UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-Q

(Mark One)

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

For the quarterly period ended September 30, 2021

OR

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

Commission File Number: 001-33038

ZIOPHARM Oncology, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**84-1475642**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

One First Avenue, Parris Building 34, Navy Yard Plaza
Boston, Massachusetts 02129
(617) 259-1970
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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	**ZIOP**	**The Nasdaq Stock Market LLC**

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

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

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

Large Accelerated Filer	☒	Accelerated Filer	☐
Non-Accelerated Filer	☐	Smaller Reporting Company	☐
		Emerging Growth Company	☐

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

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

As of October 29, 2021, the number of outstanding shares of the registrant's common stock, $0.001 par value, was 216,145,826 shares.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements that are based on our current beliefs and expectations. These forward-looking statements may be accompanied by such words as “anticipate,” “believe,” “estimate,” “expect,” “forecast,” “intend,” “may,” “plan,” “project,” “target,” “will” and other words and terms of similar meaning, although not all forward-looking statements contain these identifying words. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. Although we believe that we have a reasonable basis for each forward-looking statement contained in this Quarterly Report, we caution you that these statements are based on a combination of facts and factors currently known by us and our expectations of the future, about which we cannot be certain.

The forward-looking statements in this Quarterly Report include, but are not limited to, statements about:

- our ability to raise substantial additional capital to fund our planned operations in the near term;
- estimates regarding our expenses, use of cash, timing of future cash needs and anticipated capital requirements;
- the development of our product candidates, including statements regarding the initiation, timing, progress and results of our preclinical studies, clinical trials and research and development programs;
- our ability to advance our product candidates through various stages of development, especially through pivotal safety and efficacy trials;
- the risk that final trial data may not support interim analysis of the viability of our product candidates;
- our expectation regarding the safety and efficacy of our product candidates;
- the timing, scope or likelihood of regulatory filings and approvals from the U.S. Food and Drug Administration ("FDA") or equivalent foreign regulatory agencies for our product candidates and for which indications;
- our ability to license additional intellectual property relating to our product candidates from third parties and to comply with our existing license agreements;
- our ability to enter into partnerships or strategic collaboration agreements, our ability to achieve the results contemplated and the potential benefits to be derived from relationships with collaborators;
- our ability to maintain and establish collaborations and licenses; developments and projections relating to competition from other pharmaceutical and biotechnology companies or our industry;
- our estimates regarding the potential market opportunity for our product candidates;
- the anticipated rate and degree of commercial scope and potential, as well as market acceptance of our product candidates for any indication, if approved;
- anticipated milestones and other payments under licensing, collaboration or acquisition agreements, research and development costs and other expenses;
- our intellectual property position, including the strength and enforceability of our intellectual property rights;
- our ability to attract, hire, and retain qualified employees and key personnel;
- the impact of government laws and regulations in the United States and foreign countries;
- our expectations regarding the impact of the ongoing coronavirus disease 2019, or COVID-19, pandemic, including the expected duration of disruption and immediate and long-term impact and effect on our business and operations;
- the diversion of healthcare resources away from the conduct of clinical trials as a result of the ongoing COVID-19 pandemic, including the diversion of hospitals serving as our clinical trial sites and hospital staff supporting the conduct of our clinical trials;
- the interruption of key clinical trial activities, such as clinical trial site monitoring, due to limitations on travel, quarantines or social distancing protocols imposed or recommended by federal or state governments, employers and others in connection with the ongoing COVID-19 pandemic; and
- other risks and uncertainties, including those listed under Part II, Item 1A, “Risk Factors”.

Any forward-looking statements in this Quarterly Report on Form 10-Q reflect our current views with respect to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual

results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under Part II, Item 1A. “Risk Factors” and elsewhere in this Quarterly Report on Form 10-Q. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

NOTE REGARDING COMPANY REFERENCES

Throughout this Quarterly Report on Form 10-Q, “Ziopharm,” the “Company,” “we,” “us” and “our” refer to ZIOPHARM Oncology, Inc. and its subsidiaries.

NOTE REGARDING TRADEMARKS

All trademarks, trade names and service marks appearing in this Quarterly Report on Form 10-Q are the property of their respective owners.

SUMMARY OF SELECTED RISKS ASSOCIATED WITH OUR BUSINESS

Our business faces significant risks and uncertainties. If any of the following risks are realized, our business, financial condition and results of operations could be materially and adversely affected. You should carefully review and consider the full discussion of our risk factors in the section titled “Risk Factors” in Part II, Item 1A of this Quarterly Report. Some of the more significant risks include the following:

- Our business, operations and clinical development plans and timelines could be adversely affected by the effects of health epidemics, including the COVID-19 pandemic, on the manufacturing, clinical trial and other business activities performed by us or by third parties with whom we conduct business, including our contract manufacturers, clinical research organizations, or CROs, shippers and others.
- We will require substantial additional financial resources to continue ongoing development of our product candidates and pursue our business objectives; if we are unable to obtain these additional resources when needed, we may be forced to delay or discontinue our planned operations, including clinical testing of our product candidates.
- Our plans to develop and commercialize non-viral TCR T-cell therapy can be considered a new approach to cancer treatment, the successful development of which is subject to significant challenges.
- Our current product candidates are based on novel technologies and are supported by limited clinical data and we cannot assure you that our current and planned clinical trials will produce data that supports regulatory approval of one or more of these product candidates.
- If we are unable to obtain the necessary U.S. or worldwide regulatory approvals to commercialize any product candidate, our business will suffer.
- Our product candidates are in various stages of clinical trials, which are very expensive and time-consuming. We cannot be certain when we will be able to submit a Biologics License Application, or BLA to the FDA and any failure or delay in completing clinical trials for our product candidates could harm our business.
- We identified a material weakness in our internal controls over financial reporting as of June 30, 2021, which has not been remediated as of September 30, 2021. Remediation action plans have been identified and implemented. The testing of these controls implemented to date will begin in the fourth quarter of 2021. We may identify additional material weaknesses in the future or otherwise fail to maintain an effective system of internal controls, which may result in material misstatements of our financial statements or could have a material adverse effect on our business and trading price of our securities.
- Our cell-based therapy immuno-oncology products rely on the availability of reagents, specialized equipment, and other specialty materials and infrastructure, which may not be available to us on acceptable terms or at all. For some of these reagents, equipment, and materials, we rely or may rely on sole source vendors or a limited number of vendors, which could impair our ability to manufacture and supply our products.

- Our immuno-oncology product candidates are based on a novel technology, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. Currently, limited numbers of cell therapy products have been approved in the United States and Europe.
- Our reliance on third parties to formulate and manufacture our product candidates exposes us to a number of risks that may delay the development, regulatory approval and commercialization of our products or result in higher product costs.
- If we are unable either to create sales, marketing and distribution capabilities or enter into agreements with third parties to perform these functions, we will be unable to commercialize our product candidates successfully.
- Our immuno-oncology product candidates may face competition in the future from biosimilars and other developing technologies.
- If we or our licensors fail to adequately protect or enforce our intellectual property rights or secure rights to patents of others, the value of our intellectual property rights would diminish and our ability to successfully commercialize our products may be impaired.
- Our stock price has been, and may continue to be, volatile.

ZIOPHARM Oncology, Inc.

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Part I - Financial Information

Item 1. Financial Statements

ZIOPHARM Oncology, Inc.

BALANCE SHEETS
(unaudited)

(in thousands, except share and per share data)

	September 30, 2021	December 31, 2020
ASSETS		
Current assets:		
Cash and cash equivalents	$ 91,725	$ 115,069
Receivables	1,510	4,665
Prepaid expenses and other current assets	3,319	10,855
Total current assets	96,554	130,589
Property and equipment, net	11,662	10,231
Right of use asset	5,179	4,650
Deposits	365	130
Other non-current assets	2	745
Total assets	$ 113,762	$ 146,345
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 1,463	$ 960
Current portion of long-term debt	12,037	—
Accrued expenses	13,963	16,589
Lease liability - current portion	710	819
Total current liabilities	28,173	18,368
Long-term debt	12,174	—
Lease liability - non-current portion	4,708	3,995
Total liabilities	45,055	22,363
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Common stock, $0.001 par value; 350,000,000 shares authorized; 216,145,804 and 214,591,906 shares issued and outstanding at September 30, 2021 and December 31, 2020, respectively	216	215
Additional paid-in capital	899,549	887,868
Accumulated deficit	(831,058)	(764,101)
Total stockholders' equity	68,707	123,982
Total liabilities and stockholders' equity	$ 113,762	$ 146,345

The accompanying notes are an integral part of the unaudited interim financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF OPERATIONS
(unaudited)

(in thousands, except share and per share data)

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2021	2020	2021	2020
Collaboration revenue	$ 398	$ —	$ 398	$ —
Operating expenses:				
Research and development	14,521	13,968	41,427	38,725
General and administrative	8,173	6,353	25,469	18,862
Total operating expenses	22,694	20,321	66,896	57,587
Loss from operations	(22,296)	(20,321)	(66,498)	(57,587)
Other income (expense):				
Interest income (expense), net	(444)	7	(444)	412
Other income (expense), net	7	(1)	(15)	(29)
Other income (expense), net	(437)	6	(459)	383
Net loss	$ (22,733)	$ (20,315)	$ (66,957)	$ (57,204)
Basic and diluted net loss per share	$ (0.11)	$ (0.10)	$ (0.31)	$ (0.27)
Weighted average common shares outstanding, basic and diluted	214,542,465	212,837,367	214,310,349	208,497,410

The accompanying notes are an integral part of the unaudited interim financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
For the Three and Nine Months Ended September 30, 2021 and 2020
(unaudited)

(in thousands)

For the Three Months Ended September 30, 2021

	Common Stock		Additional Paid In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount			
Balance at June 30, 2021	215,559,148	$ 216	$ 896,390	$ (808,325)	$ 88,281
Stock-based compensation	-	-	2,371	-	2,371
Restricted stock awards	875,000	-	-	-	-
Cancelled restricted common stock	(288,344)	-	-	-	-
Issuance of warrants	-	-	788	-	788
Net loss	-	-	-	(22,733)	(22,733)
Balance at September 30, 2021	216,145,804	$ 216	$ 899,549	$ (831,058)	$ 68,707

For the Nine Months Ended September 30, 2021

	Common Stock		Additional Paid In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount			
Balance at December 31, 2020	214,591,906	$ 215	$ 887,868	$ (764,101)	$ 123,982
Stock-based compensation	-	-	9,857	-	9,857
Exercise of employee stock options	363,109	-	1,037	-	1,037
Restricted stock awards	1,601,224	1	(1)	-	-
Cancelled restricted common stock	(410,435)	-	-	-	-
Issuance of warrants	-	-	788	-	788
Net loss	-	-	-	(66,957)	(66,957)
Balance at September 30, 2021	216,145,804	$ 216	$ 899,549	$ (831,058)	$ 68,707

The accompanying notes are an integral part of the unaudited interim financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY (continued)
For the Three and Nine Months Ended September 30, 2021 and 2020
(unaudited)

(in thousands)

For the Three Months Ended September 30, 2020

	Common Stock		Additional Paid In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount			
Balance at June 30, 2020	214,150,940	$ 214	$ 884,214	$ (721,014)	$ 163,414
Stock-based compensation	-	-	1,792	-	1,792
Exercise of employee stock options	14,750	-	27	-	27
Net loss	-	-	-	(20,315)	(20,315)
Balance at September 30, 2020	214,165,690	$ 214	$ 886,033	$ (741,329)	$ 144,918

For the Nine Months Ended September 30, 2020

	Common Stock		Additional Paid In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount			
Balance at December 31, 2019	181,803,320	$ 182	$ 778,953	$ (684,125)	$ 95,010
Stock-based compensation	-	-	5,393	-	5,393
Exercise of employee stock options	22,916	-	43	-	43
Issuance of restricted common stock	555,900	1	(1)	-	-
Cancelled restricted common stock	(141,230)	-	-	-	-
Issuance of common stock in connection with a public offering, net of commissions and expense of $5.9 million	29,110,111	29	88,632	-	88,661
Issuance of common stock in connection with an at the market offering, net of commissions of $0.4 million	2,814,673	2	13,013	-	13,015
Net loss				(57,204)	(57,204)
Balance at September 30, 2020	214,165,690	$ 214	$ 886,033	$ (741,329)	$ 144,918

The accompanying notes are an integral part of the unaudited interim financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF CASH FLOWS
(unaudited)

(in thousands)

	For the Nine Months Ended September 30,	
	2021	**2020**
Cash flows from operating activities:		
Net loss	$ (66,957)	$ (57,204)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	1,892	708
Amortization of financing costs	148	-
Stock-based compensation	9,857	5,393
(Increase) decrease in:		
Receivables	3,155	(2,098)
Prepaid expenses and other current assets	7,646	8,249
Right of use asset	(529)	(98)
Other noncurrent assets	508	(636)
Increase (decrease) in:		
Accounts payable	503	1,713
Accrued expenses	(3,169)	3,828
Lease liabilities	604	168
Net cash used in operating activities	(46,342)	(39,977)
Cash flows from investing activities:		
Purchases of property and equipment	(2,964)	(6,012)
Net cash used in investing activities	(2,964)	(6,012)
Cash flows from financing activities:		
Proceeds from long-term debt borrowing	25,000	-
Debt issuance costs	(75)	-
Proceeds from exercise of stock options	1,037	43
Issuance of common stock in connection with a public offering, net	-	88,661
Issuance of common stock in connection with at the market offerings, net	-	13,015
Net cash provided by financing activities	25,962	101,719
Net increase (decrease) in cash and cash equivalents	(23,344)	55,730
Cash and cash equivalents, beginning of period	115,069	79,741
Cash and cash equivalents, end of period	$ 91,725	$ 135,471
Supplementary disclosure of cash flow information:		
Cash paid for interest	$ 136	$ —
Amounts included in accrued expenses and accounts payable related to property and equipment	$ 348	$ 1,163
Issuance costs in accounts payable and accrued expenses	$ 184	$ —
Supplementary disclosure of noncash investing and financing activities		
Warrants issued in a term loan	$ 788	$ —

The accompanying notes are an integral part of the unaudited interim financial statements.

1. Business

Overview

ZIOPHARM Oncology, Inc., which is referred to herein as "Ziopharm," or the "Company," is a biopharmaceutical company seeking to develop, acquire, and commercialize, on its own or with partners, a diverse portfolio of immuno-oncology therapies.

The Company is a clinical stage biopharmaceutical company focused on discovering, developing and commercializing next generation immuno-oncology platforms that leverage cell therapies to treat patients with cancers. The Company is developing technologies that utilize the immune system by employing innovative cell engineering to deliver safe and effective cell therapies for the treatment of multiple cancer types. Specifically, the Company is focused on developing T-cell receptor, or TCR, T cell therapies to target neoantigens in solid tumors, or TCR-T. A part of the Company's platform is referred to as "*Sleeping Beauty*" and is based on the non-viral genetic engineering of immune cells using a transposon/transposase system that is intended to stably engineer T cells outside of the body for subsequent infusion.

The Company's operations to date have consisted primarily of conducting research and development and raising capital to fund those efforts. In May 2021, the Company announced that it will be winding down our existing Controlled IL-12 clinical program for the treatment of recurrent glioblastoma multiforme. The Company will continue to seek a partner for this program and have also begun exploring potential synergies between this technology and our cell therapy programs. Costs incurred during the three and nine months ended September 30, 2021 under the program wind-down have not been material.

