's properties, rights and assets, except for its intellectual property which is subject to a negative pledge under the Loan Agreement.

The Loan Agreement contains customary representations, warranties, events of default and covenants, including a requirement that the Company maintain in accounts of the Company at SVB unrestricted and unencumbered cash equal to the lesser of all of the Company's cash or \$20,000,000. On March 10, 2023, SVB was closed and the FDIC was appointed receiver for the bank. The FDIC created a successor bridge bank, and all deposits and loans of SVB were transferred to the bridge bank under a systemic risk exception approved by the United States Department of the Treasury, the Federal Reserve and the FDIC. On March 27, 2023, First Citizens Bank & Trust Company ("First Citizens Bank"), assumed all of SVB's deposits and certain other liabilities and acquired substantially all of SVB's loans and certain other assets from the FDIC. First Citizens Bank continues to hold the Company's Term Loans under the same existing terms and covenants which were in place with SVB.

During the years ended December 31, 2023 and 2022, the Company recognized interest expense related to the Term Loans of \$1,003,000 and \$570,000, respectively, and \$130,000 and \$109,000, respectively, in interest expense related to accretion of the final repayment.

The following table presents the aggregate maturities of Long-term debt as of December 31, 2023 (in thousands):

Year		
2024	\$	4,000
2025		4,000
Total	\$	8,000

The following table presents long-term and current portions of debt as of December 31, 2023 (in thousands):

Long-term debt	\$	4,000
Accretion of final payment		239
Less: unamortized debt issuance costs		(37)
Long-term debt, net	\$	4,202
Current portion of long-term debt	\$	4,000
Less: unamortized debt issuance costs		(37)
Current portion of long-term debt, net	\$	3,963

Debt Issuance Costs

Debt issuance costs are deferred and presented as a reduction to long-term debt. Debt issuance costs are amortized using the effective interest rate method over the term of the loan. Amortization of deferred debt issuance costs are included in interest expense in the consolidated statements of operations and comprehensive loss. The Company incurred approximately \$142,000 in debt issuance costs related to the Loan Agreement. For the years ended December 31, 2023 and 2022, the Company recorded approximately \$37,000 and \$31,000, respectively, in amortization of debt issuance costs to interest expense in the consolidated statements of operations and comprehensive loss. The Company recorded \$37,000 to both short- and long-term debt issuance costs contra-liabilities as of December 31, 2023.

7. Accrued Expenses

Accrued expenses as of December 31, 2023 and 2022 is summarized as follows:

(In thousands)	December 31,	
	2023	2022
Employee and board compensation	\$ 2,219	\$ 2,273
Contract research services	1,411	1,038
Professional services	344	243
Contract manufacturing services	163	—
Total	\$ 4,137	\$ 3,554

8. Einstein License and Service Agreement

License Agreement

On January 14, 2015, the Company entered into a license agreement, as amended on June 2, 2015 (the “Einstein License”), with Albert Einstein College of Medicine (“Einstein”) for certain patent rights relating to the Company’s core technology platform for the engineering of biologics to control T cell activity, precision, immune-modulatory drug product candidates, and two supporting technologies that enable the discovery of costimulatory signaling molecules (ligands) and T-cell targeting peptides. On July 31, 2017, the Company entered into an amended and restated license agreement which modified certain obligations of the parties under the Einstein License.

Under the Einstein License, the Company holds an exclusive worldwide license, with the right to sublicense, import, make, have made, use, provide, offer to sell, and sell all products, processes and services that use the patents covered by the Einstein License, including certain technology received from Einstein relating thereto (the “Licensed Products”). Under the Einstein License, the Company is required to:

- Pay royalties and amounts based on a certain percentage of proceeds, as defined in the Einstein License, from sales of Licensed Products and sublicense agreements.
- Pay escalating annual maintenance fees, which are nonrefundable, but are creditable against the amount due to Einstein for royalties.
- Make significant payments based upon the achievement of certain milestones, as defined in the Einstein License. Payments made upon achievement of milestones are nonrefundable and are not creditable against any other payment due to Einstein. At December 31, 2023, the Company has made aggregate payments totaling \$1,233,000 since inception with respect to achievement of these milestones.
- Incur minimum product development costs until the first commercial sale of the first licensed product.

The Company was in compliance with its obligations under the Einstein License at December 31, 2023 and 2022.

The Einstein License expires upon the expiration of the Company’s last obligation to make royalty payments to Einstein which may be due with respect to certain Licensed Products, unless terminated earlier under the provisions thereof. The Einstein License includes certain termination provisions if the Company fails to meet its obligations thereunder.

Pursuant to the Einstein License, the Company issued to Einstein 671,572 shares of the Company’s common stock in connection with the consummation of the initial public offering of its common stock on December 27, 2017.

The Company accounts for license fees incurred in connection with the Einstein License in accordance with ASC 730, Research and Development. Please refer to Note 11 Collaboration Revenue.

9. Stock-Based Compensation

Effective March 23, 2016, the Company adopted the 2016 Omnibus Incentive Plan (the “Omnibus Plan”) and the 2016 Non-Employee Equity Incentive Plan (the “Non-Employee Plan”), which are intended to allow the Company to compensate and retain the services of key employees, non-employees, Scientific and Clinical Advisory Board members, and outside advisors and consultants. The plans are under the administration of the Company’s Board of Directors. Under the plans, the Company, at its discretion, may grant stock option awards to certain employees and non-employees through March 23, 2026. The Omnibus Plan and the Non-Employee Plan initially provided for the grant of a total of 2,000,000 shares of common stock and 500,000 shares of common stock, respectively.

On August 13, 2017, the Company’s Board of Directors approved an amendment and restatement of the Company’s Omnibus Plan to increase the number of shares authorized for issuance under such plan by 800,000 shares, from 2,000,000 shares to 2,800,000 shares, subject to stockholder approval of such amendment within 12 months following board approval thereof. The Company’s stockholders approved the plan in December 2017. Additionally, on May 17, 2019, the Company’s Board of Directors approved Amendment No. 1 to the Omnibus Plan to increase the number of shares that may be issued as incentive stock options under the plan, which the Company’s stockholders approved on August 6, 2019. The Omnibus Plan, as

amended and restated, provides that on the first day of each fiscal year of the Company during the period beginning in fiscal year ended December 31, 2018 and ending on the second day of fiscal year ending December 31, 2027, the number of shares of common stock authorized to be issued under such plan shall be increased by an amount equal to the lesser of (i) the number of shares necessary such that the aggregate number of shares available to be issued under the plan equals 20% of the number of fully diluted outstanding shares on such date (assuming the conversion of all outstanding shares of preferred stock and other outstanding convertible securities and exercise of all outstanding options and warrants to purchase shares) and (ii) an amount to be determined by the Company's Board of Directors.

Pursuant to the plans, during the year ended December 31, 2023, the Company granted stock options to purchase 2,591,900 shares of the Company's common stock, 165,602 shares of common stock were exercised, 1,107,248 shares of common stock were cancelled. At December 31, 2023, stock options for 10,924,521 shares of common stock and 320,000 restricted stock units had been granted and 3,302,062 shares of common stock were reserved for future grants under the Omnibus Plan, and stock options for 494,600 shares of common stock had been granted and 5,400 shares of common stock were reserved for future grants under the Non-Employee Plan. In the aggregate, at December 31, 2023, stock options for a total of 11,419,121 shares of common stock and 320,000 restricted stock units had been granted and 3,307,462 shares of common stock were reserved for future grants. Such grants are accounted for as share-based compensation in accordance with ASC 718, *Compensation - Stock Compensation*, and ASC 505-50, *Equity-Based Payments to Non-Employees*.

Stock Option Valuation

For stock options requiring an assessment of value during the years ended December 31, 2023 and 2022, the fair value of each stock option award was estimated using the Black-Scholes option-pricing model utilizing the following assumptions:

	December 31,	
	2023	2022
Risk-free interest rate	3.40 to 4.21%	1.53 to 2.92%
Expected dividend yield	0%	0%
Expected volatility	97.0-114.21%	92.1-95.7%
Expected life	5.5 to 6.25 years	5.5 to 6.25 years

The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant for periods corresponding with the expected term of the stock option award; as permitted by Staff Accounting Bulletin 107, due to insufficient history of stock option activity, management has utilized the simplified approach to estimate the expected term of the stock options, which represents the period of time that stock options granted are expected to be outstanding; the expected volatility is based upon historical volatilities of comparable companies in a similar industry; and the expected dividend yield based upon the Company's current dividend rate and future expectations.

A summary of stock option activity for the years ended December 31, 2023 and 2022 is as follows:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in Years)
Stock options outstanding at December 31, 2021	5,654,168	\$ 10.08	5.48
Granted	828,500	6.99	
Exercised	—	—	
Cancelled	(308,801)	11.32	
Stock options outstanding at December 31, 2022	6,173,867	9.60	5.05
Granted	2,591,900	3.64	
Exercised	(165,602)	2.86	
Cancelled	(1,107,248)	4.76	
Stock options outstanding at December 31, 2023	7,492,917	8.41	6.12
Stock options exercisable at December 31, 2023	4,597,265	\$ 10.18	4.50

The Company recognized \$8,180,030 and \$8,649,803, in stock-based compensation expense during the years ended December 31, 2023 and 2022, respectively. As of December 31, 2023, total unrecognized stock-based compensation was approximately \$10,049,000, which is expected to be recognized as an operating expense in the Company's consolidated statements of operations and comprehensive loss through December 2025 or 2 years.