The Company has operated at a loss since its inception in 2003 and has no recurring revenues from operations. The Company anticipates that losses will continue for the foreseeable future. As of September 30, 2021, the Company had approximately $91.7 million of cash and cash equivalents. The Company's accumulated deficit at September 30, 2021 was approximately $831.1 million. Given its current development plans and cash management efforts, the Company anticipates cash resources will be sufficient to fund operations into the second quarter of 2023. The Company's ability to continue operations after its current cash resources are exhausted depends on its ability to obtain additional financing or to achieve profitable operations, as to which no assurances can be given. Cash requirements may vary materially from those now planned because of changes in the Company's focus and direction of its research and development programs, competitive and technical advances, patent developments, regulatory changes or other developments. If adequate additional funds are not available when required, or if the Company is unsuccessful in entering into partnership agreements for further development of its product candidates, management may need to curtail its development efforts and planned operations to conserve cash.

The Company's amended and restated certificate of incorporation authorizes it to issue 350,000,000 shares of common stock. As of October 29, 2021, there were 216,145,826 shares of common stock outstanding and an additional 33,778,465 shares of common stock reserved for issuance pursuant to outstanding stock options and warrants.

Basis of Presentation

The accompanying unaudited interim financial statements have been prepared in accordance with the instructions to Form 10-Q pursuant to the rules and regulations of the Securities and Exchange Commission, or the SEC. Certain information and note disclosures required by generally accepted accounting principles in the United States have been condensed or omitted pursuant to such rules and regulations.

It is management's opinion that the accompanying unaudited interim financial statements reflect all adjustments (which are normal and recurring) that are necessary for a fair presentation of the financial position of the Company and its results of operations and cash flows for the periods presented. The unaudited interim financial statements should be read in conjunction with the audited financial statements and the notes thereto for the year ended December 31, 2020, included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2020 filed with the SEC on March 1, 2021, or the Annual Report.

The results disclosed in the statements of operations for the three and nine months ended September 30, 2021 are not necessarily indicative of the results to be expected for the full fiscal year 2021.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Although the Company regularly assesses these estimates, actual results could differ from those estimates. Changes in estimates are recorded in the period in which they become known.

The Company's most significant estimates and judgments used in the preparation of its financial statements are:

- Clinical trial expenses and other research and development expenses;
- Collaboration agreements;
- Fair value measurements of stock-based compensation; and
- Income taxes.

Impact of COVID-19 Pandemic

With the ongoing COVID-19 pandemic, the Company has implemented business continuity plans designed to address and mitigate the impact of the COVID-19 pandemic on its business and operations. The Company continues to evaluate the impact of the COVID-19 global pandemic on patients, healthcare providers and its employees, as well as its operations and the operations of its business partners and healthcare communities. In response to the COVID-19 pandemic, the Company has implemented policies at its locations to mitigate the risk of exposure to COVID-19 by its personnel. The extent to which the COVID-19 pandemic impacts the Company's business, clinical development and regulatory efforts and the value of its common stock, will depend on future developments that are highly uncertain and cannot be predicted with confidence at this time, such as the ultimate duration of the pandemic, travel restrictions, quarantines, social distancing and business closure requirements, the result of vaccination efforts and the effectiveness of any other actions taken globally to contain and treat the disease. The global economic slowdown, the overall disruption of global healthcare systems and the other risks and uncertainties associated with the COVID-19 pandemic could have a material adverse effect on the Company's business, financial condition, results of operations and growth prospects.

2. Financings

August 2021 Term Loan

On August 6, 2021, the Company entered into a Loan and Security Agreement with Silicon Valley Bank and affiliates of Silicon Valley Bank (collectively, "SVB") (the "Term Loan Agreement"). The Term Loan Agreement provides for an initial term loan of $25.0 million funded at the closing, with an additional tranche of $25.0 million available if certain funding and clinical milestones are met by August 31, 2022. Please refer to Note 4, *Debt*, for further discussion of the Company's Term Loan Agreement with SVB.

February 2020 Public Offering

On February 5, 2020, the Company entered into an underwriting agreement with Jefferies LLC, or Jeffries, as representative of the several underwriters named therein, relating to the issuance and sale of 27,826,086 shares of its common stock. The price to the public in the offering was $3.25 per share, and the underwriters agreed to purchase the shares from the Company pursuant to the underwriting agreement at a purchase price of $3.055 per share.

The offering was made pursuant to the Company's effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The underwriters purchased the 27,826,086 shares on February 5, 2020. The net proceeds from the offering were approximately $84.8 million after deducting underwriting discounts and offering expenses paid by the Company.

On March 10, 2020, the underwriters exercised their option to purchase an additional 1,284,025 shares. The net proceeds were approximately $3.9 million after deducting underwriting discounts and offering expenses paid by the Company.

At-the-Market (ATM) Facility

In June 2019, the Company entered into an Open Market Sale Agreement, or Sales Agreement, with Jefferies, pursuant to which the Company may offer and sell, from time to time through Jefferies, shares of its common stock having an aggregate offering price of up to $100.0 million. Shares will be sold pursuant to the Company's effective registration statement on Form S-3ASR (File No. 333-232283), as previously filed with the SEC.

During the nine months ended September 30, 2020, the Company sold an aggregate of 2,814,673 shares of its common stock at an average price of $4.77 per share under the Sales Agreement. The net proceeds from sales were approximately $13.0 million after deducting underwriting discounts.

During the nine months ended September 30, 2021, there were no sales under the Sales Agreement.

3. Summary of Significant Accounting Policies

The Company's significant accounting policies were identified in the Company's Annual Report. There have been no material changes in those policies since the filing of its Annual Report except as noted below.

New Accounting Pronouncements

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, which is intended to simplify various aspects related to accounting for income taxes. ASU 2019-12 removes certain exceptions to the general principles in ASC 740 and also clarifies and amends existing guidance to improve consistent application. The Company adopted this standard effective January 1, 2021, with no material impact upon adoption.

4. Debt

The carrying values of our debt obligation were as follows:

	September 30, 2021
Term Loan Agreement	$ 25,078
Unamortized discount on Term Loan Agreement	(867)
Total debt	24,211
Less: current portion of long-term debt	(12,037)
Long-term debt	$ 12,174

On August 6, 2021, the Company entered into a $50.0 million Term Loan Agreement with SVB, with an initial borrowing of $25.0 million ("Term A Tranche"). Loans under the Term Loan Agreement are secured by a first lien of substantially all the assets of the Company, other than the Company's intellectual property. Proceeds from intellectual property are available as security for amounts borrowed.

The Term Loan Agreement requires the Company to meet certain funding and clinical milestones in order to either: (i) extend the maturity date of the initial loan ("Equity Milestone") or (ii) to utilize the Term Loan Agreement's remaining $25.0 million available borrowing capacity ("Term B Tranche").

Principal repayments for the Term A Tranche will start on April 1, 2022, with a maturity date of March 1, 2023; however, if an Equity Milestone is achieved on or before March 31, 2022, principal repayments for the Term A Tranche will start on September 1, 2022, with a maturity date of August 1, 2025. Upon achievement of certain funding and clinical milestones associated with the Term B Tranche on or before August 31, 2022, the Company may borrow the remaining $25.0 million available under the Term Loan Agreement with principal repayments for the Term Loan Agreement starting on September 1, 2023 and a maturity date of August 1, 2025.

Outstanding loans bear interest, payable monthly, at the greater of (a) 7.75% and (b) the current published U.S. prime rate, plus a margin of 4.5%. As of September 30, 2021, interest on outstanding loans was 7.75%. In addition to the payment of the outstanding principal plus accrued interest due, the Company will also owe SVB 5.75% of the original principal amounts borrowed as a final payment ("Final Payment"). The Final Payment will be accreted over the term of the loan using the effective interest method.

The Company may, at its option, make up to two prepayments, each prepayment consisting of no less than $5,000,000 of any outstanding borrowings under the Term Loan Agreement, *plus* accrued and unpaid interest, subject to a prepayment premium. In addition to any outstanding principal plus accrued interest selected for prepayment, the Company would also prepay a pro-rata portion of the prepayment premium and the Final Payment associated with the principal amount being repaid. The Company cannot re-borrow any amounts previously paid.

Should the Company fail to achieve the Equity Milestone on or before December 31, 2021, cash and cash equivalents equal to 50% of the then outstanding principal plus associated Final Payment must be deposited into an account pledged to SVB as additional cash collateral.

The Term Loan Agreement restricts the Company, apart from conducting its operations in the normal course of business and certain other permitted exceptions, from entering into mergers or acquisitions, incurring additional indebtedness, paying dividends, delisting its stock from the Nasdaq stock exchange or disposing of assets or making changes to its business operations without the consent of SVB.

The Term Loan Agreement also contains standard conditions, as well as insolvency and delisting of the Company's common stock from Nasdaq, as deemed events of default. Should the debt become mandatorily repayable upon an event of default, a default interest rate of 3% above otherwise applicable rates would be due on any balances outstanding.

In connection with the Term Loan Agreement, the Company also issued warrants to SVB providing for the purchase of a total of 432,844 shares of its common stock at an exercise price of $2.22 per share. The warrants are exercisable in whole or in part any time prior to August 6, 2031, and were recorded at their relative fair value amount of $0.8 million in additional paid-in capital upon issuance (with an offsetting reduction to the carrying value of outstanding debt).

Should the Company achieve the Term B Milestone and borrow the remaining $25.0 million available under the Term Loan Agreement, an additional 432,842 warrants will be issued and recorded at that time to SVB with similar terms to the initial issuance described above.

The Term Loan Agreement issuance costs were approximately $1.0 million and primarily related to the warrants issued to SVB, which will be amortized into interest expense over the period to March 1, 2023. Interest expense, including the amortization of issuance costs, was $0.4 million for the third quarter of 2021.

The fair value of the Term Loan Agreement as of September 30, 2021 approximates its face value due to proximity to the transaction.

5. Fair Value Measurements

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 generally accepted accounting principles 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. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The fair value hierarchy is based on three levels of inputs, of which the first two are considered observable and the last unobservable, that may be used to measure fair value as follows:

- Level 1 - Quoted prices in active markets for identical assets or liabilities.
- Level 2 - Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3 - Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Assets and liabilities, measured at fair value on a recurring basis as of September 30, 2021 and December 31, 2020 were as follows:

($ in thousands)		Fair Value Measurements at Reporting Date Using		
Description	**Balance as of September 30, 2021**	**Quoted Prices in Active Markets for Identical Assets/ Liabilities (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**
Assets:				
Cash equivalents	$ 84,891	$ 84,891	$ —	$ —

($ in thousands)

Description	Balance as of December 31, 2020	Fair Value Measurements at Reporting Date Using: Quoted Prices in Active Markets for Identical Assets/ Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash equivalents	$ 75,990	$ 75,990	$ —	$ —

The cash equivalents represent deposits in short-term United States treasury money market mutual funds quoted in an active market and classified as a Level 1 asset.

6. Net Loss per Share

Basic net loss per share is computed by dividing net loss by the weighted average number of shares of common stock outstanding for the period. The Company's potentially dilutive shares, which include outstanding common stock options, inducement stock options, unvested restricted stock and warrants, have not been included in the computation of diluted net loss per share for any of the periods presented as the result would be anti-dilutive. Such potentially dilutive shares of common stock consisted of the following as of September 30, 2021 and 2020, respectively:

	September 30, 2021	September 30, 2020
Stock options	11,072,894	6,572,191
Inducement stock options	97,500	863,333
Unvested restricted stock	1,510,655	1,289,389
Warrants	22,705,571	22,272,727
	35,386,620	30,997,640

7. Related Party Transactions

Collaborations with Precigen/ PGEN

During the year ended December 31, 2018, the Company and PGEN Therapeutics, Inc., or PGEN, a wholly owned subsidiary of Precigen Inc., or Precigen, which was formerly known as Intrexon Corporation, entered into an Exclusive License Agreement (Note 8).

Collaboration with PGEN and MD Anderson

On January 13, 2015, the Company, together with Precigen, entered into a License with the MD Anderson Cancer Center, or MD Anderson, (which Precigen subsequently assigned to PGEN). Pursuant to the MD Anderson License, the Company, together with PGEN, hold an exclusive, worldwide license to certain technologies owned and licensed by MD Anderson, including technologies relating to novel CAR T-cell therapies, non-viral gene transfer systems, genetic modification and/or propagation of immune cells and other cellular therapy approaches, Natural Killer, or NK Cells, and TCRs, arising from the laboratory of Laurence Cooper, M.D., Ph.D., who served as the Company's Chief Executive Officer from May 2015 to February 2021 and was formerly a tenured professor of pediatrics at MD Anderson. In partial consideration for entering into the MD Anderson License, the Company issued MD Anderson an aggregate of 11,722,163 shares of common stock for which the Company incurred a $67.3 million charge recorded in 2015.

During the nine months ended September 30, 2021 and 2020, the Company did not make any payments to MD Anderson. The total aggregate payments made in connection with this agreement have been $41.9 million since inception. The net balance of cash resources on hand at MD Anderson available to offset expenses and future costs was zero at September 30, 2021 as the outstanding balance has been fully utilized. At September 30, 2021 and December 31, 2020, the Company had accounts receivable due from MD Anderson of $1.1 million and $4.7 million, respectively. Additionally, the Company recorded approximately $2.1 million and $1.4 million of accrued expenses due to MD Anderson for research and other activities at September 30, 2021 and December 31, 2020, respectively.

Collaboration with Vineti Inc.

On July 9, 2020, the Company entered into a master service agreement and statement of work with Vineti, Inc., or Vineti. Pursuant to the agreements, Vineti is developing a software platform to coordinate and orchestrate the order, cell collection and manufacturing

process for the Company's TCR-T clinical programs. Heidi Hagen, who previously served as a member of our Board of Directors and served as Interim Chief Executive Officer of the Company from February 2021 through August 2021, is a co-founder and former officer, of Vineti. During the three and nine months ended September 30, 2021, the Company recorded expenses of approximately $0.1 million and $0.4 million for services performed by Vineti, respectively.

Joint Venture with TriArm Therapeutics/Eden Biocell

On December 18, 2018, the Company entered into a Framework Agreement with TriArm Therapeutics, Ltd., or TriArm, pursuant to which the parties agreed to launch Eden BioCell, Ltd., or Eden BioCell, to lead clinical development and commercialization of certain *Sleeping Beauty*-generated CAR-T therapies as set forth in a separate license agreement. Eden BioCell is a joint venture in the People's Republic of China (including Macau and Hong Kong), Taiwan and Korea, or collectively, Greater China. The Company licensed to Eden BioCell the rights in Greater China for its third-generation Sleeping Beauty-generated CAR-T therapies targeting the CD19 antigen. Eden BioCell is owned equally by the Company and TriArm and the parties share decision-making authority. TriArm has contributed $10.0 million to Eden BioCell. TriArm also manages all clinical development in the territory pursuant to a Master Services Agreement between TriArm and Eden BioCell. James Huang, who became a director of the Company in July 2020, Chairman of the Board of Directors in January 2021 and Executive Chairman in February 2021, was the founder and serves as managing partner of Panacea Venture, which is an investor in TriArm. Mr. Huang also serves as a member of Eden BioCell's Board of Directors.

For the three and nine months ended September 30, 2021 and 2020, Eden Biocell incurred a net loss and the Company continues to have no commitment to fund its operations. In September 2021, TriArm and Ziopharm mutually agreed to dissolve the joint venture.

8. Commitments and Contingencies

License Agreements

Exclusive License Agreement with PGEN Therapeutics

On October 5, 2018, the Company entered into an exclusive license agreement, or the License Agreement, with PGEN. As between the Company and PGEN, the terms of the License Agreement replace and supersede the terms of: (a) that certain Exclusive Channel Partner Agreement by and between the Company and Precigen, dated January 6, 2011, as amended by the First Amendment to Exclusive Channel Partner Agreement effective September 13, 2011, the Second Amendment to the Exclusive Channel Partner Agreement effective March 27, 2015, and the Third Amendment to Exclusive Channel Partner Agreement effective June 29, 2016, which was subsequently assigned by Precigen to PGEN; (b) certain rights and obligations pursuant to that certain License and Collaboration Agreement effective March 27, 2015 between Ziopharm, Precigen and ARES TRADING S.A., or Ares Trading, a subsidiary of Merck KGaA, or Merck, as assigned by Precigen to PGEN, or the Ares Trading Agreement; (c) that certain License Agreement between the Company, Precigen, and MD Anderson, with an effective date of January 13, 2015, or the MD Anderson License, which was subsequently assigned by Precigen and assumed by PGEN effective as of January 1, 2018; and (d) that certain Research and Development Agreement between the Company, Precigen and MD Anderson with an effective date of August 17, 2015, or the Research and Development Agreement, and any amendments or statements of work thereto.

Pursuant to the terms of the License Agreement, PGEN has granted the Company exclusive, worldwide rights to research, develop and commercialize (i) products utilizing PGEN's RheoSwitch® gene switch, or RTS®, for the treatment of cancer, referred to as IL-12 Products, (ii) CAR products directed to (A) CD19 for the treatment of cancer, referred to as CD19 Products, and (B) a second target for the treatment of cancer, subject to the rights of Ares Trading to pursue such target under the Ares Trading Agreement, and (iii) T-cell receptor, or TCR, products designed for neoantigens for the treatment of cancer. PGEN has also granted the Company an exclusive, worldwide, royalty-bearing, sub-licensable license for certain patents relating to the *Sleeping Beauty* technology to research, develop and commercialize TCR products for both neoantigens and shared antigens for the treatment of cancer, referred to as TCR Products.

The Company is solely responsible for all aspects of the research, development and commercialization of the exclusively licensed products for the treatment of cancer. The Company is required to use commercially reasonable efforts to develop and commercialize IL-12 Products, CD19 Products and TCR Products.

In consideration of the licenses and other rights granted by PGEN, the Company pays PGEN an annual license fee of $0.1 million. The Company did not have any annual license payments for the three and nine months ended September 30, 2021 and 2020.

The Company will also make milestone payments totaling up to an additional $52.5 million for each exclusively licensed program upon the initiation of later stage clinical trials and upon the approval of exclusively licensed products in various jurisdictions. In addition, the Company will pay PGEN tiered royalties ranging from low-single digits to high-single digits on the net sales derived

from the sales of any approved IL-12 Products and CAR Products. The Company will also pay PGEN royalties ranging from low-single digit to mid-single digit on the net sales derived from the sales of any approved TCR Products, up to a maximum royalty amount of $100.0 million in the aggregate. The Company will also pay PGEN 20% of any sublicensing income received by the Company relating to the licensed products.

PGEN will pay the Company royalties ranging from low-single digits to mid-single digits on the net sales derived from the sale of PGEN's CAR products, up to $50.0 million.

During the three and nine months ended September 30, 2021, there were zero and $0.1 million, respectively, of expenses for services performed by PGEN. During the three and nine months ended September 30, 2020, there were no expenses for services performed by PGEN. As of September 30, 2021, the Company did not have any outstanding liabilities related to services performed by PGEN. As of December 31, 2020, the Company had $0.1 million in accrued expenses related to services for amounts due to PGEN.

License Agreement—The University of Texas MD Anderson Cancer Center

On January 13, 2015, the Company, together with Precigen, entered into the MD Anderson License with MD Anderson (which Precigen subsequently assigned to PGEN). Pursuant to the MD Anderson License, the Company, together with Precigen, holds an exclusive, worldwide license to certain technologies owned and licensed by MD Anderson including technologies relating to novel CAR T-cell therapies, non-viral gene transfer systems, genetic modification and/or propagation of immune cells and other cellular therapy approaches, Natural Killer, or NK Cells, and TCRs, arising from the laboratory of Laurence Cooper, M.D., Ph.D., who was the Company's Chief Executive Officer from May 2015 to February 2021 and was formerly a tenured professor of pediatrics at MD Anderson. On February 25, 2021, the Company announced that Dr. Cooper was stepping down from his role as Chief Executive Officer and as a member of the Board of Directors, but will be remaining with the Company in a scientific advisory consulting role to support the Company's operations.

The term of the MD Anderson License expires on the later of (a) the expiration of all patents licensed thereunder, or (b) the twentieth anniversary of the date of the MD Anderson License; provided, however, that following the expiration of the term of the MD Anderson License, the Company, together with PGEN, shall have a fully-paid up, royalty free, perpetual, irrevocable and sublicensable license to use the licensed intellectual property thereunder. After ten years from the date of the MD Anderson License and subject to a 90-day cure period, MD Anderson will have the right to convert the MD Anderson License into a non-exclusive license if Ziopharm and PGEN are not using commercially reasonable efforts to commercialize the licensed intellectual property on a case-by-case basis. After five years from the date of the MD Anderson License and subject to a 180-day cure period, MD Anderson had the right to terminate the MD Anderson License with respect to specific technology(ies) funded by the government or subject to a third-party contract if the Company and PGEN did not meet the diligence requirements in such funding agreement or contract, as applicable. MD Anderson may also terminate the agreement with written notice upon material breach by us and PGEN, if such breach has not been cured within 60 days of receiving such notice. In addition, the MD Anderson License will terminate upon the occurrence of certain insolvency events for both the Company and PGEN and may be terminated by the mutual written agreement of the Company, PGEN, and MD Anderson.

On August 17, 2015, the Company, Precigen and MD Anderson entered into the Research and Development, or the 2015 Agreement, to formalize the scope and process for the transfer by MD Anderson, pursuant to the terms of the MD Anderson License, of certain existing research programs and related technology rights, as well as the terms and conditions for future collaborative research and development of new and ongoing research programs.

Pursuant to the 2015 Agreement, the Company, Precigen and MD Anderson formed a joint steering committee to oversee and manage the new and ongoing research programs. Under the License Agreement with PGEN, the Company and PGEN agreed that PGEN would no longer participate on the joint steering committee after the date of the License Agreement. As provided under the MD Anderson License, the Company provided funding for research and development activities in support of the research programs under the Research and Development Agreement for a period of three years and in an amount of no less than $15.0 million and no greater than $20.0 million per year. On October 22, 2019, the Company entered into an amendment to the Research and Development Agreement extending its term until December 31, 2026.

During the three and nine months ended September 30, 2021 and 2020, the Company made no payments to MD Anderson. The net balance of cash resources on hand at MD Anderson available to offset expenses and future costs was zero at September 30, 2021 as the outstanding balance has been fully utilized. At September 30, 2021 and December 31, 2020, the Company had accounts receivable due from MD Anderson of $1.1 million and $4.7 million, respectively. Additionally, the Company recorded approximately $2.1 million and $1.4 million of accrued expenses due to MD Anderson for research and other activities at September 30, 2021 and December 31, 2020, respectively.

On October 22, 2019, the Company entered into the 2019 Research and Development Agreement, or the 2019 Agreement, with MD Anderson, pursuant to which the parties agreed to collaborate with respect to the Company's *Sleeping Beauty* immunotherapy program, which uses non-viral gene transfer to stably express and clinically evaluate neoantigen-specific TCRs in T cells. Under the 2019 Agreement, the parties will, among other things, collaborate on programs to expand the Company's TCR library and conduct clinical trials.

The Company will own all intellectual property developed under the 2019 Agreement and will retain all rights to intellectual property for oncology products manufactured using non-viral gene transfer technologies under the Agreement, including the Company's *Sleeping Beauty* technology. The Company has granted MD Anderson an exclusive license for such intellectual property outside the field of oncology and to develop and commercialize autologous TCR products manufactured using viral gene transfer technologies, and a non-exclusive license for allogeneic TCR products manufactured using viral-based technologies.

The Company has agreed, beginning on January 1, 2021, to reimburse MD Anderson up to a total of $20.0 million for development costs incurred starting after January 1, 2021 under the 2019 Agreement. In addition, the Company will pay MD Anderson royalties on net sales of its TCR products at rates in the low-single digits. The Company is required to make performance-based payments upon the successful completion of clinical and regulatory benchmarks relating to its TCR products. The aggregate potential benchmark payments are $36.5 million, of which only $3.0 million will be due prior to the first marketing approval of the Company's TCR products. The royalty rates and benchmark payments owed to MD Anderson may be reduced upon the occurrence of certain events. The Company also agreed that it will sell the Company's TCR products to MD Anderson at preferential prices and will sell its TCR products in Texas exclusively to MD Anderson for a limited period of time following the first commercial sale of the Company's TCR products. No costs have been incurred or paid under this agreement as of September 30, 2021.

In connection with the execution of the 2019 Agreement, the Company issued MD Anderson warrants to purchase 3,333,333 shares of common stock. Refer to Note 11 – *Warrants* for further details.

License Agreement with the National Cancer Institute

On May 28, 2019, the Company entered into a patent license agreement, or the Patent License, with the National Cancer Institute, or the NCI. Pursuant to the Patent License, the Company holds an exclusive, worldwide license to certain intellectual property to develop and commercialize patient-derived (autologous), peripheral blood T-cell therapy products engineered by transposon-mediated gene transfer to express TCRs reactive to mutated KRAS, TP53 and EGFR. In addition, pursuant to the Patent License, the Company holds an exclusive, worldwide license to certain intellectual property for manufacturing technologies to develop and commercialize autologous, peripheral blood T-cell therapy products engineered by non-viral gene transfer to express TCRs, as well as a non-exclusive, worldwide license to certain additional manufacturing technologies.

Pursuant to the terms of the Patent License, the Company is required to pay the NCI a cash payment in the aggregate amount of $1.5 million, payable in $0.5 million installments within sixty days, six-months, and the twelve-month anniversary of the effective date of the agreement of the Patent License. The $1.5 million was paid as of December 31, 2020.

On January 8, 2020, the Company entered into an amendment to the Patent License which expanded the TCR library to include additional TCRs reactive to mutated KRAS and TP53.

The terms of the Patent License also require the Company to pay the NCI minimum annual royalties in the amount of $0.3 million, which amount will be reduced to $0.1 million once the aggregate minimum annual royalties paid by the Company equals $1.5 million. The first minimum annual royalty payment is payable on the date that is eighteen months following the date of the Patent License. This payment of $0.1 million was expensed during the first quarter of 2021.

On September 28, 2020, the Company entered into a second amendment to the patent license agreement which expanded the TCR library to include additional TCRs. On April 16, 2021, the Company entered into a third amendment to the patent license agreement which modified the terms governing termination, modification and surrender of rights under the license. On May 4, 2021, the Company entered into a fourth amendment to the patent license agreement which expanded the TCR library to include additional TCRs. On August 13, 2021, the Company entered into a fifth amendment to the patent licensing agreement which expanded the TCR library to include an additional TCR.

The Company is also required to make performance-based payments upon successful completion of clinical and regulatory benchmarks relating to the licensed products. The aggregate potential benchmark payments are $4.3 million, of which aggregate payments of $3.0 million are due only after marketing approval in the United States or in Europe, Japan, Australia, China or India. The first benchmark payment of $0.1 million will be due upon the initiation of the Company's first sponsored Phase 1 clinical trial of

a licensed product or licensed process in the field of use licensed under the Patent License, which has not been met at September 30, 2021.

In addition, the Company is required to pay the NCI one-time benchmark payments following aggregate net sales of licensed products at certain net sales up to $1.0 billion. The aggregate potential amount of these benchmark payments is $12.0 million. The Company must also pay the NCI royalties on net sales of products covered by the Patent License at rates in the low to mid-single digits depending upon the technology included in a licensed product. To the extent the Company enters into a sublicensing agreement relating to a licensed product, the Company is required to pay the NCI a percentage of all consideration received from a sublicensee, which percentage will decrease based on the stage of development of the licensed product at the time of the sublicense.

The Patent License will expire upon expiration of the last patent contained in the licensed patent rights, unless terminated earlier. The NCI may terminate or modify the Patent License in the event of a material breach, including if the Company does not meet certain milestones by certain dates, or upon certain insolvency events that remain uncured following the date that is 90 days following written notice of such breach or insolvency event. The Company may terminate the Patent License, or any portion thereof, in the Company's sole discretion at any time upon 60 days' written notice to the NCI. In addition, the NCI has the right to: (i) require the Company to sublicense the rights to the product candidates covered by the Patent License upon certain conditions, including if the Company is not reasonably satisfying required health and safety needs and (ii) terminate or modify the Patent License, including if the Company is not satisfying requirements for public use as specified by federal regulations.

During the three and nine month periods ended September 30, 2021, the Company expensed $0.3 million and $0.5 million related to patent prosecution services under this agreement. The Company did not incur expenses related to patent services during the three and nine month periods ended September 30, 2020. Additionally, the Company recorded $0.3 million in accrued expenses as of September 30, 2021 related to patent prosecution services.

Cooperative Research and Development Agreement (CRADA) with the National Cancer Institute

On January 10, 2017, the Company announced the signing of a CRADA, with the NCI for the development of adoptive cell transfer, or ACT, based immunotherapies genetically modified using the *Sleeping Beauty* transposon/transposase system to express TCRs for the treatment of solid tumors. The principal goal of the CRADA is to develop and evaluate ACT for patients with advanced cancers using autologous peripheral blood lymphocytes, or PBL, genetically modified using the non-viral *Sleeping Beauty* system to express TCRs that recognize neoantigens expressed within a patient's cancer. Research conducted under the CRADA will be at the direction of Steven A. Rosenberg, M.D., Ph.D., Chief of the Surgery Branch at the NCI, in collaboration with the Company. In February 2019, the Company extended the CRADA with the NCI for two years, committing an additional $5.0 million to this program. The Company recorded $1.3 million of expense for both nine month periods ended September 30, 2021 and 2020, and for the three month period ended September 30, 2021 and 2020, the Company recorded expense of zero and $0.6 million, respectively.

Patent and Technology License Agreement—The University of Texas MD Anderson Cancer Center and the Texas A&M University System

On August 24, 2004, the Company entered into a patent and technology license agreement with MD Anderson and the Texas A&M University System, which the Company refers to, collectively, as the Licensors. Under this agreement, the Company was granted an exclusive, worldwide license to rights (including rights to U.S. and foreign patent and patent applications and related improvements and know-how) for the manufacture and commercialization of two classes of organic arsenicals (water- and lipid-based) for human and animal use. The class of water-based organic arsenicals includes darinaparsin.