The aggregate intrinsic value of exercisable but unexercised in-the-money stock options of 4,597,265 at December 31, 2023 was approximately \$594 based on a weighted average exercise price of \$10.18 per share. The aggregate intrinsic value of options is calculated as the difference of the market close price of \$2.64 on December 31, 2023, and the weighted average exercise price of \$10.18, with a weighted average remaining contractual term of 4.5 years.

The aggregate intrinsic value of exercisable but unexercised in-the-money stock options of 4,397,991 at December 31, 2022 was approximately \$0 based on a weighted average exercise price of \$9.04 per share. The aggregate intrinsic value of options is calculated as the difference of the market close price of \$2.85 on December 31, 2022, and the weighted average exercise price of \$9.04, with a weighted average remaining contractual term of 3.74 years.

Restricted Stock Units

On October 3, 2019, the Company granted 100,000 restricted stock units (“RSUs”) with time-based vesting conditions to an executive officer having an average grant date fair value of \$7.53 per share. The RSUs vested in three equal installments beginning on the grant date, and annually on each anniversary of the grant date thereafter. Compensation expense is recognized on a straight-line basis.

On February 5, 2020, the Company granted 150,000 RSUs with time-based vesting conditions to an executive officer. One-half of the RSUs vested on September 30, 2021, and the balance vested on March 31, 2022. On March 31, 2020, the Company granted 50,000 RSUs with time-based vesting conditions to an executive officer. The RSUs vested in three equal installments beginning on the grant date, and annually on each anniversary of the grant date thereafter. Compensation expense is recognized on a straight-line basis.

On August 21, 2020, the Company granted 20,000 RSUs with time-based vesting conditions to an executive officer. The RSUs vest in three equal installments beginning on the grant date, and annually on each anniversary of the grant date thereafter, subject to the recipient’s continued service on each applicable vesting date. Compensation expense is recognized on a straight-line basis.

The Company recognized \$0 and \$846,073 in stock-based compensation during the years ended December 31, 2023 and 2022, respectively, related to RSU activity. As of December 31, 2023, total unrecognized stock-based compensation related to RSU activity was \$0.

Stock-based Compensation

Stock-based compensation for the years ended December 31, 2023 and 2022 was included in the consolidated statements of operations and comprehensive loss as follows:

(In thousands)	December 31,	
	2023	2022
General and administrative	\$ 3,687	\$ 4,615
Research and development	4,493	4,881
Total	<u>\$ 8,180</u>	<u>\$ 9,496</u>

10. Warrants

The Company issued warrants exercisable for 1,500 shares of common stock on June 15, 2015 with an exercise price of \$2.70 per share, which warrants expired at the end of their 7-year term on June 15, 2022. The Company issued another tranche of warrants exercisable for an aggregate of 882,071 shares of common stock with an exercise price of \$9.38 per share when issued on December 27, 2017, which warrants expired at the end of their 5-year term on December 26, 2022.

On November 16, 2022 the Company issued 9,188,406 warrants with an exercise price of \$3.93 and a 5-year term and 1,531,440 Pre-Funded Warrants at a nominal exercise price of \$0.0001 per share. These November 2022 warrants remain outstanding at December 31, 2023 and 2022.

Each tranche of warrants was evaluated under ASC 480, Distinguishing Liabilities from Equity, and ASC 815, *Derivatives and Hedging*, and the Company determined that equity classification was appropriate. The Company determined equity classification for both warrants and pre-funded warrants as they do not embody an obligation for the Company to repurchase its shares and permit the holders to receive a fixed number of shares of common stock upon exercise. Per ASC 815-40-25, the Company accounts for the warrants and pre-funded warrants as equity, as the Company does not provide the holder a fixed or guaranteed return.

The Company recorded cash received from 7,656,966 shares of common stock, 9,188,406 warrants to purchase shares of common stock and 1,531,440 Pre-Funded Warrants to additional paid in capital in the amount of \$27,394,687, net of placement fees of \$2,597,649 during the year ended December 31, 2022. The Company recorded placement fees and expenses related to the sale of shares of common stock, warrants to purchase shares of common stock and Pre-Funded Warrants as a debit to additional paid in capital in the consolidated balance sheet.

11. Collaboration Revenue

The Company recognizes collaboration revenue under certain of the Company's license or collaboration agreements that are within the scope of ASC 606. The Company's contracts with customers typically include promises related to licenses to intellectual property and research and development services. If the license to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenue from non-refundable, up-front fees allocated to the license when the license is transferred to the licensee and the licensee is able to use and benefit from the license. For licenses that are bundled with other promises, the Company utilizes judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and if, over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, up-front fees. The Company's contracts may include options to acquire additional goods and/or services.

The terms of the Company's arrangements with customers typically include the payment of one or more of the following: (i) non-refundable, up-front payment, and pass through costs related to research activities, (ii) development, regulatory and commercial milestone payments, (iii) future options and (iv) royalties on net sales of licensed products. Accordingly, the transaction price is generally comprised of a fixed fee due at contract inception and variable consideration in the form of pass through costs and milestone payments due upon the achievement of specified events and tiered royalties earned when customers recognize net sales of licensed products. The Company measures the transaction price based on the amount of consideration to which it expects to be entitled in exchange for transferring the promised goods and/or services to the customer. The Company utilizes the "expected value method" method to estimate the amount of variable consideration, to predict the amount of consideration to which it will be entitled for its one open contract. Amounts of variable consideration are included in the transaction price to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Milestone payments that are not within the control of the Company or the licensee, such as those dependent upon receipt of regulatory approval, are not considered to be probable of achievement until the triggering event occurs. At the end of each reporting period, the Company reevaluates the probability of achievement of each milestone and any related constraint, and, if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenue and net loss in the period of adjustment.

For arrangements that include sales-based royalties, including milestone payments based upon the achievement of a certain level of product sales, the Company recognizes revenue upon the later of: (i) when the related sales occur or (ii) when the performance obligation to which some or all of the payment has been allocated has been satisfied (or partially satisfied). To date, the Company has not recognized any development, regulatory or commercial milestones or royalty revenue resulting from any of its collaboration arrangements. Consideration that would be received for optional goods and/or services is excluded from the transaction price at contract inception.

The Company allocates the transaction price to each performance obligation identified in the contract on a relative standalone selling price basis, when applicable. However, certain components of variable consideration are allocated specifically to one or more particular performance obligations in a contract to the extent both of the following criteria are met: (i) the terms of the payment relate specifically to the efforts to satisfy the performance obligation or transfer the distinct good or service and (ii) allocating the variable amount of consideration entirely to the performance obligation or the distinct good or service is consistent with the allocation objective of the standard whereby the amount allocated depicts the amount of consideration to which the entity expects to be entitled in exchange for transferring the promised goods or services. The Company develops assumptions that require judgment to determine the standalone selling price for each performance obligation identified in each contract. The key assumptions utilized in determining the standalone selling price for each performance obligation may include forecasted revenues, development timelines, estimated research and development costs, discount rates, likelihood of exercise and probabilities of technical and regulatory success.

Revenue is recognized based on the amount of the transaction price that is allocated to each respective performance obligation when or as the performance obligation is satisfied by transferring a promised good and/or service to the customer. For performance obligations that are satisfied over time, the Company recognizes revenue by measuring the progress toward complete satisfaction of the performance obligation using a single method of measuring progress which depicts the performance in transferring control of the associated goods and/or services to the customer. The Company uses input methods to measure progress toward the complete satisfaction of performance obligations satisfied over time. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenue and net loss in the period of adjustment. The Company measures progress toward satisfaction of the performance obligation over time as effort is expended.

Collaboration Agreement with LG Chem

On November 6, 2018, the Company entered into a collaboration agreement (the "LG Chem Collaboration Agreement") with LG Chem Ltd. ("LG Chem") related to the development of the Company's Immuno-STATs focused in the field of

oncology. Pursuant to the LG Chem Collaboration Agreement, the Company granted LG Chem an exclusive license to develop, manufacture and commercialize the Company's lead product, CUE-101, as well as Immuno-STATs that target T cells against two additional cancer antigens, in certain Asian countries (collectively, the "LG Chem Territory"). On April 30, 2021, LG Chem's option pursuant to the Global License and Collaboration Agreement entered into between the Company and LG Chem on December 18, 2019 and as amended on November 5, 2020 (the "Global License and Collaboration Agreement"), expired, and accordingly the Company no longer has any material obligations under the Global License and Collaboration Agreement. In June 2021, after ongoing discussions regarding the selection of the second of the two additional cancer antigens, LG Chem and the Company agreed to let the selection period expire without a second antigen being selected. The Company retains rights to develop and commercialize all assets included in the LG Chem Collaboration Agreement in the United States and in global markets outside of the LG Chem Territory. In exchange for the licenses and other rights granted to LG Chem under the LG Chem Collaboration Agreement, LG Chem made a \$5.0 million equity investment in common stock of the Company and a \$5.0 million nonrefundable up-front cash payment. The Company is also eligible to receive up to an additional \$400.0 million in research, development, regulatory and sales milestones. In addition, the LG Chem Collaboration Agreement also provides that LG Chem will pay the Company tiered single-digit percentage royalties on net sales of commercialized drug product candidates in the LG Chem Territory.