Under the terms of the agreement, the Company may be required to make additional payments to the Licensors upon achievement of certain other milestones in varying amounts which, on a cumulative basis could total up to an additional $4.5 million. In addition, the Licensors are entitled to receive single digit percentage royalty payments on sales from a licensed product and will also be entitled to receive a portion of any fees that the Company may receive from a possible sublicense under certain circumstances. During the three and nine months ended September 30, 2021 the Company accrued $80,000 of fees under the terms of the license agreement. No amounts were accrued or paid during the three or nine months ended September 30, 2020.

Collaboration Agreement with Solasia Pharma K.K.

On March 7, 2011, the Company entered into a License and Collaboration Agreement with Solasia Pharma K.K., or Solasia, which was amended on July 31, 2014 to include an exclusive worldwide license. Pursuant to the License and Collaboration Agreement, the Company granted Solasia an exclusive license to develop and commercialize darinaparsin in both intravenous and oral forms and related organic arsenic molecules, in all indications for human use.

As consideration for the license, the Company is eligible to receive from Solasia development- and sales-based milestones, a royalty on net sales of darinaparsin, once commercialized, and a percentage of any sublicense revenues generated by Solasia. Solasia will be responsible for all costs related to the development, manufacturing and commercialization of darinaparsin. The Company's Licensors, as defined in the agreement, will receive a portion of all milestone and royalty payments made by Solasia to the Company in accordance with the terms of the license agreement with the Licensors. During the three and nine months ended September 30, 2021, the Company recorded $0.4 million of collaboration revenue under the collaboration agreement with Solasia in accordance with variable consideration guidance within ASC Topic 606, *Revenue from Contracts with Customers*. No amounts were recorded or received during the three or nine months ended September 30, 2020.

Collaboration with KBI

On July 9, 2020, the Company entered into a master service agreement and statement of work with KBI Biopharma, a contract manufacturing organization serving the biotechnology industry, including cell therapy. Pursuant to the agreements, KBI will provide cGMP cell therapy manufacturing and testing for the Company's library TCR-T cell clinical program.

Collaboration with Aldevron

On March 3, 2019, the Company entered into a master services agreement with Aldevron, a plasmid DNA manufacturer. On June 25, 2020, Aldevron announced an agreement for Aldevron to produce DNA plasmids under their neoGMP® service to be utilized in the manufacture of the Company's TCR-T cell therapies for treatment of solid tumors.

9. Leases

In June 2012, the Company entered into a master lease for the Company's corporate office headquarters in Boston, Massachusetts, which was originally set to expire in August 2016, but renewed through August 31, 2021. As of September 30, 2021 and December 31, 2020, a total security deposit of $0.1 million is included in deposits on the Company's balance sheet.

On April 22, 2021, the Company extended its lease for a 9,800 square foot portion of its office space in Boston. The renewal for its office space was originally set to expire on August 31, 2021, but has now been extended through August 2026. Under the terms of the renewal, the Company is required to make rental payments of approximately $26,000 per month.

On January 30, 2018, the Company entered into a lease agreement for office space in Houston, Texas, at MD Anderson. Under the terms of the Houston lease agreement, the Company leased approximately 210 square feet and were required to make rental payments at an average monthly rate of approximately $1,000. This lease was terminated effective March 31, 2020.

On March 12, 2019, the Company entered into a lease agreement, or the First Houston Lease, for office and lab space in Houston, Texas at MD Anderson through April 2021. Under the terms of the First Houston Lease agreement, the Company leased approximately 1,038 square feet and was required to make rental payments at an average monthly rate of approximately $2,000 through April 2021. On October 15, 2019, the Company entered into a lease agreement, or the Second Houston Lease, for additional office space in Houston through February 2027. Under the terms of the Second Houston Lease, the Company leases from MD Anderson, approximately 8,443 square feet and is initially required to make rental payments of approximately $17,000 per month through February 2027, subject to an annual base rent increase of approximately 3.0% throughout the term. Effective April 13, 2020, the Company leased an additional 5,584 square feet from MD Anderson. The Company is initially required to make rental payments of approximately $12,000 per month through February 2027, subject to an annual base rent increase of approximately 3.0% throughout the term.

Effective December 15, 2020, the Company leased an additional 35,482 square feet from MD Anderson. The Company is initially required to make rental payments of approximately $37,000 per month through April 2028, subject to an annual base rent increase of approximately 3.0% throughout the term beginning in April 2023.

The components of lease expense were as follows:

	Three Months Ended September 30,		For the Nine Months Ended September 30,	
(in thousands)	2021	2020	2021	2020
Operating lease cost	$ 352	$ 267	$ 1,113	$ 768
Total lease cost	$ 352	$ 267	$ 1,113	$ 768
Weighted-average remaining lease term (years)	5.71	4.99	5.71	4.99
Weighted-average discount rate	8.00%	8.00%	8.00%	8.00%

Effective June 1, 2020, the Company entered into a noncancelable lease for a period of less than a year with monthly payments of approximately $10,000 that is not subject to right of use asset recognition under ASC 842. Effective September 1, 2020, the Company added additional space to the noncancelable lease for a period of less than a year with monthly payments now totaling approximately $15,000. Rent expense was zero and $5,000 during the three and nine months ended September 30, 2021, respectively. As of September 30, 2021, this lease has been terminated and the Company has no further obligation.

As of September 30, 2021, the future minimum lease payments of the Company's operating lease obligations for the years ended December 31, were as follows (in thousands):

2021 (excluding the nine months ended September 30, 2021)	$ 273
2022	1,102
2023	1,132
2024	1,166
2025	1,201
Thereafter	1,873
Total lease payments	6,747
Less: Imputed interest and adjustments	(1,329)
Present value of lease payments	$ 5,418

10. Stock-Based Compensation

The Company recognized stock-based compensation expense on all employee and non-employee awards as follows:

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
(in thousands)	2021	2020	2021	2020
Research and development	535	522	2,115	1,587
General and administrative	1,836	1,270	7,742	3,806
Stock-based compensation expense	$ 2,371	$ 1,792	$ 9,857	$ 5,393

The Company granted an aggregate of 2,755,000 and 7,150,438 stock options during the three and nine months ended September 30, 2021, with a weighted-average grant date fair value of $1.08 and $1.91 per share, respectively. The Company granted an aggregate of 203,178 and 1,252,178 stock options during the three and nine months ended September 30, 2020, with a weighted-average grant date fair value of $1.96 and $2.45 per share, respectively.

On March 4, 2021, the Company extended the contractual life of 216,700 fully vested stock options held by a former director of the Company. On April 5, 2021, the Company extended the contractual life of 751,371 stock options and accelerated the vesting of 226,889 shares of restricted stock held by a former officer of the Company. On April 29, 2021, the Company extended the contractual life of 10,417 vested and 167,023 unvested stock options and accelerated the vesting of 4,137 shares of restricted stock held by a former director. On May 17, 2021, the Company extended the contractual life of 347,267 vested stock options held by a former officer of the Company. These extensions resulted in additional stock compensation expense of approximately $2.0 million during the nine months ended September 30, 2021.

For the three and nine months ended September 30, 2021 and 2020, the fair value of stock options was estimated on the date of grant using a Black-Scholes option valuation model with the following assumptions:

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2021	2020	2021	2020
Risk-free interest rate	0.89 - 0.96%	0.36 - 0.39%	0.50 - 1.15%	0.36 - 1.68%
Expected life in years	6.00 - 6.25	5.75 - 6.25	5.50 - 6.25	5.75 - 6.25
Expected volatility	72.53 - 72.84%	73.59 - 74.18%	72.53 - 74.80%	71.11 - 74.18%
Expected dividend yield	—%	—%	—%	—%

At September 30, 2021, there were 97,500 stock options that had been issued outside the 2012 Equity Incentive Plan, or the 2012 Plan and the 2020 Equity Incentive Plan, or the 2020 Plan. These options are excluded from the schedule below.

Stock option activity under the Company's stock option plans for the nine months ended September 30, 2021 is as follows:

(in thousands, except share and per share data)	Number of Shares	Weighted-Average Exercise Price	Weighted-Average Contractual Term (Years)	Aggregate Intrinsic Value
Outstanding, December 31, 2020	6,840,719	$ 3.81		
Granted	7,150,438	2.97		
Exercised	(363,109)	2.86		
Cancelled	(2,555,154)	3.54		
Outstanding, September 30, 2021	11,072,894	$ 3.36	8.32	$ 473
Options exercisable, September 30, 2021	5,743,820	$ 4.08	7.24	$ —
Options exercisable, December 31, 2020	3,596,315	$ 4.17	6.90	$ 598
Options available for future grant	2,224,159			

At September 30, 2021, total unrecognized compensation costs related to unvested stock options outstanding amounted to $8.0 million. The cost is expected to be recognized over a weighted-average period of 2.03 years.

A summary of the status of unvested restricted stock for the nine months ended September 30, 2021 is as follows:

	Number of Shares	Weighted-Average Grant Date Fair Value
Unvested, December 31, 2020	786,280	$ 3.08
Granted	1,601,224	2.60
Vested	(466,436)	3.68
Cancelled	(410,413)	3.46
Unvested, September 30, 2021	1,510,655	$ 2.28

At September 30, 2021, total unrecognized compensation costs related to unvested restricted stock outstanding amounted to $2.4 million. The cost is expected to be recognized over a weighted-average period of 2.19 years.

At the Company's annual meeting held on June 29, 2020, the shareholders approved the 2020 Equity Incentive Plan, or the 2020 Plan, which is a successor to and continuation of the 2012 Plan. The 2020 Plan had 21 million shares authorized, plus the shares remaining for issuance under the 2012 Plan. Our ability to utilize the total shares authorized under the 2020 Plan will be limited by the total number of shares authorized in our certificate of incorporation. As a result, as of September 30, 2021, there are 2,224,159 shares available to grant from the 2020 Plan. Additionally, 2,625,000 stock options with an exercise price of $1.64 were granted on August 30, 2021 to the Company's Chief Executive Officer, as part of his compensation package. These options are subject to a vesting schedule. None of these options have vested and do not currently impact the shares available to grant from the 2020 Plan. No additional awards can be granted from the 2012 Plan or the Company's 2003 Stock Option Plan.

11. Warrants

In connection with the Company's November 2018 private placement which provided net proceeds of approximately $47.1 million, the Company issued warrants to purchase an aggregate of 18,939,394 shares of common stock, or the 2018 warrants, which became exercisable six months after the closing of the private placement. The warrants have an exercise price of $3.01 per share and have a five-year term. The relative fair value of the warrants was estimated at $18.4 million using a Black-Scholes model with the following assumptions: expected volatility of 71%, risk free interest rate of 2.99%, expected life of five years and no dividends.

The Company assessed whether the warrants require accounting as derivatives. The Company determined that the warrants were (1) indexed to the Company's own stock and (2) classified in stockholders' equity in accordance with Financial Accounting Standards Board, or (FASB) Accounting Standards Codification ("ASC") Topic 815, *Derivatives and Hedging*. As such, the Company has concluded the warrants meet the scope exception for determining whether the instruments require accounting as derivatives and should be classified in stockholders' equity.

On July 26, 2019 and September 12, 2019, the Company entered into agreements with existing investors for the exercise of previously issued warrants to purchase common stock in the private placement. Pursuant to the terms of the agreements, investors exercised their 2018 warrants for an aggregate of 17,803,031 shares of common stock, at an exercise price of $3.01 per share. Proceeds from the warrant exercise, after deducting placement agent fees and other related expenses of $1.1 million were approximately $52.5 million.

The Company issued participating investors new warrants to purchase up to 17,803,031 additional shares of common stock, or the 2019 warrants, as an inducement for the warrant holders to exercise their 2018 warrants. The 2019 warrants will expire on the fifth anniversary of the initial exercise date and have an exercise price of $7.00. The 2019 warrants were valued using a Black-Scholes valuation model and resulted in a $60.8 million non-cash charge to the Company's statement of operations in 2019.

On October 22, 2019, the Company entered into the 2019 Agreement with MD Anderson. Refer to Note 8 – *Commitments and Contingencies* for further details. In connection with the execution of the 2019 Agreement, the Company issued MD Anderson a warrant to purchase 3,333,333 shares of common stock. The warrant has an initial exercise price of $0.001 per share and grant date fair value of $14.5 million. The warrant expires on December 31, 2026 and vests upon the occurrence of certain clinical milestones. The Company will recognize expense on the warrant in the same manner as if the Company paid cash for services to be rendered. The Company has not recognized any expense related to the warrant as of September 30, 2021, as no work towards any of the specified clinical milestones has begun.

On August 6, 2021, the Company entered into a Loan and Security Agreement with Silicon Valley Bank and affiliates, collectively, SVB. Refer to Note 4 - *Debt*. In connection with the Loan and Security Agreement, the Company issued SVB warrants to purchase 432,844 shares of common stock with an exercise price of $2.22 per share. The warrants have a ten year life and are fully vested upon issuance. The fair value of the warrants was estimated at $0.8 million using a Black-Scholes model with the following assumptions: expected volatility of 79%, risk free interest rate of 1.31%, expected life of ten years and no dividends.

12. Restructuring

On September 27, 2021, in order to lower its existing cost structure in connection with the realignment of its business strategy, the Company announced a strategic reduction in force and notified approximately 60 full-time employees of its intention to terminate their services on or, in most cases, before November 30, 2021. Certain of the notified employees had employment agreements that provided for enhanced severance benefits. The severance benefits, apart from certain continuing company-paid health care benefits for up to twelve months, will be paid during the fourth quarter of 2021.

The Company expensed the following costs associated with these future termination benefit payments resulting from the strategic reduction in force:

		September 30, 2021
Research and Development	$	2,248
General and Administrative		1,289
Total Severance Expense	$	3,537

Amounts remaining to be expensed after September 30, 2021, for a limited number of employees continuing to render service through November 30, 2021, are di minimis. At September 30, 2021, the accrued liability balance associated with the strategic reduction in force announced in the third quarter of 2021 is $3.5 million and is expected to be paid in the fourth quarter of 2021.

13. Joint Venture

On December 18, 2018, the Company entered into a Framework Agreement with TriArm pursuant to which the parties agreed to launch Eden BioCell, to lead clinical development and commercialization of certain *Sleeping Beauty*-generated CAR-T therapies as set forth in a separate license agreement (see Note 7).

On January 3, 2019, Eden BioCell was incorporated in Hong Kong as a private company. Eden BioCell, the Company and TriArm entered into a Share Subscription Agreement on January 23, 2019, where the Company and TriArm agreed to contribute certain intellectual property, services and cash (only with respect to TriArm) to Eden BioCell to subscribe for a certain number of newly issued ordinary shares in the share capital of Eden BioCell. On the closing date, upon the issuance and subscription of the shares, in respect of the aforementioned consideration, 10,000,000 ordinary shares were issued to the Company and 10,000,000 ordinary shares were issued to TriArm.

The closing of the transaction occurred on July 5, 2019. The Framework Agreement and Share Subscription Agreements were each respectively amended to be effective as of this date. Upon consummation of the joint venture, Eden BioCell and the Company also entered into a license agreement, pursuant to which the Company licensed the rights to Eden BioCell for third-generation *Sleeping Beauty*-generated CAR-T therapies targeting the CD19 antigen for the territory of China (including Macau and Hong Kong), Taiwan and Korea. Eden BioCell will be responsible for certain milestone and royalty payments related to the Company's license agreements with MD Anderson and PGEN (see Note 8). TriArm entered into a master services agreement with Eden BioCell and contributed

$10.0 million of cash on the closing date. TriArm and the Company each received a 50% equity interest in the joint venture in exchange for their contributions to Eden BioCell.

As of July 5, 2019, as a result of the design and purpose of Eden BioCell, the Company determined that Eden BioCell was considered a variable interest entity, or VIE, and concluded that it is not the primary beneficiary of the VIE as it did not have the power to direct the activities of the VIE that most significantly impact its performance. Rather, the Company accounts for the equity interest in Eden BioCell under the equity method of accounting as it has the ability to exercise significant influence over the operations of Eden BioCell.

The Company determined that Eden BioCell was not a customer and therefore, accounted for the transaction as the transfer of nonfinancial assets to be recognized at their fair value on the contribution date. The fair value of the intellectual property contributed to Eden BioCell had a de minimis value due to the early stage of the technology and the likelihood of clinical success. Due to the de minimis fair value of the intellectual property contributed, the Company did not record a gain or loss on this transaction and recognized no value for its equity-method investment.

In March 2021 and as announced by the Company in April 2021, Eden BioCell, the Company's Joint Venture in Taiwan with TriArm Therapeutics, began treating patients in a clinical trial with the Company's investigational CD19 RPM CAR-T cell therapy, under the IND cleared by the Taiwan FDA in December. Two patients have now been treated in this trial. The lead investigator at National Taiwan University in Taipei, has reported no serious adverse safety events in either of these patients. Laboratory results continue to support, as previously published, that non-viral Sleeping Beauty gene transfer is effective in genetically modifying autologous T-cells. Patients were infused two days after gene transfer, thus shortening the turnaround time and demonstrating an advantage over viral methods.

Based on laboratory data from the first two patients generated between March and May 2021, the TriArm/Eden team concluded, in concert with the investigator and the team at Ziopharm, that further process development work is required.

In September 2021, TriArm and Ziopharm mutually agreed to dissolve the joint venture.

For the three and nine months ended September 30, 2021 and 2020, Eden BioCell incurred a net loss. The Company continues to have no commitment to fund its operations.

14. Subsequent Events

The Company has evaluated subsequent events from the balance sheet date through the date on which these financial statements were issued. The Company did not have any material subsequent events that impacted its financial statements or disclosures.

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

The following information should be read in conjunction with our unaudited condensed financial statements and the notes thereto included in this Quarterly Report on Form 10-Q and the audited financial information and the notes thereto included in our Annual Report on Form 10-K, which was filed with the Securities and Exchange Commission, or the SEC, on March 1, 2021, or the Annual Report.

Except for the historical information contained herein, the matters discussed in this Quarterly Report on Form 10-Q may be deemed to be forward-looking statements that involve risks and uncertainties. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. In this Quarterly Report on Form 10-Q, words such as "may," "expect," "anticipate," "estimate," "intend," "plan," and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) are intended to identify forward-looking statements.

Our actual results and the timing of certain events may differ materially from the results discussed, projected, anticipated, or indicated in any forward-looking statements. We caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this Quarterly Report. In addition, even if our results of operations, financial condition and liquidity, and the development of the industry in which we operate are consistent with the forward-looking statements contained in this Quarterly Report, they may not be predictive of results or developments in future periods.

The following information and any forward-looking statements should be considered in light of factors discussed elsewhere in this Quarterly Report on Form 10-Q, including those risks identified under Part II, Item 1A. Risk Factors.

We caution readers not to place undue reliance on any forward-looking statements made by us, which speak only as of the date they are made. We disclaim any obligation, except as specifically required by law and the rules of the SEC, to publicly update or revise any such statements to reflect any change in our expectations or in events, conditions or circumstances on which any such statements may be based, or that may affect the likelihood that actual results will differ from those set forth in the forward-looking statements.

Overview

We are a clinical stage biopharmaceutical company focused on discovering, developing and commercializing next generation immuno-oncology platforms that leverage cell therapies to treat patients with cancers. We are developing technologies that utilize the immune system by employing innovative cell engineering to deliver safe and effective cell therapies for the treatment of multiple cancer types. Specifically, we are focused on developing T-cell receptor, or TCR, T cell therapies to target neoantigens in solid tumors, or TCR-T. A part of our platform is referred to as "*Sleeping Beauty*" and is based on the non-viral genetic engineering of immune cells using a transposon/transposase system that is intended to stably engineer T cells outside of the body for subsequent infusion.

We have identified specific hotspot mutations and have correspondingly prepared TCRs which, when engineered to the T cells of the patient, will redirect these T cells to target these shared neoantigen hotspots in solid tumors. These distinct TCRs, which we refer to as our "Library TCR-T Approach", have been prepared before the patient-recipient has been identified. We then screen potential patients for the hotspot mutations for which we have corresponding TCRs, and when we find a match, we will genetically modify the recipient's own T cells to redirect specificity to shared neoantigens. In our company-sponsored Phase 1 clinical trial, we will evaluate TCRs from our library for the investigational treatment of lung, cholangiocarcinoma, pancreatic, colorectal and gynecological cancers. Initially, six curated TCRs reactive to mutated KRAS and TP53 were included in the clinical trial. The clinical trial design, however, allows for and we expect to expand the number of TCRs to be evaluated in this trial. This clinical trial is being conducted in collaboration with The University of Texas MD Anderson Cancer Center, or MD Anderson, which will serve as the first site for the clinical trial. Other clinical trial sites may be added at a later time. The U.S. Food and Drug Administration, or the FDA, has cleared the investigational new drug, or IND, application we have submitted for this clinical trial. Enrollment in this clinical trial has not yet begun. We anticipate treating the first patient under this trial during the first half of 2022.

Under our Cooperative Research and Development Agreement, the NCI, is conducting a Phase 2 Personalized TCR-T clinical trial to evaluate autologous peripheral blood lymphocytes genetically modified with the Sleeping Beauty system to express autologous neoantigen-specific TCRs. The trial is designed to enroll patients with a broad range of solid tumors. The U.S. Food and Drug Administration, or the FDA, has cleared the investigational new drug, or IND, application submitted by the NCI for this clinical trial. However, enrollment in this clinical trial has been suspended due to issues internal to the NCI and unrelated to our technology. The progress and timeline for recommencement of this trial, including the timeline for dosing patients, are under the control of the NCI.

We have not generated significant revenue and have incurred significant net losses in each year since our inception. For the nine months ended September 30, 2021, we had a net loss of $67.0 million, and, as of September 30, 2021, we have incurred approximately $831.1 million of accumulated deficit since our inception in 2003. We expect to continue to incur significant operating expenditures and net losses. Further development of our product candidates will likely require substantial increases in our expenses as we:

- continue to undertake clinical trials for product candidates;
- seek regulatory approvals for product candidates;
- work with regulatory authorities to identify and address program-related inquiries;
- implement additional internal systems and infrastructure;
- hire additional personnel; and
- scale-up the formulation and manufacturing of our product candidates.

We continue to seek additional financial resources to fund the further development of our product candidates. If we are unable to obtain sufficient additional capital, one or more of these programs could be delayed, and we may be unable to continue our operations at planned levels and be forced to reduce our operations. Because of the numerous risks and uncertainties associated with product development, we are unable to predict the timing or amount of increased expenses or when or if we will be able to achieve or maintain profitability.

Recent Developments

On September 27, 2021, we announced a restructuring enabling us to advance our TCR program. As a result of the restructuring, approximately 60 positions were eliminated, where the anticipated cost savings associated with the restructuring extend our cash runway. Given our current development plans and cash management efforts, we anticipate cash resources will be sufficient to fund operations into the second quarter of 2023.

The ongoing COVID-19 global pandemic has presented a significant health and economic challenge around the world and is affecting our employees, partners and business operations. The full extent to which the COVID-19 pandemic will directly or indirectly impact our business, results of operations and financial condition will depend on future developments that are highly uncertain and cannot be accurately predicted. Supply chain disruptions caused by the pandemic may negatively impact productivity, disrupt our business and delay our clinical programs and timelines. The severity of negative impacts will depend, in part, on the length and magnitude of the disruptions. These and perhaps more severe disruptions in our operations could negatively impact our business, operating results and financial condition. We continue to work with our partners to mitigate the impact the COVID-19 pandemic is having on our business.

Clinical, Manufacturing, Scientific, and Regulatory Developments

In February 2021, the FDA cleared our company-sponsored IND application for a Phase 1/2 clinical trial evaluating TCRs from our library for the investigational treatment of lung, cholangiocarcinoma, pancreatic, colorectal and gynecological cancers. The screening study is now open and we are actively identifying patients who may be eligible for our sponsored clinical treatment trial. We anticipate dosing of the first patient in the clinical treatment study in the first half of 2022.

The clinical treatment study will be opened for enrollment once clinical manufacturing readiness has been established. We have built and will be opening our own cGMP clinical production unit ("CPU"). Commissioning of the facility, as well as aseptic process validation, were completed in the second quarter of 2021. In October we completed engineering and process qualification runs in the CPU. We are committed to having our internal manufacturing capabilities operational to support the first patient dosing in the first half of 2022. During 2020, we successfully transferred the manufacturing process to KBI, a contract manufacturing organization with cGMP cell therapy manufacturing facilities in The Woodlands, Texas. The TCR-T batch data generated at both KBI and Ziopharm’s laboratory were the basis of the CMC portion of the IND filing. KBI must complete the process qualification and aseptic process validation to facilitate clinical manufacturing at their site.

We have built and will be opening our own cGMP clinical production unit ("CPU"). Commissioning of the facility, as well as aseptic process validation, were completed in the second quarter of 2021. In October we completed engineering and process qualification runs in the CPU. We are committed to having our internal manufacturing capabilities operational to support the first patient dosing in the first half of 2022.

We continue to qualify TCRs in our library and will amend the IND at the appropriate time to include these additional TCRs. We expect that the additional TCRs will expand the potential utility and applicable patient population for the library and may include additional KRAS and TP53 mutations or other genetic hotspots associated with solid tumors (EGFR).

During the second quarter of 2021, we presented a poster at the annual American Association of Cancer Research (AACR) meeting. The poster highlighted preclinical work regarding our TCR-T program and demonstrated that multiple TCRs with unique specificities targeting recurrent TP53 and KRAS substitutions in frequent HLA haplotypes could be stably expressed using Sleeping Beauty transposition to re-direct peripheral blood T-cells towards tumor cells.

In March 2021 and as announced in April 2021, Eden BioCell, our Joint Venture in Taiwan with TriArm Therapeutics, began treating patients in a clinical trial with our investigational CD19 RPM CAR-T cell therapy, under the IND cleared by the Taiwan FDA in December. Two patients were treated in this trial. The lead investigator at National Taiwan University in Taipei, has reported no serious adverse safety events in either of these patients. Laboratory results continue to support, as previously published, that non-viral Sleeping Beauty gene transfer is effective in genetically modifying autologous T-cells. Patients were infused two days after gene transfer, thus shortening the turnaround time and demonstrating an advantage over viral methods.

Based on laboratory data from the first two patients generated between March and May 2021, the TriArm/Eden team concluded, in concert with the investigator and the team at Ziopharm, that further process development work is required.

In September 2021, TriArm and Ziopharm mutually agreed to dissolve the Eden Biocell Joint Venture. We will continue seeking a partner for this program. The decision to dissolve the Eden Biocell Joint Venture further allows us to prioritize our efforts and capital on the TCR-T program, which is the focus of our strategy and represents a much larger potential commercial opportunity.

MD Anderson has closed the CD19 RPM CAR-T Allogeneic Phase 1 clinical trial and withdrew the IND as of June 2021.

We are winding down our existing Controlled IL-12 clinical program for the treatment of recurrent glioblastoma multiforme. We will continue seeking a partner for this program and have also begun exploring potential synergies between this technology and our cell therapy programs.

Financial Overview

Overview of Results of Operations

Three and Nine Months Ended September 30, 2021 Compared to Three and Nine Months Ended September 30, 2020

License Income. License income during the three and nine months ended September 30, 2021 and 2020 were as follows:

	Three months ended September 30,				Nine months ended September 30,			
	2021	2020	Change		2021	2020	Change	
($ in thousands)								
Collaboration revenue	$ 398	$ —	$ 398	100 %	$ 398	$ —	$ 398	100 %

Collaboration revenue during the three and nine months ended September 30, 2021 was $0.4 million compared to zero during the three and nine months ended September 30, 2020. In the current year, we received $0.4 million under our Collaboration Agreement.

Research and development expenses. Research and development expenses during the three and nine months ended September 30, 2021 and 2020 were as follows:

	Three months ended September 30,				Nine months ended September 30,			
	2021	2020	Change		2021	2020	Change	
($ in thousands)								
Research and development	$ 14,521	$ 13,968	$ 553	4 %	$ 41,427	$ 38,725	$ 2,702	7 %

Research and development expenses for the three months ended September 30, 2021 increased by $0.6 million when compared to the three months ended September 30, 2020 primarily due to a $2.2 million charge recognized during the third quarter related to our strategic restructuring event announced on September 27, 2021. The increase was primarily offset by $1.6 million in reduced trial and consulting costs.

Research and development expenses for the nine months ended September 30, 2021 increased by $2.7 million when compared to the nine months ended September 30, 2020 primarily due to a $2.2 million charge recognized during the third quarter related to our strategic restructuring event announced on September 27, 2021, an increase of $4.8 million related to salary and employee related expenses and a $1.5 million increase in facilities and other related expenses. The increase during the period was offset by reduced program related costs of $5.8 million in program and consulting costs in comparison to the nine months ended September 30, 2020.

Our research and development expense consists primarily of salaries and related expenses for personnel, costs of contract manufacturing services, costs of facilities and equipment, fees paid to professional service providers in conjunction with our clinical trials, fees paid to contract research organizations in conjunction with costs of materials used in research and development, consulting, license and milestone payments and sponsored research fees paid to third parties.

We have not accumulated and tracked our internal historical research and development costs or our personnel and personnel-related costs on a program-by-program basis. Our employee and infrastructure resources are allocated across several projects, and many of our costs are directed to broadly applicable research endeavors. As a result, we cannot state the costs incurred for each of our programs on a program-by-program basis related to personnel and personnel related costs.

We do track our accumulated costs by program for costs incurred by outside vendors conducting research for our named clinical candidates. For the three months ended September 30, 2021, our clinical stage projects included a Phase 1/2 clinical trial evaluating TCRs from our library for the investigational treatment of long cholangiocarinoma, pancreatic, colorectal and gynecological cancers, a Phase 1 clinical trial with Ad-RTS-IL-12 plus veledimex in progressive glioblastoma; a Phase 1 clinical trial infusing our 2nd generation CD19-specific CAR^{+} T cells in patients with advanced lymphoid malignancies; a Phase 1/2 clinical trial of Ad-RTS-hIL-12 with veledimex for the treatment of pediatric brain tumors; and a Phase 2 clinical trial of Ad-RTS-hIL-12 with veledimex in combination with cemiplimab-rwlc in progressive glioblastoma.