On May 16, 2019, LG Chem paid the Company a \$2.5 million milestone payment for the U.S. Food and Drug Administration's ("FDA") acceptance of the investigational new drug application ("IND") for the Company's lead drug product candidate, CUE-101, pursuant to the LG Chem Collaboration Agreement. The \$2.5 million milestone payment was recorded as a contract liability upon receipt of payment as it requires deferral of revenue recognition to a future period until the Company performs its obligations under the arrangement. Of the \$2.5 million milestone payment, approximately \$412,500 was recognized as tax withholding, shown as income tax expense on the consolidated statement of operations and other comprehensive loss.

On December 7, 2020, the Company earned a \$1.25 million milestone payment on the selection of a pre-clinical candidate pursuant to the LG Chem Collaboration Agreement. The \$1.25 million milestone payment was recorded as a contract liability upon receipt. Revenue related to this milestone payment was recognized by the Company pursuant to the Company's revenue recognition policy in relation to the performance of its obligations related to the development of this pre-clinical candidate. Of the \$1.25 million milestone payment, approximately \$206,250 was withheld as payment of foreign tax withholding and shown as income tax expense on the consolidated statement of operations and other comprehensive loss.

On November 23, 2021, the Company earned a \$3 million milestone payment for the selection of a clinical product candidate in partnership with LG Chem. The \$3 million milestone payment was recorded as a contract liability upon receipt. Revenue related to this milestone payment was recognized by the Company pursuant to the Company's revenue recognition policy in relation to the performance of its obligations related to the development of this preclinical candidate. Of the \$3 million milestone payment, approximately \$495,000 was withheld as payment of foreign tax withholding and shown as income tax expense on the consolidated statements of operations and comprehensive loss. Cash was collected in relation to this milestone payment in February 2022.

Aside from the \$6.75 million in milestone payments earned to date, the Company does not believe that any variable consideration should be included in the transaction price as of December 31, 2023. Such assessment considered the application of the constraint to ensure that estimates of variable consideration would be included in the transaction price only to the extent the Company had a high degree of confidence that revenue would not be reversed in a subsequent reporting period. The Company will re-evaluate the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as other changes in circumstances occur. For the years ended December 31, 2023 and 2022, the Company recognized revenue of approximately \$324,000 and approximately \$1,245,000, respectively, related to the LG Chem Collaboration Agreement. The Company did not record short or long-term research and development liabilities on its balance sheet dated December 31, 2023 and December 31, 2022, as the performance obligation was met and completed. Research and development cost sharing provisions under the agreement expired on March 31, 2022, thereafter the Company recognized revenue on intellectual patent filing passthrough costs in the LG Chem territory.

Collaboration and Option Agreement with Ono

On February 22, 2023, the Company entered into a strategic collaboration agreement (the "Ono Collaboration and Option Agreement") with Ono Pharmaceutical Co., Ltd. ("Ono") to further develop CUE-401 and provide dedicated resources and capabilities to help advance CUE-401 toward the clinic. Under the terms of the Ono Collaboration and Option Agreement, Ono paid the Company an upfront payment and agreed to fully fund all research activities related to CUE-401 through a specified option period. During this option period, the Company will be responsible for the research and development of

CUE-401. Upon Ono's exercise of its option to license CUE-401, the Company will receive an option exercise payment and be eligible for development and commercial milestone payments up to an aggregate of approximately \$220 million, as well as tiered royalties on sales. Upon any such exercise, Ono will receive worldwide rights to develop and commercialize CUE-401, with the Company retaining a 50% co-development and co-commercialization right in the United States. The Company's decision to elect the co-development and co-commercialization option may be made within 30 days of Ono's option exercise to license CUE-401. The amount paid by Ono to the Company for the option exercise and future milestone payments will vary based upon the Company's decision to exercise the co-development and co-commercialization option.

Under the terms of the Ono Collaboration and Option Agreement, the Company will perform research activities related to CUE-401 through a specified option period of 24 months (the "Research Term"). During this Research Term, the Company will be responsible for the execution of scientific investigation, nonclinical, preclinical, and clinical drug research and development activities designed to progress CUE-401 toward a potential IND and regulatory approval (such activities, collectively referred to as "R&D"). Ono is responsible for the funding of R&D activities performed by the Company. Per the agreement, as consideration for the R&D activities performed by the Company, Ono (i) made a one-time, non-refundable, non-creditable upfront payment of \$3.0 million to the Company and (ii) will reimburse the Company for all costs incurred in conducting research, including (a) pass through costs from third party contractors and (b) full time employee salaries capped at \$2.1 million in the first 18 months of the Research Term. The term of the Ono Collaboration and Option Agreement extends until the expiration of the Research Term which cannot exceed a 24-month period. The Company has forecasted that it will be able to complete the R&D activities in the first 18 months of the Research Term based on the initial research and development plans it has established. The Company received the \$3.0 million upfront payment in March 2023.

Aside from the \$3.0 million upfront payment and funding related to pass through costs, the Company does not believe that any variable consideration should be included in the transaction price as of December 31, 2023. Such assessment considered the application of the constraint to ensure that estimates of variable consideration would be included in the transaction price only to the extent the Company had a high degree of confidence that revenue would not be reversed in a subsequent reporting period. The Company will re-evaluate the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as other changes in circumstances occur. For the years ended December 31, 2023 and 2022, the Company recognized revenue of approximately \$5,166,000 and \$0, respectively, related to the Ono Collaboration and Option Agreement. The Company recorded short-term research and development liabilities on its balance sheet dated December 31, 2023, of approximately \$2,112,000. The Company did not recognize short or long-term research and development liabilities on its balance sheet as of December 31, 2022, as the agreement was executed in February 2023.

Capitalization of Contract Costs

The Company considered the capitalization of contract costs under the guidance in ASC 340-40, *Other Assets and Deferred Costs: Contracts with Customers*. As it related to the LG Chem Collaboration Agreement, the Company capitalized license expenses of approximately \$908,000 as of December 31, 2022, paid to Einstein pursuant to the Einstein License Agreement which requires the Company to pay a percentage of sublicenses related to the Company's patent rights for components of its core technology that is licensed from Einstein. This amount is comprised of approximately \$438,000 of capitalized license expenses related to the up-front payment received from LG Chem in December 2018, approximately \$313,000 in capitalized license expenses related to the milestone payment received in June 2019, and approximately \$157,000 in capitalized license expenses related to the milestone payment received in December 2020, net of accumulated amortization of approximately \$908,000. As of December 31, 2023 and 2022, no capitalized license expenses net of accumulated amortization were included in prepaid expenses and other short-term assets related to the LG Chem Collaboration Agreement. The Company has not capitalized license expenses related to the Ono Collaboration and Option Agreement, as CUE-401 does not contain components of the core technology licensed from Einstein.

12. Stockholders' Equity

Preferred Stock

The Company has authorized a total of 10,000,000 shares of preferred stock, par value \$0.001 per share, none of which were outstanding at December 31, 2023 and 2022. The Company's Board of Directors has the authority to issue preferred stock and to determine the rights, preferences, privileges, and restrictions, including voting rights.

Common Stock

The Company has authorized a total of 100,000,000 shares of common stock, par value \$0.001 per share, of which 47,215,116 shares and 43,042,548 shares were issued and outstanding at December 31, 2023 and 2022, respectively.

Warrants

Information with respect to warrants and pre-funded warrants issued is described in Note 10.

13. Related Party Transactions

Information with respect to payments under the Einstein License is described in Note 8.

14. Income Taxes

The Company accounts for income taxes under the provision of ASC 740, Income Taxes. The Company did not report a tax provision for the years ended December 31, 2023 and 2022 due to historically incurred net operating losses.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's deferred tax assets as of December 31, 2023 and 2022 are as follows:

(In thousands)	December 31,	
	2023	2022
Deferred tax assets:		
Net operating loss carryforwards	\$ 53,376	\$ 49,708
Research and other credits	7,482	5,841
R&D capitalization	16,181	8,183
Reserves and accruals	8,519	8,574
Other	270	291
Total gross deferred tax assets	85,828	72,597
Less valuation allowance	(84,039)	(70,010)
Total deferred tax assets	1,789	2,587
Deferred tax liability:		
Depreciation	(1,789)	(2,587)
Other	—	—
Net deferred tax assets	\$ —	\$ —

In assessing the potential realization of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will be realized. The ultimate realization of deferred tax assets is dependent upon the Company attaining future taxable income during the periods in which those temporary differences become deductible. As of December 31, 2023, and 2022, management was unable to determine if it is more likely than not that the Company's deferred tax assets will be realized and has therefore recorded a 100% valuation allowance against deferred tax assets at such dates.