Costs incurred by outside vendors conducting research for our named clinical candidates during the three months ended September 30, 2021 and through inception is as follows:

(in mllions)	Three Months Ended September 30, 2021	Since Inception, Through September 30, 2021
Direct external expenses by program:		
TCR Library	$ 4.7	$ 11.7
Ad-RTS-hIL-12 with veledimex in combination with cemiplimab-rwlc	$ 1.1	$ 7.8
Ad-RTS-hIL-12 with veledimex for the treatment of pediatric brain tumors	$ -	$ 2.7
Ad-RTS-IL-12 plus veledimex in progressive glioblastoma	$ 0.2	$ 14.8
CD19-specific CAR+ T cells in patients with advanced lymphoid malignancies	$ -	$ 6.2

Our future research and development expenses in support of our current and future programs will be subject to numerous uncertainties in timing and cost to completion. We test potential products in numerous preclinical studies for safety, toxicology and efficacy. We may conduct multiple clinical trials for each product. As we obtain results from trials, we may elect to discontinue or delay clinical trials for certain products to focus our resources on more promising products or indications. Completion of clinical trials may take several years or more, and the length of time generally varies substantially according to the type, complexity, novelty and intended use of a product. It is not unusual for preclinical and clinical development of each of these types of products to require the expenditure of substantial resources.

We estimate that clinical trials of the type generally needed to secure new drug approval are typically completed over the following timelines:

Clinical Phase	Estimated Completion Period
Phase 1	1 - 2 years
Phase 2	2 - 3 years
Phase 3	2 - 4 years

The duration and the cost of clinical trials may vary significantly over the life of a project as a result of differences arising during clinical development, including, among others, the following:

- The number of clinical sites included in the trials;
- The length of time required to enroll suitable patents;
- The number of patients that ultimately participate in the trials;

- The length of time and cost to develop and optimize manufacturing processes;
- The cost to manufacture the clinical products for patients;
- The duration of patient follow-up to ensure the absence of long-term product-related adverse events; and
- The efficacy and safety profile of the product.

As a result of the uncertainties discussed above, we are unable to determine the duration and completion costs of our programs or when and to what extent we will receive cash inflows from the commercialization and sale of a product. Our inability to complete our programs in a timely manner or our failure to enter into appropriate collaborative agreements could significantly increase our capital requirements and could adversely impact our liquidity. These uncertainties could force us to reduce or eliminate our activities in one or more of our programs or seek additional, external sources of financing from time-to-time in order to continue with our product development strategy. Our inability to raise additional capital, or to do so on terms reasonably acceptable to us, would jeopardize the future success of our business.

General and administrative expenses. General and administrative expenses during the three and nine months ended September 30, 2021 and 2020 were as follows:

	Three months ended September 30,				Nine months ended September 30,			
	2021	2020	Change		2021	2020	Change	
($ in thousands)								
General and administrative	$ 8,173	$ 6,353	$ 1,820	29%	$ 25,469	$ 18,862	$ 6,607	35%

General and administrative expenses for the three months ended September 30, 2021 increased by $1.8 million as compared to three months ended September 30, 2020 primarily related to $1.3 million in employee related severance charges in association with our September 2021 strategic reduction in force recognized during the quarter and an increase of $0.8 million related to consulting service costs. The increases were offset by a $0.3 million decrease in salary and employee related costs.

General and administrative expenses for the nine months ended September 30, 2021 increased by $6.6 million as compared to nine months ended September 30, 2020 primarily due to an increase of $1.3 million in employee related severance charges associated with our September 2021 strategic reduction in force, $4.2 million related to employee related expenses, and $1.1 million related to consulting service costs.

Other income (expense), net. Other income, net for the three and nine months ended September 30, 2021 and 2020 was as follows:

	Three months ended September 30,				Nine months ended September 30,			
	2021	2020	Change		2021	2020	Change	
($ in thousands)								
Interest expense, net	$ (444)	$ 7	$ (451)	(6,443)%	$ (444)	$ 412	$ (856)	(208)%
Other expense, net	7	(1)	8	(800)%	(15)	(29)	14	(48)%
Other income (expense), net	$ (437)	$ 6			$ (459)	$ 383		

Other expense, net for the three and nine months ended September 30, 2021 increased as compared to the three and nine months ended September 30, 2020 due to interest expense associated with our Term Loan with Silicon Valley Bank.

Liquidity and Capital Resources

Source of liquidity

We have not generated any revenue from product sales. Since inception, we have incurred net losses and negative cash flows from our operations.

To date, we have financed our operations primarily through public offerings of our common stock, private placements of our convertible equity securities, term debt and collaborations. Through September 30, 2021, we have received an aggregate of $739.1 million from issuances of equity and with our term loan with Silicon Valley Bank.

Term Loan

On August 6, 2021, the Company entered into a Loan and Security Agreement with Silicon Valley Bank and affiliates of Silicon Valley Bank (collectively, "SVB") (the "Term Loan Agreement"). The Term Loan Agreement provides for an initial term loan of $25.0 million funded at the closing, with an additional tranche of $25.0 million available if certain funding and clinical milestones are met by August 31, 2022. Principal repayments will start on April 1, 2022, unless certain milestones are reached prior to that date.

February 2020 Public Offering

On February 5, 2020, we entered into an underwriting agreement with Jefferies LLC, or Jefferies, as representative of the several underwriters named therein, relating to the issuance and sale of 27,826,086 shares of our common stock. The price to the public in the offering was $3.25 per share, and the underwriters agreed to purchase the shares from us pursuant to the underwriting agreement at a purchase price of $3.055 per share.

The offering was made pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $84.8 million after deducting underwriting discounts and offering expenses paid by us.

On March 10, 2020, the underwriters exercised their option to purchase an additional 1,284,025 shares. The net proceeds were approximately $3.9 million after deducting underwriting discounts and offering expenses paid by the us.

At-the-Market Facility

In June 2019, we entered into an Open Market Sale Agreement, or Sales Agreement, with Jefferies as a sale agent pursuant to which we may offer and sell, from time to time through Jefferies, shares of our common stock having an aggregate offering value of up to $100.0 million. Shares will be sold pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283), as previously filed with the Securities and Exchange Commission. Subject to the terms of the sales agreement, we are able to determine, at our sole discretion, the timing and number of shares to be sold under this ATM facility. The compensation to Jefferies for sales of our common stock pursuant to the sales agreement will be an amount equal to 3% of the gross proceeds of any shares of common stock sold under the sales agreement. During the nine months ended September 30, 2020, we issued and sold an aggregate of 2,814,673 shares of its common stock. The offering was made pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $13.0 million after deducting underwriting discounts and offering expenses payable by us. We did not sell any shares of our common stock under the at-the-market facility during the three or nine months ended September 30, 2021.

Funding Requirements

Given our current development plans and cash management efforts, we anticipate cash resources will be sufficient to fund operations into the second quarter of 2023. We currently do not have any committed sources of additional capital at this time. The forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of our expenses could vary materially and adversely as a result of a number of factors. We have based our estimates on assumptions that may prove to be wrong, and our expenses could prove to be significantly higher than we currently anticipate. Management does not know whether additional financing will be on terms favorable or acceptable to us when needed, if at all. In addition, we have issued or reserved for future issuance shares nearing the maximum number of shares of common stock authorized by our certificate of incorporation. If we are unable to increase the total number of authorized shares, we may be unable to effectively utilize our common stock to raise capital. If adequate additional funds are not available when required, or if we are unsuccessful in entering into partnership agreements for further development of our products, management may need to curtail development efforts. The COVID-19 pandemic continues to rapidly evolve and has already resulted in a significant disruption of global financial markets. If the disruption persists and deepens, we could experience an inability to access additional capital when and if needed. If we are unable to obtain funding, we could be forced to delay, reduce or eliminate some or all of our research and development programs, product portfolio expansion or commercialization efforts, which would adversely affect our business prospects, or we may be unable to continue operations.

In addition to these factors, our actual cash requirements may vary materially from our current expectations due to a number of other factors that may include, but are not limited to, changes in the focus and direction of our development programs, competitive and technical advances, costs associated with the development of our product candidates, our ability to secure partnering arrangements, and the costs of filing, prosecuting, defending and enforcing our intellectual property rights. If we exhaust our capital reserves more quickly than anticipated, regardless of the reason, and we are unable to obtain additional financing on terms acceptable to us or at all, we will be unable to proceed with development of some or all of our product candidates on expected timelines and will be forced to prioritize among them.

Cash Flows

The following table summarizes our net decrease in cash, cash equivalents, and restricted cash for the nine months ended September 30, 2021 and 2020:

($ in thousands)	Nine months ended September 30, 2021	2020	Change
Net cash provided by (used in):			
Operating activities	$ (46,342)	$ (39,977)	$ (6,365)
Investing activities	(2,964)	(6,012)	3,048
Financing activities	25,962	101,719	(75,757)
Net increase (decrease) in cash and cash equivalents	$ (23,344)	$ 55,730	$ (79,074)

Cash flows from operating activities represent the cash receipts and disbursements related to all of our activities other than investing and financing activities. Operating activities is derived by adjusting our net loss for:

- Non-cash operating items such as depreciation and stock-based compensation; and
- Changes in operating assets and liabilities, which reflect timing differences between the receipt and payment of cash associated with transactions and when they are recognized in results of operations.

Net cash used in operating activities for the nine months ended September 30, 2021 was $46.3 million, as compared to net cash used in operating activities of $40.0 million for the nine months ended September 30, 2020. The net cash used in operating activities for the nine months ended September 30, 2021 was primarily due to our net loss of $66.0 million, the decrease in prepaid and other current assets of $7.5 million, a decrease in receivables of $3.2 million related to the collection of our outstanding receivables and use of funds at MD Anderson, a change in accrued expenses of $3.2 million, non-cash stock-based compensation of $9.9 million, and an increase in lease liabilities of $0.6 million.

Net cash used in investing activities was $3.0 million for the nine months ended September 30, 2021 compared to $6.0 million for the nine months ended September 30, 2020. The change of $3.1 million is a result of cash used to expand our internal cell therapy capabilities in our Houston, Texas facilities during the nine months ended September 30, 2020 in comparison to the nine months ended September 30, 2021.

Net cash provided by financing activities for the nine months ended September 30, 2021 was $26.0 million related to proceeds from our Term Loan with Silicon Valley bank and the exercise of stock options. Net cash provided by financing activities for the nine months ended September 30, 2020 was $101.7 million, which included $88.7 million from the issuance of common stock in our public offering, net and $13.0 million from the issuance of common stock in our at the market offerings, net.

Operating capital and capital expenditure requirements

We anticipate that losses will continue for the foreseeable future. At September 30, 2021, our accumulated deficit was approximately $831.1 million. Our actual cash requirements will depend on and could increase significantly as a result of a number of factors, including:

- the scope, number, initiation, progress, timing, costs, design, duration, any potential delays, and results of clinical trials and nonclinical studies for our current or future product candidates;
- changes in the focus, direction and pace of our development programs;
- the effect of competitive and technical advances and market developments;
- costs associated with the development of our product candidates;
- our ability to establish and maintain partnering, collaborations or similar arrangements on favorable terms and whether and to what extent we retain development or commercialization responsibilities under any new licensing, collaboration or similar arrangement;
- diversion of healthcare resources away from the conduct of clinical trials as a result of the ongoing COVID-19 pandemic, including the diversion of hospitals serving as our clinical trial sites and hospital staff supporting the conduct of our clinical trials;

- the interruption of key clinical trial activities, such as clinical trial site monitoring, due to limitations on travel, quarantines or social distancing protocols imposed or recommended by federal or state governments, employers and others in connection with the ongoing COVID-19 pandemic;
- our need and ability to hire additional management and scientific and medical personnel;
- the costs of acquiring, licensing or investing in businesses, product candidates and technologies;
- costs of filing, prosecuting, defending and enforcing any patent claims and any other intellectual property rights, or other developments; and
- other matters identified under Part II, Item 1A. “Risk Factors.”

Our working capital as of September 30, 2021 was $68.5 million, consisting of $96.6 million in current assets and $28.1 million in current liabilities. Working capital as of December 31, 2020 was $112.2 million, consisting of $130.6 million in current assets and $18.4 million in current liabilities. In May 2021, as a result of our review of our research and development portfolio, we announced the realigning of resources behind our *Sleeping Beauty* program. The Company announced that it will be winding down our existing Controlled IL-12 clinical program, and we anticipate the realignment of resources will reduce cash expenditures on the Controlled IL-12 program. On September 27, 2021, in order to lower our existing cost structure, we also announced a strategic reduction in force and notified approximately 60 full-time employees of our intention to terminate their employment services.

Contractual Obligations

The following table summarizes our outstanding obligations as of September 30, 2021 and the effect those obligations are expected to have on our liquidity and cash flows in future periods:

($ in thousands)	Total	Less than 1 year	2 -3 years	4 -5 years	More than 5 years
Operating leases	$ 6,747	$ 1,097	$ 2,281	$ 2,391	$ 978
Royalty and license fees	3,277	350	700	450	1,777
Term loan	28,481	14,258	14,223	-	-
Total	$ 38,505	$ 15,705	$ 17,204	$ 2,841	$ 2,755

Operating Leases

Our commitments for operating leases relate to the lease for our corporate headquarters in Boston, Massachusetts, and laboratory and office space in Houston, Texas. On December 21, 2015 and April 15, 2016, we renewed the lease for our office space in Boston, MA through August 31, 2021. On April 22, 2021, we extended our lease for a portion of office space currently held at our office space in Boston. The renewal of the portion of our office space was originally set to expire on August 31, 2021, but has now been extended through August 31, 2026.

On January 30, 2018, we entered into a lease agreement for office space in Houston, TX at MD Anderson through April 2021. On March 12, 2019, we entered into a lease agreement for additional office space in Houston through April 2021. On October 15, 2019, we entered into another lease agreement for additional office and lab space in Houston through February 2027. On April 13, 2020, we entered into another lease agreement for additional office and laboratory space in Houston through February 2027. On June 1, 2020, we entered into a short-term lease in Houston for office and laboratory space. On September 1, 2020, we entered an additional short-term lease in Houston for additional office and laboratory space. On December 15, 2020, we entered into another lease for additional office and laboratory space in Houston through April 2028.

Royalty and License Fees

On January 10, 2017, we announced the signing of a Cooperative Research and Development Agreement, or CRADA with the NCI for the development of ACT-based immunotherapies genetically modified using the Sleeping Beauty transposon/transposase system for the treatment of solid tumors. In February 2019, we extended the CRADA with the NCI until January 9, 2022. As of September 30, 2021, we do not expect to incur any further fees associated with the CRADA.

On October 5, 2018, we entered into the License Agreement with PGEN Therapeutics, Inc. or PGEN, a wholly owned subsidiary of Precigen Inc., or Precigen, which was formerly known as Intrexon Corporation. Under the License Agreement, we are obligated to pay PGEN an annual licensing fee of $0.1 million expected to be paid through the term of the agreement.

Off-balance Sheet Arrangements

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

Critical Accounting Policies and Estimates

In our Annual Report, our most critical accounting policies and estimates upon which our financial status depends were identified as those relating to clinical trial expenses; collaboration agreements; fair value measurements for stock-based compensation; and income taxes. We reviewed our policies and determined that those policies remain our most critical accounting policies for the nine months ended September 30, 2021.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

Our exposure to market risk is limited to our cash. The goals of our investment policy are preservation of capital, fulfillment of liquidity needs and fiduciary control of cash. We also seek to maximize income from our investments without assuming significant risk. To achieve our goals, we maintain our cash in interest-bearing bank accounts in global banks, United States treasuries and other government-backed investments, which are subject to minimal interest rate risk.

Effect of Currency Exchange Rates and Exchange Rate Risk Management

We currently have no clinical studies or clinical trials taking place outside of the United States. Therefore, any currency fluctuations will not have a material impact on our financial position, results of operations or cash flows.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal accounting officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) or 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act) as of September 30, 2021. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by the company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal accounting officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of September 30, 2021, our principal executive officer and principal accounting officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level, except with respect to the event described below.

Material Weakness

As reported in our Quarterly Report on Form 10-Q with the SEC on August 12, 2021, we identified a material weakness in our internal controls over financial reporting relating to the reconciliation and review of our accounts in a timely manner. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the Company’s interim or annual financial statements will not be prevented or detected on a timely basis. Specifically, our identified material weakness existing in our financial reporting process relates to the lack of sufficient accounting resources to execute certain controls related to the reconciliation and review of accounts in a timely manner. The material weakness remains unremediated at September 30, 2021. The material weakness had no impact on any amounts reported in the financial statements for the quarter ended September 30, 2021 or for any previous period.

Remediation Efforts to Address Material Weakness

Remediation action plans have been identified and implemented with regard to controls related to the reconciliation and review of accounts in a timely manner. We have reassessed the design and operation of the internal controls over our financial statement close process and have realigned our accounting staffing levels and experience. The material weakness had no impact on any amounts reported in the financial statement for the quarter ended September 30, 2021 or for any previous period. The effectiveness of these internal controls that have been implemented to date will be tested beginning in the fourth quarter of 2021. Management is committed to remediating the material weakness in a timely manner.

Changes in Internal Control over Financial Reporting

We have taken actions to remediate the material weakness related to our internal control over financial reporting, as described above. Other than the changes disclosed above, there were no material changes in our internal control over financial reporting identified in connection with the evaluation required by Rules 13a-5 and 15d-15 under the Exchange Act that occurred during the quarter ended September 30, 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Part II - Other Information

Item 1. Legal Proceedings

In the ordinary course of business, we may periodically become subject to legal proceedings and claims arising in connection with ongoing business activities from time to time. The results of litigation and claims cannot be predicted with certainty, and unfavorable resolutions are possible and could materially affect our results of operations, cash flows or financial position. In addition, regardless of the outcome, litigation could have an adverse impact on us because of defense costs, diversion of management attention and resources and other factors.

As of September 30, 2021, based on information readily available, there are no material matters that, in the opinion of management, are likely to result in a material adverse effect on our financial position, results of operations or cash flows.

Item 1A. Risk Factors

The following important factors could cause our actual business and financial results to differ materially from those contained in forward-looking statements made in this Quarterly Report on Form 10-Q or elsewhere by management from time to time. The risk factors in this Quarterly Report have been revised to incorporate changes to our risk factors from those included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2020. The risk factors set forth below with an asterisk (*) next to the title are new risk factors or risk factors containing changes, which may be material, from the risk factors previously disclosed in Item 1A of our Annual Report on Form 10-K for the fiscal year ended December 31, 2020, as filed with the Securities and Exchange Commission. The market price of our common stock could decline if one or more of these risks or uncertainties actually occur, causing you to lose all or part of your investment. The impact of COVID-19 may also exacerbate other risks discussed in this filing, any of which could have a material effect on us. This situation is changing rapidly and additional impacts may arise. Additional risks that we currently do not know about, or that we currently believe to be immaterial, may also impair our business. Certain statements below are forward-looking statements. See “Cautionary Note Regarding Forward-Looking Statements” in this Quarterly Report.

RISKS RELATED TO OUR BUSINESS

Our business, operations and clinical development plans and timelines could be adversely affected by the effects of health epidemics, including the COVID-19 pandemic, on the manufacturing, clinical trial and other business activities performed by us or by third parties with whom we conduct business, including our contract manufacturers, clinical research organizations, or CROs, shippers and others.

Our business could be adversely affected by health epidemics wherever we have clinical trial sites or other business operations. In addition, health epidemics could cause significant disruption in the operations of third-party manufacturers, CROs and other third parties upon whom we rely.

We depend on a worldwide supply chain to manufacture products used in our preclinical studies and clinical trials. Quarantines, shelter-in-place and similar government orders, or the expectation that such orders, shutdowns or other restrictions could occur, whether related to COVID-19 or other infectious diseases, could impact personnel at our own manufacturing facilities or third-party manufacturing facilities in the United States and other countries, or the availability or cost of materials, which could disrupt our supply chain.

If our relationships with our suppliers or other vendors are terminated or scaled back as a result of the COVID-19 pandemic or other health epidemics, we may not be able to enter into arrangements with alternative suppliers or vendors or do so on commercially reasonable terms or in a timely manner. Switching or adding additional suppliers or vendors involves substantial cost and requires management time and focus. In addition, there is a natural transition period when a new supplier or vendor commences work. As a result, delays may occur, which could adversely impact our ability to meet our desired clinical development and any future commercialization timelines. Although we carefully manage our relationships with our suppliers and vendors, there can be no assurance that we will not encounter challenges or delays in the future or that these delays or challenges will not harm our business.

In addition, our preclinical studies and clinical trials have been and may continue to be affected by the COVID-19 pandemic. Clinical site initiation, patient enrollment and activities that require visits to clinical sites, including data monitoring, have been and may continue to be delayed due to prioritization of hospital resources toward the COVID-19 pandemic or concerns among patients about participating in clinical trials during a pandemic. Some patients may have difficulty following certain aspects of clinical trial protocols if quarantines impede patient movement or interrupt healthcare services. Similarly, if we are unable to successfully recruit and retain patients and principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19 or experience additional restrictions by their institutions, city, or state our clinical trial operations could be adversely impacted.

The spread of COVID-19, which has caused a broad impact globally, may materially affect us economically. While the potential economic impact brought by, and the duration of, COVID-19 may be difficult to assess or predict, a widespread pandemic could result

in significant disruption of global financial markets, reducing our ability to access capital, which could in the future negatively affect our liquidity. In addition, a recession or market correction resulting from the spread of COVID-19 could materially affect our business and the value of our common stock.

The global COVID-19 pandemic continues to evolve rapidly. The ultimate impact of the COVID-19 pandemic or a similar epidemic is highly uncertain and subject to change. We may experience a material impact on our operations, and we continue to monitor the COVID-19 situation closely.

We will require substantial additional financial resources to continue ongoing development of our product candidates and pursue our business objectives; if we are unable to obtain these additional resources when needed, we may be forced to delay or discontinue our planned operations, including clinical testing of our product candidates.

We have not generated significant revenue and have incurred significant net losses in each year since our inception. For the nine months ended September 30, 2021, we had a net loss of $67.0 million, and, as of September 30, 2021, we have incurred approximately $831.1 million of accumulated deficit since our inception in 2003. We expect to continue to incur significant operating expenditures and net losses. Further development of our product candidates will require substantial increases in our expenses as we:

- continue to undertake clinical trials for product candidates;
- scale-up the formulation and manufacturing of our product candidates;
- seek regulatory approvals for product candidates;
- work with regulatory authorities to identify and address program-related inquiries;
- implement additional internal systems and infrastructure; and
- hire additional personnel, including highly-skilled and experienced scientific and medical staff.

As of September 30, 2021, we have approximately $91.7 million of cash and cash equivalents. Given our current development plans and cash management efforts, we anticipate cash resources will be sufficient to fund operations into the second quarter of 2023, and we have no committed sources of additional capital at this time. The forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of our expenses could vary materially and adversely as a result of a number of factors. We have based our estimates on assumptions that may prove to be wrong, and our expenses could prove to be significantly higher than we currently anticipate. Management does not know whether additional financing will be on terms favorable or acceptable to us when needed, if at all.

Our actual cash requirements may vary materially from our current expectations for a number of other factors that may include, but are not limited to, changes in the focus and direction of our development programs, slower and/or faster than expected progress of our research and development efforts, changes in governmental regulation, competitive and technical advances, rising costs associated with the development of our product candidates, our ability to secure partnering arrangements, and costs of filing, prosecuting, defending and enforcing our intellectual property rights. The COVID-19 pandemic continues to rapidly evolve and has already resulted in a significant disruption of global financial markets. If the disruption persists and deepens, we could experience an inability to access additional capital, which could in the future negatively affect our operations. If we exhaust our capital reserves more quickly than anticipated, regardless of the reason, and we are unable to obtain additional financing on terms acceptable to us or at all, we will be unable to proceed with development of some or all of our product candidates on expected timelines and will be forced to prioritize among them.

Further, we may elect to prioritize one or more of our programs and reduce or eliminate our activities on our other programs to preserve our capital resources. Any decision to reduce or eliminate activities for a program may negatively impact the potential for the program, which could have a material adverse effect on our business. For instance, we have decided to wind down the existing clinical programs of our Controlled IL-12 program in 2021 and to actively explore partnership opportunities for the Controlled IL-12 program to support its continued development. Some of these changes to our planned Controlled IL-12 program may impact the prospects and future development of this program, including our ability to pursue later stage development or a partnership for this program. We have also mutually agreed with TriArm to dissolve the Eden BioCell joint venture.

We need to raise additional capital to fund our operations. The manner in which we raise any additional funds may affect the value of your investment in our common stock.

Until such time, if ever, as we can generate substantial revenue, we expect to finance our cash needs through a combination of equity offerings, debt financings and license and collaboration agreements. We do not have any committed external source of funds. The unpredictability of the capital markets may severely hinder our ability to raise capital within the time periods needed or on terms we

consider acceptable, if at all. In addition, the ongoing COVID-19 pandemic continues to disrupt the global financial markets, negatively impacted U.S. market conditions and may reduce opportunities for us to seek out additional funding in the future. In particular, a decline in the market price of our common stock could make it more difficult for us to sell equity or equity-related securities in the future at a time and price that we deem appropriate. Moreover, if we fail to advance one or more of our current product candidates into early or later-stage clinical trials, successfully commercialize one or more of our product candidates, or acquire new product candidates for development, we may have difficulty attracting investors that might otherwise be a source of additional financing.

On August 6, 2021, the Company entered into a Term Loan Agreement with Silicon Valley Bank and affiliates of Silicon Valley Bank. The Term Loan Agreement provides for an initial term loan of $25.0 million funded at the closing, with an additional tranche of $25.0 million available if certain funding and clinical milestones are met by August 31, 2022. In connection with the initial borrowing, the Company also issued warrants to SVB providing for the purchase of a total of 432,844 shares of its common stock at an exercise price of $2.22 per share.

In June 2019, we entered into an Open Market Sale Agreement with Jefferies pursuant to which we may offer and sell, from time to time through Jefferies, shares of our common stock having an aggregate offering price of up to $100.0 million. Shares will be sold pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283), as previously filed with the Securities and Exchange Commission. During the year ended December 31, 2020, we issued and sold an aggregate of 2,814,673 shares of our common stock under the sales agreement for aggregate net proceeds of $13.0 million after deducting commissions and offering expenses of $0.4 million and may sell and issue approximately $80.9 million in additional shares under the sales agreement. There were no issuances during the three or nine months ended September 30, 2021.

To the extent that we raise additional capital by issuing equity securities such as under our at-the-market program, our existing stockholders' ownership will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. Any debt financing that we enter into may involve covenants that restrict our operations. These restrictive covenants may include limitations on additional borrowing and specific restrictions on the use of our assets as well as prohibitions on our ability to create liens, pay dividends, redeem our stock or make investments. Furthermore, the ongoing impact of COVID-19 on global financial markets could make the terms of any available financing less attractive to use and more dilutive to our existing shareholders. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves. 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, research programs or product candidates or grant licenses on terms that may not be favorable to us.

We identified a material weakness in our internal control as of June 30, 2021, which has not been remediated as of September 30, 2021. We may identify additional material weaknesses in the future or otherwise fail to maintain an effective system of internal controls, which may result in material misstatements of our financial statements or could have a material adverse effect on our business and trading price of our securities.

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, the Sarbanes-Oxley Act of 2002 and the rules and regulations of the Nasdaq Global Market. Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, we are required to perform system and process evaluation and testing of our internal control over financial reporting to allow our management to report on the effectiveness of our internal control over financial reporting. We may also be required to have our independent registered public accounting firm issue an opinion on the effectiveness of our internal control over financial reporting on an annual basis.

In connection with the review of our consolidated financial statements as of and for the quarter ended June 30, 2021, we identified a material weakness in our internal control over financial reporting. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of our consolidated financial statements will not be prevented or detected on a timely basis. The material weakness was related to the reconciliation and review of our accounts in a timely manner. Specifically, our identified material weakness existing in our financial reporting process relates to the lack of sufficient accounting resources to execute certain controls related to the reconciliation and review of accounts in a timely manner. The material weakness remains unremediated as of September 30, 2021.

Remediation action plans have been identified and implemented with regard to controls related to the reconciliation and review of accounts in a timely manner. We have reassessed the design and operation of the internal controls over our financial statement close process and have realigned our accounting staffing levels and experience. The material weakness had no impact on any amounts

reported in the financial statement for the quarter ended September 30, 2021 or for any previous period. The effectiveness of these internal controls that have been implemented to date will be tested beginning in the fourth quarter of 2021.

We cannot assure you that any measures we are taking or may take in the future will be sufficient to remediate the control deficiencies that led to the material weakness in our internal control over financial reporting or to avoid potential future material weaknesses. We also previously had a material weakness identified for the year ended December 31, 2019, which was fully remediated as of December 31, 2020. If we are unable to successfully remediate our existing or any future material weakness in our internal control over financial reporting, or if we identify any additional material weaknesses, the accuracy and timing of our financial reporting may be adversely affected. If we are unable to maintain effective internal controls, we may not have adequate, accurate or timely financial information, and we may be unable to meet our reporting obligations as a public company, including the requirements of the Sarbanes-Oxley Act, we may be unable to accurately report our financial results in future periods, or report them within the timeframes required by the requirements of the SEC, Nasdaq or the Sarbanes-Oxley Act. Failure to comply with the Sarbanes-Oxley Act, when and as applicable, could also potentially subject us to sanctions or investigations by the SEC or other regulatory authorities. Any failure to maintain or implement required new or improved controls, or any difficulties we encounter in their implementation, could result in the identification of additional material weaknesses or significant deficiencies, cause us to fail to meet our reporting obligations or result in material misstatements in our financial statements. Furthermore, if we cannot provide reliable financial reports or prevent fraud, our business and results of operations could be harmed and investors could lose confidence in our reported financial information.

Our plans to develop and commercialize non-viral adoptive cellular therapies, such as TCR-T cell therapies, can be considered as new approaches to cancer treatment, the successful development of which is subject to significant challenges.

We intend to employ technologies such as the technology licensed from MD Anderson pursuant to the MD Anderson License described above, and from PGEN, pursuant to the License Agreement, to pursue the development and commercialization of non-viral cellular therapies based on cytokines, T-cells, and TCRs, targeting solid tumor malignancies. Because this is a new approach to cancer immunotherapy and cancer treatment generally, developing and commercializing product candidates subjects us to a number of challenges, including:

- obtaining regulatory approval from the FDA and other regulatory authorities that have very limited experience with the commercial development of genetically modified and/or unmodified T-cell therapies for cancer;
- identifying and manufacturing appropriate TCRs from patient and from third parties that can be administered to a patient;
- developing and deploying consistent and reliable processes for engineering a patient's and/or donor's T-cells *ex vivo* and infusing the T-cells back into the patient;
- possibly conditioning patients with chemotherapy in conjunction with delivering each of the potential products, which may increase the risk of adverse side effects of the potential products;
- educating medical personnel regarding the potential side effect profile of each of the potential products, such as the potential adverse side effects related to cytokine release;
- addressing any competing technological and market developments;
- developing processes for the safe administration of these potential products, including long-term follow-up for all patients who receive the potential products;
- sourcing additional clinical and, if approved, commercial supplies for the materials used to manufacture and process the potential products;
- developing a manufacturing process and distribution network with a cost of goods that allows for an attractive return on investment;
- establishing sales and marketing capabilities after obtaining any regulatory approval to gain market acceptance;
- developing therapies for types of cancers beyond those addressed by the current potential products;
- maintaining and defending the intellectual property rights relating to any products we develop;
- and not infringing the intellectual property rights, in particular, the patent rights, of third parties, including competitors, such as those developing T-cell therapies.