No Federal tax provision has been provided for the years ended December 31, 2023 and 2022 due to the losses incurred during such periods. A reconciliation of the difference between the income tax rate computed by applying the U.S. Federal statutory rate and the effective tax rate for the years ended December 31, 2023 and 2022 is as follows:

	December 31,	
	2023	2022
U. S. federal statutory tax rate	(21)%	(21)%
State taxes	(6)%	(6)%
Change in valuation allowance	28%	29%
Tax credits	(3)%	(4)%
Stock-based compensation	2%	1%
Foreign withholding taxes	0%	0%
Other	0%	1%
Effective tax rate	0%	0%

On October 4, 2023, Massachusetts enacted tax law changes which included the adoption of a single sales apportionment factor effective on January 1, 2025. As required under ASC 740, the Company has accounted for the deferred tax impacts of this tax law change in the period the tax law was enacted, which resulted in an insignificant increase in state deferred tax assets and offset with a valuation allowance.

The Company has applied the provisions of ASC 740, which clarifies the accounting for uncertainty in tax positions and requires the recognition of the impact of a tax position in the financial statements if that position is more likely than not of being sustained on a tax return, based on the technical merits of the position, upon examination by the relevant taxing authority. At December 31, 2023 and 2022, the Company had unrecognized tax benefits related to Federal and state research tax credits of approximately \$2,927,000 and \$2,491,000, respectively. The Company is subject to Federal and state income tax examinations by tax authorities for all years since its incorporation in 2014. The Company is currently not under examination by any tax authority.

At December 31, 2023, the Company has available net operating loss carryforwards for Federal and state income tax purposes of approximately \$196.1 million and \$193.5 million, respectively, which, if not utilized earlier, will begin to expire in 2035. Approximately \$167.5 million of the federal net operating losses have an indefinite carryforward. The Company has Federal research credits of approximately \$8.4 million, which, if not utilized earlier, will begin to expire in 2035, and state research credits of approximately \$2.4 million, which, if not utilized earlier, will begin to expire in 2033. Approximately \$0.1 million of the state research credits have an indefinite carryforward.

The following is a reconciliation of the Company's gross uncertain tax position at December 31, 2023 and 2022:

(In thousands)	December 31,	
	2023	2022
Balance at the beginning of year	\$ 2,491	\$ 2,068
Additions for current year tax provisions	424	401
Additions for prior year tax provisions	14	58
Reductions of prior year tax provisions	(2)	(36)
Balance as of end of year	\$ 2,927	\$ 2,491

15. Commitments and Contingencies

Einstein License Agreement

In 2015, the Company entered into the Einstein License Agreement with Einstein for certain patent rights relating to the Company's core technology platform for the engineering of biologics to control T cell activity, precision, immune-modulatory drug product candidates, and two supporting technologies that enable the discovery of costimulatory signaling molecules (ligands) and T cell targeting peptides. The Company entered into an amended and restated license agreement on July 31, 2017, as amended on October 2018, which modified certain obligations of the parties under the Einstein License Agreement. For the years ended December 31, 2023 and 2022, the Company incurred approximately \$7,000 and \$0, respectively, in fees payable to Einstein in relation to this license.

The Company's remaining commitments with respect to the Einstein License are based on the attainment of future milestones. The aggregate amount of milestone payments made under the Einstein License may equal up to \$1.85 million for each Licensed Product, and up to \$1.85 million for each new indication of a Licensed Product. Additionally, the aggregate amount of one-time milestone payments based on cumulative sales of all Licensed Products may equal up to \$5.75 million. The Company is also party to a service agreement with Einstein to support the Company's ongoing research and development activities.

Collaboration Agreement with LG Chem

See discussion of the LG Chem Collaboration Agreement in Note 11.

Collaboration Agreement with Ono

See discussion of the Ono Collaboration and Option Agreement in Note 11.

Contingencies

The Company accrues contingent liabilities to the extent that the liability is probable and estimable. There are no accruals for contingent liabilities in these consolidated financial statements.

The Company may be subject to various legal proceedings from time to time as part of its business. As of December 31, 2023, the Company was not a party to any legal proceedings or threatened legal proceedings, the adverse outcome of which, individually or in the aggregate, would have a material adverse effect on its business, financial condition or results of operations.

16. Leases

On March 28, 2022, the Company entered into a License Agreement (the "License") with MIL 40G, LLC (the "Licensor"), pursuant to which the Company leases approximately 13,000 square feet of office, research and development and laboratory space located at 40 Guest Street, Boston, Massachusetts 02135 (the "Premises"). The Company relocated its corporate headquarters to the Premises in April 2022. On March 28, 2022, the Company terminated its office and lab space lease in Cambridge Massachusetts (the "Laboratory and Office Lease") effective April 30, 2022. The Company performed an analysis of the accounting implications of this termination based on ASC 360 Impairments and Abandonments guidance. For the year ended December 31, 2022, the Company recorded an adjustment to decrease the right-of-use asset and lease liability of approximately \$8,124,000 and \$8,382,000, respectively, and recorded a gain on right-of-use asset included in the consolidated statement of operations and comprehensive loss of approximately \$258,000.

The Company recognized a right of use asset of approximately \$9,056,000 and an operating lease liability of approximately \$9,056,000 which were recorded as of the Term Commencement Date (as defined below) related to the License.

The term of the License commenced on April 15, 2022 (the "Term Commencement Date") and expires on April 14, 2026 (the "Term"). The License has a monthly rental rate of \$200,700 for the first year of the Term, \$208,728 for the second year of the Term, \$217,077 for the third year of the Term and \$225,760 for the remainder of the Term. Pursuant to the License, the Company prepaid two months of rent and a security deposit. The Licensor is obligated under the License to provide certain services to the Company, including providing certain gases, chemicals and equipment to the Premises' laboratory space, IT support, security, office support and health and safety training. The Licensor has the right to terminate the License for Cause (as defined in the License).

On May 3, 2022, the Company entered into the First Amendment to the License ("First Amendment") with the Licensor, pursuant to which the License was expanded to include an additional room effective July 15, 2022. In consideration of the First Amendment, the security deposit was increased from \$225,760 to \$235,884 effective July 15, 2022. Upon execution of the First Amendment, the Company prepaid three months of rent, two of which will be held in escrow and credited against future rent payments and the other of which was applied to the first month's rent. Effective July 15, 2022, the monthly rental rate under the First Amendment increased to \$209,700 from \$200,700. During the year ended December 31, 2022, the Company recognized a right of use asset of approximately \$369,000 and a short and long term operating lease liability of approximately \$100,300 and \$260,600, respectively, using the weighted average discount rate of 8%, which were recorded as of the Term Commencement Date related to the License.

On May 31, 2022, the Company entered into an operating lease for additional laboratory space at 40 Guest Street, Boston, Massachusetts for the period from December 1, 2022, through December 1, 2024 (the "40G Additional Laboratory Lease"). The 40G Additional Laboratory Lease contains escalating payments during the lease period. The monthly rental rate under the 40G Additional Laboratory Lease is \$59,152 for the first 12 months and \$61,519 for the remainder of the term. Under the terms of this lease agreement, the Company prepaid three months of rent, two of which are held in escrow and will be credited against future rent payments and the other of which was applied to the first month's rent. During the year ended December 31, 2022, the Company recognized a right of use asset of approximately \$1,307,000 and a short and long term operating lease liability of approximately \$712,000, and \$535,000, respectively, using the weighted average discount rate of 10%, which were recorded as of the Term Commencement Date related to the 40G Additional Laboratory Lease.

On September 9, 2022, the Company terminated its lab space lease in Cambridge, Massachusetts with MIL 21E, LLC with an effective termination date of December 6, 2022. The Company performed an analysis of the accounting implications of this termination based on ASC 360 Impairments and Abandonments guidance. During the year ended December 31, 2022, the Company recorded an entry to remove the remaining lease liability and right of use asset of \$963,000 and \$945,000, respectively. The difference between the carrying amounts of the right of use asset and lease liability of \$19,000 was recorded to gain on right of use asset and included in the consolidated statement of operations and comprehensive loss.

For the year ended December 31, 2023, the Company recorded approximately \$512,000 in interest expense to the lease liability.

At December 31, 2023, the Company recorded approximately \$6,323,000 to operating lease right-of-use asset, and approximately \$3,368,000 and \$3,162,000 to the short-term and long-term operating lease liability, respectively. At December 31, 2022, the Company recorded approximately \$9,203,000 to operating lease right-of-use asset, and approximately \$3,300,000 and \$6,018,000 to the short-term and long-term operating lease liability, respectively. As of December 31, 2023 and 2022, a security deposit of approximately of \$595,000 and \$794,000, respectively, included in deposits on the Company's consolidated balance sheet related to the 40G Additional Laboratory Lease.

Future minimum lease payments under these leases at December 31, 2023 are as follows:

Year	(in thousands)
2024	3,368
2025	2,799
2026	818
Total lease payments	6,985
Less: present value discount	(455)
Present value of lease payments	\$ 6,530

Total rent expense of approximately \$3,421,000 and \$4,182,000 was included in the consolidated statements of operations and comprehensive loss for the years ended December 31, 2023 and 2022, respectively. Other information pertaining to the Company's operating leases for the twelve months ended December 31, 2023 is summarized in the table below.

The weighted average remaining lease term and discount rate related to the Company's leases were as follows:

	December 31,	
	2023	2022
Weighted average remaining lease term (years)	2.16	3.11
Weighted average discount rate	6.25 %	6.41 %

17. Cue Biopharma 401(k) Plan

Effective as of January 1, 2017, the Company adopted the Cue Biopharma 401(k) Plan (the "Plan") for all employees of the Company. Employees may participate in the Plan upon complying with the Plan's eligibility requirements, subject to limitations imposed by the Internal Revenue Service. Under the Plan, the Company may match employee contributions at its discretion. The Company made contributions of approximately \$272,000 and \$245,000 to the Plan during the years ended December 31, 2023 or 2022, respectively.

18. Subsequent Events

ATM Sales

Subsequent to December 31, 2023, the Company sold 1,428,200 shares of common stock under the October 2021 ATM Agreement for proceeds of approximately \$3.4 million, net of commissions paid, but excluding transactions expenses. As of March 28, 2024, aggregate sales under the October 2021 ATM Agreement totaled 9,028,573 shares of common stock sold for approximately \$40.4 million, net of commissions paid, but excluding estimated transaction expenses.

PART IV

Item 15. Exhibit and Financial Statement Schedules

(a) List of documents filed as part of this report:

1. Financial Statements (see “Financial Statements and Supplementary Data” at Item 8 and incorporated herein by reference).
2. Financial Statement Schedules (Schedules to the Financial Statements have been omitted because the information required to be set forth therein is not applicable or is shown in the accompanying Financial Statements or notes thereto)
3. Exhibits

The following is a list of exhibits filed as part of this Annual Report on Form 10-K:

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Filed Herewith	Form	Exhibit	Filing Date Registration /File No.
3.1	Amended and Restated Certificate of Incorporation of the Registrant, as amended		10-Q	3.1	11/09/2020 001-38327
3.2	Amended and Restated Bylaws of the Registrant		S-1	3.5	12/05/2017 333-220550
4.1	Specimen Certificate representing shares of common stock of the Registrant		S-1	4.1	12/05/2017 333-220550
4.2	Description of Common Stock of the Registrant Registered Pursuant to Section 12 of the Securities Exchange Act of 1934	X			
4.3	Form of Pre-Funded Warrant to Purchase Common Stock		8-K	4.1	11/15/2022 001-38327
4.4	Form of Warrant to Purchase Common Stock or Pre-Funded Warrant		8-K	4.2	11/15/2022 001-38327
10.1	Form of Registration Rights Agreement between the Registrant and investors for an offering completed on June 15, 2015		S-1	10.4	09/21/2017 333-220550
10.2	Form of Joinder and Amendment to Registration Rights Agreement between the Registrant and investors for an offering completed on December 22, 2016		S-1	10.6	09/21/2017 333-220550
10.3#	First Amendment to Collaboration, License and Option Agreement, dated March 15, 2019, between the Registrant and LG CHEM LTD.		10-K	10.3	03/09/2021 001-38327
10.4#	Second Amendment to Collaboration, License and Option Agreement, dated August 5, 2019, between the Registrant and LG CHEM LTD.		10-K	10.4	03/09/2021 001-38327
10.5#	Third Amendment to Collaboration, License and Option Agreement, dated October 29, 2019, between the Registrant and LG CHEM LTD.		10-K	10.5	03/09/2021 001-38327
10.6#	Fourth Amendment to Collaboration, License and Option Agreement, dated December 18, 2019, between the Registrant and LG CHEM LTD.		10-K	10.6	03/09/2021 001-38327

10.7#	Fifth Amendment to Collaboration, License and Option Agreement, dated January 10, 2020, between the Registrant and LG CHEM LTD.	10-K	10.7	03/09/2021	001-38327
10.8#	Sixth Amendment to Collaboration, License and Option Agreement, dated February 14, 2020, between the Registrant and LG CHEM LTD.	10-K	10.8	03/09/2021	001-38327
10.9#	Seventh Amendment to Collaboration, License and Option Agreement, dated May 14, 2020, between the Registrant and LG CHEM LTD.	10-K	10.9	03/09/2021	001-38327
10.10#	Eighth Amendment to Collaboration, License and Option Agreement, dated December 7, 2020, between the Registrant and LG CHEM LTD.	10-K	10.10	03/09/2021	001-38327
10.11	Form of Indemnification Agreement between the Registrant and its directors and officers	10-K	10.11	03/21/2023	001-38327
10.12†	Amended and Restated License Agreement by and between the Registrant and Albert Einstein College of Medicine dated July 31, 2017	S-1	10.11	12/13/2017	333-220550
10.13*	Cue Biopharma, Inc. 2016 Omnibus Incentive Plan, as amended and restated	S-1	10.13	09/21/2017	333-220550
10.14*	Form of stock option award under 2016 Omnibus Incentive Plan	S-1	10.14	09/21/2017	333-220550
10.15*	Cue Biopharma, Inc. 2016 Non-Employee Equity Incentive Plan	S-1	10.15	09/21/2017	333-220550
10.16*	Form of stock option award under 2016 Non-Employee Equity Incentive Plan	S-1	10.16	09/21/2017	333-220550
10.17*	Director Compensation Policy effective December 7, 2023	X			
10.18*	Executive Employment Agreement between the Registrant and Colin G. Sandercock dated as of November 15, 2017	S-1	10.22	12/04/2017	333-220550
10.19†	Collaboration, License and Option Agreement between the Registrant and LG Chem, Ltd. dated November 6, 2018	8-K	10.1	12/26/2018	001-38327
10.20*	Amendment No. 1 to Cue Biopharma, Inc. 2016 Omnibus Incentive Plan	10-K	10.16	03/12/2020	001-38327
10.21*	Amended and Restated Executive Employment Agreement between the Registrant and Anish Suri dated October 3, 2019	8-K	10.1	10/07/2019	001-38327
10.22	Third Amended and Restated Executive Employment Agreement dated March 4, 2021 between the Company and Daniel Passeri	10-K	10.26	03/09/2021	001-38327
10.23	Executive Employment Agreement dated August 21, 2020 between Registrant and Kerri-Ann Millar	8-K	10.1	08/24/2020	001-38327
10.24	First Amendment to the Amended and Restated License Agreement with Albert Einstein College of Medicine dated October 30, 2018	10-K	10.30	03/09/2021	001-38327
10.25	Open Market Sale AgreementSM, dated October 1, 2021, by and between Cue Biopharma, Inc. and Jefferies LLC	10-Q	10.1	11/09/2021	001-38327

10.26#	Loan and Security Agreement, dated February 15, 2022, by and between Cue Biopharma, Inc. and Silicon Valley Bank	10-K	10.34	03/16/2022	001-38327
10.27	License Agreement, dated March 28, 2022, between Cue Biopharma, Inc. and MIL 40G, LLC	8-K	10.1	03/30/2022	001-38327
10.28	First Amendment to the License Agreement, dated May 3, 2022, between Cue Biopharma, Inc. and MIL 40G, LLC	10-Q	10.1	08/04/2022	001-38327
10.29	Rider to License Agreement, dated as of July 7, 2022, between Cue Biopharma, Inc. and MIL 40G, LLC	10-Q	10.2	08/04/2022	001-38327
10.30	Termination of License Agreement, dated September 9, 2022, between Cue Biopharma, Inc. and MIL 21E, LLC	10-Q	10.1	11/14/2022	001-38327
10.31	Form of Securities Purchase Agreement, dated November 14, 2022, by and among the Company and the other parties thereto	8-K	10.1	11/15/2022	001-38327
10.32	Registration Rights Agreement, dated November 14, 2022, by and among the Company and the other parties thereto	8-K	10.2	11/15/2022	001-38327
10.33	Waiver and First Amendment to Loan and Security Agreement, dated April 10, 2023, by and between Cue Biopharma, Inc. and Silicon Valley Bridge Bank, N.A., as successor in interest to Silicon Valley Bank	10-Q	10.2	05/09/2023	001-38327
10.34*	Amendment No. 2 to Cue Biopharma, Inc. 2016 Omnibus Incentive Plan	10-Q	10.1	08/08/2023	001-38327
10.35*	Amendment No. 1 to Cue Biopharma, Inc. 2016 Non-Employee Equity Incentive Plan	10-Q	10.2	08/08/2023	001-38327
10.36*	Consulting Agreement effective June 7, 2023 entered into between Cue Biopharma, Inc. and Peter A Kiener, D.Phil	10-Q	10.3	08/08/2023	001-38327
10.37*	Amendment No. 1 to Consulting Agreement between Cue Biopharma, Inc. and Peter A. Kiener, dated September 1, 2023	10-Q	10.1	11/03/2023	001-38327
10.38#	Second Amendment to the Amended and Restated License Agreement with Albert Einstein College of Medicine dated January 13, 2024	X			
21.1	List of Subsidiaries	X			
23.1	Consent of RSM US LLP, Independent Registered Public Accounting Firm	X			
24.1	Power of Attorney (included on signature page)	X			
31.1	Certification Pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934	X			
31.2	Certification Pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934	X			

32.1	<u>Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>	X
97.1*	<u>Compensation Recovery Policy</u>	X
101.INS	Inline eXtensible Business Reporting Language (XBRL) Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document	X
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 (formatted as inline XBRL with applicable taxonomy extension information contained in Exhibits 101)	X

* Indicates management compensatory plan, contract or arrangement.

† Confidential treatment has been granted as to portions of this exhibit. Confidential materials omitted and filed separately with the Securities and Exchange Commission.

Portions of this exhibit have been omitted pursuant to Item 601(b)(10)(iv) of Regulation S-K.

Item 16. Form 10-K Summary

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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.

Cue Biopharma, Inc.

Dated: March 28, 2024

By: /s/ Daniel R. Passeri
Daniel R. Passeri
Chief Executive Officer and Director
(Principal Executive Officer)

POWER OF ATTORNEY AND SIGNATURES

We, the undersigned officers and directors of Cue Biopharma, Inc., hereby severally constitute and appoint Daniel R. Passeri and Kerri-Ann Millar our true and lawful attorney, with full power to him or her to sign for us and in our names in the capacities indicated below, any amendments to this Annual Report on Form 10-K, and generally to do all things in our names and on our behalf in such capacities to enable Cue Biopharma, Inc. to comply with the provisions of the Securities Exchange Act of 1934, as amended, and all the requirements of the Securities Exchange Commission.

Pursuant to the requirements of the Securities and Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signatures	Title	Date
<u>/s/ Daniel R. Passeri</u> Daniel R. Passeri	Chief Executive Officer and Director (Principal Executive Officer)	March 28, 2024
<u>/s/ Kerri-Ann Millar</u> Kerri-Ann Millar	Chief Financial Officer (Principal Financial and Accounting Officer)	March 28, 2024
<u>/s/ Peter A. Kiener</u> Peter A. Kiener	Director	March 28, 2024
<u>/s/ Frederick Driscoll</u> Frederick Driscoll	Director	March 28, 2024
<u>/s/ Pamela Garzone</u> Pamela Garzone	Director	March 28, 2024
<u>/s/ Patrick Verheyen</u> Patrick Verheyen	Director	March 28, 2024
<u>/s/ Frank Morich</u> Frank Morich	Director	March 28, 2024

**DESCRIPTION OF COMMON STOCK OF CUE BIOPHARMA, INC.
REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934**

The following information is a summary of information concerning the common stock, par value \$0.001 per share (the “Common Stock”), of Cue Biopharma, Inc. (“we,” “our,” or “us”) and does not purport to be complete. It is subject to and qualified in its entirety by reference to our Amended and Restated Certificate of Incorporation, as amended (the “Certificate of Incorporation”), and Amended and Restated Bylaws (the “Bylaws”), each of which are incorporated by reference as an exhibit to the Annual Report on Form 10-K of which this exhibit is a part.

Authorized Common Stock

The Certificate of Incorporation authorizes the issuance of 100,000,000 shares of Common Stock. Our authorized but unissued shares of Common Stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange or automated quotation system on which our securities may be listed or traded. Our Common Stock is registered under Section 12(b) of the Exchange Act.

Voting

Each holder of Common Stock is entitled to one vote for each such share outstanding in the holder’s name on each matter submitted to the stockholders on which the holders of shares of Common Stock are entitled to vote. No holder of Common Stock is entitled to cumulate votes in voting for directors. All elections of directors shall be decided by a plurality of the votes cast, and, unless otherwise provided by our Certificate of Incorporation, our Bylaws, the rules or regulations of any stock exchange applicable to us or applicable law or pursuant to any regulation applicable us or our securities, all other elections and questions shall be decided by the affirmative vote of the holders of a majority in voting power of the shares of stock which are present in person or by proxy and entitled to vote thereon.

Dividends

Subject to the rights of the holders of preferred stock, holders of Common Stock are entitled to such dividends and other distributions as may be declared by our board of directors out of assets or funds legally available for such purpose and shall share equally on a per share basis in such dividends and distributions.

Rights and Preferences

Shares of Common Stock are neither redeemable nor convertible. Holders of Common Stock have no preemptive or subscription rights to purchase any of our securities.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of Common Stock are entitled to receive, pro rata, our remaining assets which are available for distribution to stockholders, subject to the rights of the holders of preferred stock and after payments of all debts and other liabilities.

Preferred Stock

The Certificate of Incorporation authorizes the issuance of 10,000,000 shares of preferred stock. Our authorized but unissued shares of preferred stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange or automated quotation system on which our securities may be listed or traded. Our board of directors also has the authority, without further action by our stockholders, to establish from time to time for each such series the number of shares to be included in each such series and to fix the designations, powers, rights, and preferences of the shares of each such series, and the qualifications, limitations and restrictions thereof. Such designations, powers, rights and preferences could include, without limitation, voting rights, dividend rights, dissolution rights, conversion rights, exchange rights, redemption rights and liquidation preferences, any or all of which may be greater than the rights of Common Stock. The issuance of preferred stock could adversely affect the voting power of holders of Common Stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in our control or other corporate action.

Anti-Takeover Provisions

Certain provisions of Delaware law, the Certificate of Incorporation and the Bylaws could have the effect of delaying, deferring or discouraging another person from acquiring control of us. These provisions, which are summarized below, may have the effect of discouraging takeover bids. Such provisions could limit the price that certain investors might be willing to pay in the future for shares of our Common Stock and may limit the ability of stockholders to remove current management or directors or approve transactions that stockholders may deem to be in their best interest and, therefore, could adversely affect the price of our common stock.

Delaware Law

We are subject to Section 203 of the Delaware General Corporation Law (the “DGCL”), an anti-takeover law. In general, Section 203 prohibits a Delaware corporation from engaging in any business combination (as defined below) with any interested stockholder (as defined below) for a period of three years following the date that the stockholder became an interested stockholder, unless:

- prior to such time, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares of voting stock outstanding (but not the voting stock owned by the interested stockholder) those shares owned by persons who are directors and officers and by excluding employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to such time, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines “business combination” to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;

- any sale, lease, exchange, mortgage, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- subject to limited exceptions, any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

Section 203 generally defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation, or who is an affiliate or associate of the corporation and beneficially owned 15% or more of the outstanding voting stock of the corporation at any time within a three-year period immediately prior to the date of determining whether such person is an interested stockholder, and any entity or person affiliated with or controlling or controlled by any of these entities or persons.

Certificate of Incorporation and Bylaw Provisions

The Certificate of Incorporation and the Bylaws include a number of provisions that could deter hostile takeovers or delay or prevent changes in control of us. Certain of these provisions are summarized in the following paragraphs.

Effects of Authorized But Unissued Common Stock. One of the effects of the existence of authorized but unissued Common Stock may be to enable our board of directors to make more difficult or to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, and thereby to protect the continuity of management. If, in the due exercise of its fiduciary obligations, the board of directors were to determine that a takeover proposal was not in our best interest, such shares could be issued by the board of directors without stockholder approval in one or more transactions that might prevent or render more difficult or costly the completion of the takeover transaction by diluting the voting or other rights of the proposed acquirer or insurgent stockholder group, by putting a substantial voting block in institutional or other hands that might undertake to support the position of the incumbent board of directors, by effecting an acquisition that might complicate or preclude the takeover, or otherwise.

No Cumulative Voting. The Certificate of Incorporation does not provide for cumulative voting in the election of directors. Cumulative voting would have allowed holders of less than a majority of the stock to elect some directors.

Director Vacancies. The Certificate of Incorporation provides that all vacancies may be filled only by the affirmative vote of a majority of directors then in office, even if less than a quorum, or by a sole remaining director.

Stockholder Action; Special Meeting of Stockholders. The Bylaws provide that stockholders may act by written consent. However, stockholders pursuing an action by written consent will be required to comply with certain notice and record date requirements that are set forth in the DGCL. Unless otherwise prescribed by statute or in the Certificate of Incorporation, a special meeting of stockholders may be called for any purpose or purposes, as shall be stated in the notice of the meeting: (1) by the Chairman of the board of directors, the Chief Executive Officer, the President (in the absence of a chief executive officer) or a

majority of the Whole Board of directors or (2) by the Secretary upon the written request of the holders of record of at least 20% of the outstanding shares of Common Stock. This provision could prevent stockholders from calling a special meeting because, unless certain significant stockholders were to join with them, they might not obtain the percentage necessary to request the meeting. Therefore, stockholders holding less than 20% of issued and outstanding Common Stock, without the assistance of management, may be unable to propose a vote on any transaction which may delay, defer or prevent a change of control, even if the transaction were in the best interests of our stockholders. “Whole Board” refers to the total number of authorized directors whether or not there exist any vacancies in previously authorized directorships.

Advance Notice Requirements for Stockholder Proposals and Director Nominations. The Bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as director. In order for any matter to be “properly brought” before a meeting, a stockholder will have to comply with such advance notice procedures and provide us with certain information. The Bylaws allow the board of directors to adopt rules and regulations for the conduct of meetings of stockholders and for the person presiding over a meeting of stockholders to convene and (for any or no reason) to adjourn the meeting, to prescribe such rules, regulations and procedures and to do all such acts as, in the judgment of such presiding person, are appropriate for the proper conduct of the meeting, except to the extent inconsistent with such rules and regulations as adopted by the board of directors. This may have the effect of precluding the conduct of certain business at a meeting if such rules and regulations are not followed. These provisions may also defer, delay or discourage a potential acquirer from conducting a solicitation of proxies to elect the acquirer’s own slate of directors or otherwise attempting to influence or obtain control of us.

Supermajority Voting for Amendments to Our Governing Documents. Certain specified amendments to the Certificate of Incorporation require the affirmative vote of at least 66 2/3% of the voting power of the outstanding shares of stock entitled to vote generally in the election of directors, voting together as a single class. The Certificate of Incorporation provides that the board of directors is expressly authorized to adopt, amend or repeal the Bylaws and that our stockholders may adopt, amend or repeal the Bylaws only with the approval of at least 66 2/3% of the voting power of all of the then outstanding shares of the capital stock entitled to vote generally in the election of directors, voting together as a single class.

Choice of Forum. The Certificate of Incorporation provides that, subject to certain exceptions, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for any claim, including any derivative claim, (i) that is based upon a violation of a duty by a current or former director or officer or stockholder in such capacity or (ii) as to which Title 8 of the Delaware Code confers jurisdiction upon the Court of Chancery, except for, as to each of (i) through (ii) above, any claim as to which the Court of Chancery determines that there is an indispensable party not subject to the jurisdiction of the Court of Chancery (and the indispensable party does not consent to the personal jurisdiction of the Court of Chancery within ten days following such determination), which is vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery, or for which the Court of Chancery does not have subject matter jurisdiction.

DIRECTOR COMPENSATION POLICY

Members of the Board of Directors (the “Board”) of Cue Biopharma, Inc. (the “Company”) who are not employees of the Company or any subsidiary of the Company (“non-employee directors”) shall receive compensation for their services on the Board in accordance with this Director Compensation Policy (this “Policy”).

Cash Compensation

Each non-employee director shall be paid an annual cash retainer of \$35,000 prorated for partial periods and paid quarterly in arrears as soon as practicable following the end of each quarter for which payment under this Policy is owed.

In addition to the annual cash retainer described above, the chairman of the Board, if he or she is a non-employee director (the “Non-Employee Chairman”), shall be paid an annual cash retainer of \$30,000 and standing committee members shall be paid the annual committee fees set forth below, in each case prorated for partial periods and paid quarterly in arrears as soon as practicable following the end of each quarter for which payment under this Policy is owed.

Audit Committee Chair:	\$15,000
Audit Committee Member (other than the committee Chair):	\$7,500
Compensation Committee Chair:	\$10,000
Compensation Committee Member (other than the committee Chair):	\$5,000
Corporate Development Committee Chair:	\$10,000
Corporate Development Committee Member (other than the committee Chair):	\$5,000
Science and Technology Strategy Committee Chair:	\$10,000
Science and Technology Strategy Committee Member (other than the committee Chair):	\$5,000
Corporate Governance and Nominating Committee Chair:	\$8,000
Corporate Governance and Nominating Committee Member (other than the committee Chair):	\$4,000

Equity Compensation

Upon initial appointment to the Board, a non-employee director shall be awarded, automatically and without the need for any further action by the Board, Options to purchase 48,800 shares of the Company's common stock ("Common Stock"). So long as such non-employee director remains a Service Provider, such Options shall vest over three years with one-third vesting on the one-year anniversary of the grant date and the balance vesting in eight equal quarterly installments. Upon Separation from Service due to the non-employee director's death, or if there is a Change in Control, then any such then unvested Options shall become fully vested as of the date of such death or Change in Control, as applicable. If such non-employee director ceases to remain a Service Provider for any reason other than death or a Change in Control, then any such unvested Options shall be forfeited as of the date of such Separation from Service.

On the first trading day following December 31 of each year (each, an "Annual Option Grant Date"), each non-employee director shall be awarded, automatically and without the need for any further action by the Board, Options to purchase 24,400 shares of Common Stock. So long as such non-employee director remains a Service Provider, such Options shall become vested on the first anniversary of the Annual Option Grant Date (the "Annual Award Vesting Date"). Upon Separation from Service due to the non-employee director's death, or if there is a Change in Control, any such Options shall become fully vested as of the date of such death or Change in Control, as applicable. If a non-employee director ceases to remain a Service Provider for any reason other than death before the Annual Award Vesting Date or a Change in Control, then such Options shall be forfeited as of the date of such Separation from Service.

Options issued in accordance with the terms of this Policy shall be made under and pursuant to the Company's 2016 Omnibus Incentive Plan (the "Omnibus Plan") or any successor plan. Capitalized terms used herein and not otherwise defined shall have the meanings given to them in the Non-Employee Plan or Omnibus Plan, as applicable. The Board, in its sole discretion and in recognition for meritorious service, may elect to vest up to 100% of a Director's unvested equity awards upon retirement.

Non-Employee Director Compensation Limit

Notwithstanding anything herein to the contrary, the cash compensation and equity compensation that each non-employee director is entitled to receive under this Policy shall be subject to the limits set forth in Section 4.3.4 of the Omnibus Plan or any similar limits in any successor plan.

Expense Reimbursement

The compensation described in this Policy is in addition to reimbursement of all reasonable out-of-pocket expenses incurred by directors in attending meetings of the Board.

Employee Directors

An employee of the Company who serves as a director receives no additional compensation for such service.

Adopted Effective December 7, 2023

Certain identified information has been excluded from the exhibit because it is both (i) not material and (ii) is the type of information that the registrant treats as private or confidential. Double asterisks denote omissions.

SECOND AMENDMENT TO THE AMENDED AND RESTATED LICENSE AGREEMENT

This Second Amendment to the Amended and Restated License Agreement (“Second Amendment”) is by and between Albert Einstein College of Medicine, a New York education corporation, having an office and place of business at 1300 Morris Park Avenue, Bronx, New York 10461 (“Licensor”) and Cue Biopharma, Inc., a corporation organized and existing under the laws of the State of Delaware, having an office and place of business at 40 Guest Street, Boston, MA 02135 (“Licensee”). The effective date of this Second Amendment is January 13, 2024 (“Second Amendment Effective Date”).

WHEREAS, Albert Einstein College of Medicine, Inc. and Cue Biopharma, Inc. are parties to that certain Amended and Restated License Agreement entered into July 31, 2017, as amended by that certain First Amendment To The Amended And Restated License Agreement dated October 30, 2018 (the “Agreement”);

WHEREAS, Licensor is successor to the Albert Einstein College of Medicine, Inc.’s interest under the Agreement effective January 1, 2019, by virtue of a merger made effective by an Order issued by the New York State Education Department’s Board of Regents;

WHEREAS, Section 12.15(e) of the Agreement sets forth Licensee's diligence obligation to “Initiate an FDA approved Phase III clinical trial for a Licensed Product within [**] of the Original Effective Date”, i.e., by [**]; and

WHEREAS, despite its best efforts, Licensee is unable to initiate an FDA approve Phase III clinical trial by [**], but intends to diligently continue clinical development of CUE-101 with the goal of initiating a clinical trial designed to support an application to the FDA for approval to market and sell CUE-101; and

NOW, THEREFORE, in consideration of the mutual covenants contained in the Agreement and in this Second Amendment and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Licensor and Licensee hereby agree as follows:

1. Section 12.15(e) of the Agreement is hereby amended to read as follows, with strikethrough indicating deletions and underlining indicating additions:
 - (e) Initiate an FDA approved Phase III clinical trial or an FDA approved clinical trial designed to support a biologics license application (BLA) for a Licensed Product within [**] of the Original Effective Date.
2. Section 12.17 of the Agreement is hereby amended to read as follows, with strikethrough indicating deletions and underlining indicating additions:

12.17 If any one of the due diligence requirements in Section 12.15 and/or 12.16 is not met, Licensors shall have the right to terminate pursuant to Section 10.03 and all rights will revert to Licensors, after providing Licensee with written notice of failure to meet such requirements and thirty (30) days from the date of such written notice to cure such failure. Notwithstanding the foregoing, in the event that Licensee provides Licensors with prior written notice that Licensee, despite its best efforts, is unable to fulfill the due diligence requirement for Section ~~12.16~~ 12.15(d), (e), (f), (g) and/or (h), the deadline for fulfilling such requirement shall be extended by [**]. No further extensions shall be granted for such diligence requirement without Einstein's prior written consent. In the event Licensee is unable to fulfill a due diligence requirement for Section ~~12.16~~ 12.15(d), (e), (f), (g) or (h) after an extension has been granted, Licensors shall have the right to terminate pursuant to Section 10.03 and all rights will revert to Licensors, after providing Licensee with written notice of failure to meet such requirements and thirty (30) days from the date of such written notice to cure such failure.

3. The notice addresses of Licensee and Licensors in Section 13.01 of the Agreement are hereby deleted in their entirety and replaced with the following:

To Licensee

Cue Biopharma, Inc.
40 Guest Street
Boston, MA 02135
Attn: Chief Executive Officer

with copies to:

[**]
and

Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
Attn: [**]

To Licensors

Albert Einstein College of Medicine
1300 Morris Park Avenue
Bronx, New York 10461
Attention: Office of Biotechnology

with copy to:

[**]
Senior Counsel
Albert Einstein College of Medicine

1300 Morris Park Avenue
Belfer 310
Bronx, New York 10461
Tel. [**]
Fax [**]
Email: [**]

4. Except as expressly amended hereby, all terms and conditions of the Agreement shall remain unchanged and in full force and effect. In the event of any conflict between the terms of this Second Amendment and the terms of the Agreement, the terms of this Second Amendment shall govern. The amendments made herein shall be effective as of the Second Amendment Effective Date. All capitalized terms used in this Second Amendment that are not otherwise defined herein shall have the same meanings as such terms are given in the Agreement. This Second Amendment may be executed in any number of counterparts, each of which shall be an original and all of which together shall constitute one and the same document. Execution of this Second Amendment by industry standard electronic signature software and/or by exchanging executed signature pages in .pdf format via e-mail shall have the same legal force and effect as the exchange of original signatures. The Agreement shall, together with this Second Amendment, be read and construed as a single instrument.

IN WITNESS WHEREOF, the Parties hereto have executed this Second Amendment as of the Second Amendment Effective Date.

ALBERT EINSTEIN COLLEGE OF MEDICINE

By: /s/ Janis Paradiso

Name: Janis Paradiso, MBA

Title: Director, Office of Biotechnology & Business Development

CUE BIOPHARMA, INC.

By: /s/ Colin Sandercock

Name: Colin Sandercock

Title: SVP & General Counsel

SUBSIDIARIES OF CUE BIOPHARMA, INC.

Registrant's consolidated subsidiaries are shown below, together with the state or jurisdiction of organization of each subsidiary and the percentage of voting securities that Registrant owns in each subsidiary.

Name of Subsidiary	Jurisdiction of Incorporation or Organization	Percent of Outstanding Voting Securities Owned
Cue Biopharma Securities Corp.	Massachusetts	100%

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statements (Nos. 333-270718, 333-263624, 333-254045, 333-237140, 333-230282 and 333-224018) on Form S-8 and Registration Statements (Nos. 333-271786 and 333-268687) on Form S-3 of Cue Biopharma, Inc. of our report dated March 28, 2024, relating to the consolidated financial statements of Cue Biopharma, Inc., appearing in this Annual Report on Form 10-K of Cue Biopharma, Inc. for the year ended December 31, 2023.

/s/ RSM US LLP

Boston, MA
March 28, 2024

**CERTIFICATION OF THE PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Daniel R. Passeri, certify that:

1. I have reviewed this Annual Report on Form 10-K of Cue Biopharma, 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: March 28, 2024

/s/ Daniel R. Passeri

Name: Daniel R. Passeri

Title: Chief Executive Officer

(Principal Executive Officer)

**CERTIFICATION OF THE PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Kerri-Ann Millar, certify that:

1. I have reviewed this Annual Report on Form 10-K of Cue Biopharma, 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: March 28, 2024

/s/ Kerri-Ann Millar

Name: Kerri-Ann Millar

Title: Chief Financial Officer

(Principal Financial Officer and Principal Accounting Officer)

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

In connection with the Annual Report on Form 10-K of Cue Biopharma, Inc. (the “Company”) for the year ended December 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), we, Daniel R. Passeri, Chief Executive Officer of the Company, and Kerri-Ann Millar, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, to our knowledge that:

- (1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Daniel R. Passeri

Name: Daniel R. Passeri

Title: Chief Executive Officer
(Principal Executive Officer)

Date: March 28, 2024

/s/ Kerri-Ann Millar

Name: Kerri-Ann Millar

Title: Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

Date: March 28, 2024

DODD-FRANK COMPENSATION RECOVERY POLICY

This Compensation Recovery Policy (this “Policy”) is adopted by Cue Biopharma, Inc. (the “Company”) in accordance with Nasdaq Listing Rule 5608 (“Rule 5608”), which implements Rule 10D-1 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”) (as promulgated pursuant to Section 954 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010). This Policy is effective as of October 2, 2023 (the “Effective Date”).

1. Definitions

(a) **“Accounting Restatement”** means a requirement that the Company prepare an accounting restatement due to the material noncompliance of the Company with any financial reporting requirement under the U.S. federal securities laws, including any required accounting restatement to correct an error in previously issued financial statements that is material to the previously issued financial statements, or that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period. Changes to the Company’s financial statements that do not represent error corrections are not an Accounting Restatement, including: (A) retrospective application of a change in accounting principle; (B) retrospective revision to reportable segment information due to a change in the structure of the Company’s internal organization; (C) retrospective reclassification due to a discontinued operation; (D) retrospective application of a change in reporting entity, such as from a reorganization of entities under common control; and (E) retrospective revision for stock splits, reverse stock splits, stock dividends or other changes in capital structure.

(b) **“Committee”** means the Compensation Committee of the Company’s Board of Directors (the “Board”).

(c) **“Covered Person”** means a person who served as an Executive Officer at any time during the performance period for the applicable Incentive-Based Compensation.

(d) **“Erroneously Awarded Compensation”** means the amount of Incentive-Based Compensation that was Received that exceeds the amount of Incentive-Based Compensation that otherwise would have been Received had the amount of Incentive-Based Compensation been determined based on the restated amounts, computed without regard to any taxes paid by the Covered Person or by the Company on the Covered Person’s behalf. For Incentive-Based Compensation based on stock price or total shareholder return, where the amount of Erroneously Awarded Compensation is not subject to mathematical recalculation directly from the information in an Accounting Restatement, the amount of Erroneously Awarded Compensation will be based on a reasonable estimate by the Committee of the effect of the Accounting Restatement on the stock price or total shareholder return upon which the Incentive-Based Compensation was Received. The Company will maintain documentation of the determination of that reasonable estimate and provide such documentation to Nasdaq.

(e) **“Executive Officer”** means the Company’s officers as defined in Rule 16a-1(f) under the Exchange Act.

(f) **“Financial Reporting Measures”** means (A) measures that are determined and presented in accordance with the accounting principles used in preparing the Company’s financial statements, and any measures that are derived wholly or in part from such measures (whether or not such measures are presented within the Company’s financial statements or included in a filing made with the U.S. Securities and Exchange Commission), (B) stock price and (C) total shareholder return.

(g) **“Incentive-Based Compensation”** means any compensation that is granted, earned, or vested based wholly or in part upon the attainment of a Financial Reporting Measure.

(h) Incentive-Based Compensation is deemed to be **“Received”** in the Company’s fiscal period during which the Financial Reporting Measure specified in the applicable Incentive- Based Compensation award is attained, even if the payment or grant of the Incentive-Based Compensation occurs after the end of that period or is subject to additional time-based vesting requirements.

(i) **“Recovery Period”** means the three completed fiscal years immediately preceding the earlier of: (A) the date the Board, a committee of the Board, or the officer or officers of the Company authorized to take such action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare an Accounting Restatement; or (B) the date a court, regulator, or other legally authorized body directs the Company to prepare an Accounting Restatement. In addition, if there is a change in the Company’s fiscal year end, the Recovery Period will also include any transition period to the extent required by Rule 5608.

2. Recovery of Erroneously Awarded Compensation

Subject to the terms of this Policy and the requirements of Rule 5608, if the Company is required to prepare an Accounting Restatement, the Company will attempt to recover, reasonably promptly from each Covered Person, any Erroneously Awarded Compensation that was Received by such Covered Person during the Recovery Period pursuant to Incentive-Based Compensation that is subject to this Policy.

3. Interpretation and Administration

(a) Role of the Committee. This Policy will be interpreted by the Committee in a manner that is consistent with Rule 5608 and any other applicable law and will otherwise be interpreted in the business judgment of the Committee. All decisions and interpretations of the Committee that are consistent with Rule 5608 will be final and binding.

(b) Compensation Not Subject to this Policy. This Policy does not apply to Incentive- Based Compensation that was Received before the Effective Date. With respect to any Covered Person, this Policy does not apply to Incentive-Based Compensation that was Received by such Covered Person before beginning service as an Executive Officer.

(c) Determination of Means of Recovery. Subject to the requirement that recovery be made reasonably promptly, the Committee will determine the appropriate means of recovery, which may vary between Covered Persons or based on the nature of the applicable Incentive-Based Compensation, and which may involve, without limitation, establishing a deferred repayment plan or setting off against current or future compensation otherwise payable to the Covered Person. Recovery of Erroneously Awarded Compensation will be made without regard to income taxes paid by the Covered Person or by the Company on the Covered Person’s behalf in connection with such Erroneously Awarded Compensation.

(d) Determination That Recovery is Impracticable. The Company is not required to recover Erroneously Awarded Compensation if a determination is made by the Committee that either (A) after the Company has made and documented a reasonable attempt to recover such Erroneously Awarded Compensation, the direct expense paid to a third party to assist in enforcing this Policy would exceed the amount to be recovered or (B) recovery of such Erroneously Awarded Compensation would likely cause an otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of the registrant, to fail to meet the requirements of Section 401(a)(13) or 411(a) of the Internal Revenue Code and regulations thereunder.

(e) No Indemnification or Company-Paid Insurance. The Company will not indemnify any Covered Person against the loss of Erroneously Awarded Compensation and will not pay or reimburse any Covered Person for the purchase of a third-party insurance policy to fund potential recovery

obligations.

(f)Interaction with Other Clawback Provisions. The Company will be deemed to have recovered Erroneously Awarded Compensation in accordance with this Policy to the extent the Company actually receives such amounts pursuant to any other Company policy, program or agreement, pursuant to Section 304 of the Sarbanes-Oxley Act or otherwise.

(g)No Limitation on Other Remedies. Nothing in this Policy will be deemed to limit the Company's right to terminate employment of any Covered Person, to seek recovery of other compensation paid to a Covered Person, or to pursue other rights or remedies available to the Company under applicable law.

Adopted by the Board on September 14, 2023.