We cannot assure you that we will be able to successfully address these challenges, which could prevent us from achieving our research, development and commercialization goals.

Our current product candidates are based on novel technologies and are supported by limited clinical data and we cannot assure you that our current and planned clinical trials will produce data that supports regulatory approval of one or more of these product candidates.

The immuno-oncology effector platform in which we have acquired rights pursuant to our License Agreement with PGEN represents early-stage technology in the field of human oncology biotherapeutics, with Ad-RTS-IL-12 plus veledimex having completed trials, in melanoma, breast cancer and rGBM. Similarly, our genetically modified T-cell candidates are supported by limited clinical data, all of which has been generated through trials conducted by MD Anderson, the NCI, and Eden BioCell, not by us. We plan to assume control of the overall clinical and regulatory development of our T-cell product candidates, and any failure to obtain, or delays in obtaining, sponsorship of new INDs, or in filing INDs sponsored by us for these or any other product candidates we determine to advance could negatively affect the timing of our potential future clinical trials. Such an impact on timing could increase research and development costs and could delay or prevent obtaining regulatory approval for our product candidates, either of which could have a material adverse effect on our business.

Further, we did not control the design or conduct of the previous trials. It is possible that the FDA will not accept these previous trials as providing adequate support for future clinical trials, whether controlled by us or third parties, for any of one or more reasons, including the safety, purity, and potency of the product candidate, the degree of product characterization, elements of the design or execution of the previous trials or safety concerns, or other trial results. We may also be subject to liabilities arising from any treatment-related injuries or adverse effects in patients enrolled in these previous trials. As a result, we may be subject to unforeseen third-party claims and delays in our potential future clinical trials. We may also be required to repeat in whole or in part clinical trials previously conducted by MD Anderson or other entities, which will be expensive and delay the submission and licensure or other regulatory approvals with respect to any of our product candidates.

In addition, the results of the limited clinical trials conducted to date may not be replicated in future clinical trials. Our genetically modified T-cell product candidates, as well as other product candidates, may fail to show the desired safety and efficacy in clinical development, and we cannot assure you that the results of any future trials will demonstrate the value and efficacy of our product candidates. Moreover, there are a number of regulatory requirements that we must satisfy before we can continue clinical trials of TCR-T cell or other cellular therapy product candidates in the United States. Satisfaction of these requirements will entail substantial time, effort and financial resources.

We report interim data on certain of our clinical trials and we cannot assure you that interim data will be predictive of either future interim results or final study results.

As part of our business, we provide updates related to the development of our product candidates, which may include updates related to interim clinical trial data. To date, our clinical trials have involved small patient populations and because of the small sample size, the interim results of these clinical trials may be subject to substantial variability and may not be indicative of either future interim results or final results.

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

The development and commercialization for new products to treat cancer, including the indications we are pursuing, is highly competitive and considerable competition exists from major pharmaceutical, biotechnology and specialty cancer companies. Many of these companies have more experience in preclinical and clinical development, manufacturing, regulatory, and global commercialization. We are also competing with academic institutions, governmental agencies, and private organizations that are conducting research in the field of cancer.

Our genetically engineering T-cell programs face significant competition in the TCR and CAR technology space from multiple companies and their collaborators. Our TCR program in particular faces competition from several companies, including from Achilles Therapeutics Limited, Adaptimmune Therapeutics plc in collaboration with GlaxoSmithKline plc, ArsenalBio, bluebird bio, BioNTech AG, Bristol-Myers Squibb Company, Immatics Biotechnologies GmbH, Iovance Biotherapeutics, Inc., Lion TCR, Lyell, Medigene AG, NexImmune, PACT Pharma, Inc., Precigen, Inc., Tactiva Therapeutics, LLC, Takara Bio, Inc., TCR2 Therapeutics Inc., Tmunity Therapeutics Inc., Zelluna Immunotherapy AS and others. Many of these companies are either investigating TCR T cells against germline antigens or are utilizing tumor infiltrating lymphocytes (TIL). Some are pursuing CAR-T cells for solid tumors. In contrast, Ziopharm is focused on developing TCR T cell products against neoantigens arising from somatic mutations in solid tumors. Several companies, including Advaxis Inc./Amgen Inc., BioNTech AG and Gritstone Oncology, Inc., are pursuing vaccine platforms to target neoantigens for solid tumors. Other companies are developing non-viral gene therapies, including Poseida Therapeutics, Inc. and several companies developing CRISPR technology, including Crispr Therapeutics Co. Ltd. Several companies are pursuing the development of allogeneic CAR+ T therapies, including Allogene Therapeutics, Inc., Atara Biotherapeutics, Inc., Precision Biosciences Inc., and Servier (in collaboration with Cellectis) which may compete with our product candidates. We also face competition from companies developing therapies using cells other than T cells such as Athenex, Fate Therapeutics Inc.,

ImmunityBio, IN8bio, Inc., Nkarta, and Takeda Pharmaceutical Company. We also face competition from companies developing T cells with cytokines such as Repertoire Immune Medicines and Obsidian Therapeutics, Inc. We also face competition from non-cell- based treatments offered by other companies such as Amgen Inc., AstraZeneca plc, Bristol-Myers Squibb Company, Incyte Corporation, Merck & Co., Inc., and Roche Holding AG.

Additionally, our ability to pursue partnerships relating to our IL-12 and CAR-T programs may be impacted by substantial competition from other biopharmaceutical companies.

Even if we obtain regulatory approval of potential TCR products, we may not be the first to market and that may affect the price or demand for our potential products. Existing or future competing products may provide greater therapeutic convenience or clinical or other benefits for a specific indication than our products or may offer comparable performance at a lower cost. Additionally, the availability and price of our competitors' products could limit the demand and the price we are able to charge for our potential products. We may not be able to implement our business plan if the acceptance of our potential products is inhibited by price competition or the reluctance of physicians to switch from existing methods of treatment to our potential products, or if physicians switch to other new drug or biologic products or choose to reserve our potential products. Additionally, 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 potential products, that may prevent us from obtaining approval from the FDA for such potential products for the same indication for seven years, except in limited circumstances. If our products fail to capture and maintain market share, we may not achieve sufficient product revenues and our business will suffer.

We compete against fully integrated pharmaceutical companies and smaller companies that are collaborating with larger pharmaceutical companies, academic institutions, government agencies and other public and private research organizations. Many of these competitors have products already approved or in development. In addition, many of these competitors, either alone or together with their collaborative partners, operate larger research and development programs or have substantially greater financial resources than we do, as well as significantly greater experience in:

- developing drugs and biopharmaceuticals;
- undertaking preclinical testing and human clinical trials;
- obtaining FDA and other regulatory approvals of drugs and biopharmaceuticals;
- formulating and manufacturing drugs and biopharmaceuticals; and
- launching, marketing, and selling drugs and biopharmaceuticals.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. In addition, our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of generic products.

Any termination of our licenses with PGEN, MD Anderson or the National Cancer Institute or our research and development agreements with MD Anderson could result in the loss of significant rights and could harm our ability to develop and commercialize our product candidates.

We are dependent on patents, know-how, and proprietary technology that are licensed from others, particularly MD Anderson, Precigen and the National Cancer Institute, or the NCI, as well as the contributions by MD Anderson under our research and development agreements. Any termination of these licenses or research and development agreements could result in the loss of significant rights and could harm our ability to commercialize our product candidates. Disputes may also arise between us and these licensors regarding intellectual property subject to a license agreement, including those relating to:

- the scope of rights granted under the applicable license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes, and the technology and processes of PGEN, MD Anderson, the NCI and our other licensors, infringe intellectual property of the licensor that is not subject to the applicable license agreement;
- our right to sublicense patent and other rights to third parties pursuant to our relationships with our licensors and partners;

- whether we are complying with our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our potential products under the MD Anderson License, the License Agreement with PGEN and our patent license agreement with the NCI;
- whether or not our partners are complying with all of their obligations to support our programs under licenses and research and development agreements; and
- the allocation of ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and by us.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements, particularly with MD Anderson, PGEN and the NCI, on acceptable terms, we may be unable to successfully develop and commercialize the affected potential products. We are generally also subject to all of the same risks with respect to protection of intellectual property that we license as we are for intellectual property that we own. If we or our licensors fail to adequately protect this intellectual property, our ability to commercialize potential products under our applicable licenses could suffer. There is a substantial amount of litigation involving patents and other intellectual property rights in the biotechnology and pharmaceutical industries, as well as administrative proceedings for challenging patents, including interference, derivation, and reexamination proceedings before the United States Patent and Trademark Office, or USPTO, or oppositions and other comparable proceedings in foreign jurisdictions. Recently, due to changes in U.S. law referred to as patent reform, new procedures including inter partes review and post-grant review have been implemented, which adds uncertainty to the possibility of challenge to our or our licensors' patents in the future.

We may not be able to retain the rights licensed to us and PGEN by MD Anderson to technologies relating to CAR T-cell therapies and other related technologies.

Under the MD Anderson License, we, together with PGEN, received an exclusive, worldwide license to certain technologies owned and licensed by MD Anderson including technologies relating to novel CAR+ T cell and TCR cell therapies arising from the laboratory of Laurence Cooper, M.D., Ph.D., who was then at MD Anderson, as well as either co-exclusive or non-exclusive licenses under certain related technologies. When combined with PGEN's technology suite and Ziopharm's clinically tested RTS® interleukin 12 modules, the resulting proprietary methods and technologies may help realize the promise of genetically modified CAR+ T cells and TCR therapies by controlling cell expansion and activation in the body, minimizing off-target and unwanted on-target effects and toxicity while maximizing therapeutic efficacy. The term of the MD Anderson License expires on the last to occur of (a) the expiration of all patents licensed thereunder, or (b) the twentieth anniversary of the date of the MD Anderson License; provided, however, that following the expiration of the term, we and PGEN shall then have a fully-paid up, royalty free, perpetual, irrevocable and sublicensable license to use the licensed intellectual property thereunder.

After 10 years from the date of the MD Anderson License and subject to a 90-day cure period, MD Anderson will have the right to convert the MD Anderson License into a non-exclusive license if we and PGEN are not using commercially reasonable efforts to commercialize the licensed intellectual property on a case-by-case basis. After five years from the date of the MD Anderson License and subject to a 180-day cure period, MD Anderson will have the right to terminate the MD Anderson License with respect to specific technology(ies) funded by the government or subject to a third-party contract if we and PGEN are not meeting the diligence requirements in such funding agreement or contract, as applicable. MD Anderson may also terminate the agreement with written notice upon material breach by us or PGEN, if such breach has not been cured within 60 days of receiving such notice. In addition, the MD Anderson License will terminate upon the occurrence of certain insolvency events for both us or PGEN and may be terminated by the mutual written agreement of us, PGEN and MD Anderson.

There can be no assurance that we will be able to successfully perform under the MD Anderson License and if the MD Anderson License is terminated it may prevent us from achieving our business objectives.

Clinical trials are very expensive, time-consuming, difficult to design, initiate and implement.

Human clinical trials are very expensive and difficult to design, initiate and implement, in part because they are subject to rigorous regulatory requirements. The clinical trial start-up and process itself is also time-consuming and results are inherently uncertain. We estimate that clinical trials of our product candidates will take at least several years to complete. Furthermore, failure can occur at any stage of the trials, and we could encounter problems that cause us to delay the start of, abandon or repeat clinical trials. The commencement and completion of clinical trials may be delayed by several factors, including:

- Additional nonclinical data requests by regulatory agencies;
- Unforeseen safety issues;
- Determination of dosing issues;

- Lack of effectiveness during clinical trials;
- Slower than expected rates of patient recruitment and enrollment;
- Inability to monitor patients adequately during or after treatment;
- Inability or unwillingness of medical investigators to follow our clinical protocols; and
- Regulatory determinations to temporarily or permanently cease enrollment for other reasons not related to patient safety.

Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful. In addition, we or the FDA may suspend our clinical trials at any time if it appears that we are exposing participants to unacceptable health risks or if the FDA finds deficiencies in our IND submission or in the conduct of these trials.

See also "Risks Related to the Clinical Testing, Regulatory Approval and Manufacturing of our Product Candidates— *Our product candidates are in various stages of clinical trials, which are very expensive and time-consuming. We cannot be certain when we will be able to submit a BLA, to the FDA and any failure or delay in completing clinical trials for our product candidates could harm our business."*

We may not be able to commercialize any products, generate significant revenues, or attain profitability.

To date, none of our product candidates have been approved for commercial sale in any country. The process to develop, obtain regulatory approval for, and commercialize potential product candidates is long, complex, and costly. Unless and until we receive approval from the FDA and/or other foreign regulatory authorities for our product candidates, we cannot sell our products and will not have product revenues. Even if we obtain regulatory approval for one or more of our product candidates, if we are unable to successfully commercialize our products, we may not be able to generate sufficient revenues to achieve or maintain profitability, or to continue our business without raising significant additional capital, which may not be available. Our failure to achieve or maintain profitability could negatively impact the trading price of our common stock.

We have a limited operating history upon which to base an investment decision.

We have not demonstrated an ability to perform the functions necessary for the successful commercialization of any product candidates. The successful commercialization of any product candidates will require us to perform a variety of functions, including:

- Continuing to undertake preclinical development and clinical trials;
- Participating in regulatory approval processes;
- Formulating and manufacturing products; and
- Conducting sales and marketing activities.

Our operations have been limited to organizing and staffing our company, acquiring, developing and securing our proprietary product candidates, and undertaking preclinical and clinical trials of our product candidates. These operations provide a limited basis for you to assess our ability to commercialize our product candidates and the advisability of investing in our securities.

We may not be successful in establishing development and commercialization collaborations, which failure could adversely affect, and potentially prohibit, our ability to develop our product candidates.

Developing biopharmaceutical products and complementary technologies, conducting clinical trials, obtaining marketing approval, establishing manufacturing capabilities and marketing approved products is expensive and, therefore, we anticipate exploring collaborations with third parties that have alternative technologies, more resources and more experience than we do. In situations where we enter into a development and commercial collaboration arrangement for a product candidate or complementary technology, we may also seek to establish additional collaborations for development and commercialization in territories outside of those addressed by the first collaboration arrangement for such product candidate or technology. There are a limited number of potential partners, and we expect to face competition in seeking appropriate partners. If we are unable to enter into any development and commercial collaborations and/or sales and marketing arrangements on reasonable and acceptable terms, if at all, we may be unable to successfully develop and seek regulatory approval for our product candidates and/or effectively market and sell future approved products, if any, in some or all of the territories outside of the United States where it may otherwise be valuable to do so.

We may not be able to successfully manage our growth.

In the future, if we are able to advance our product candidates to the point of, and thereafter through, clinical trials, we will need to expand our development, regulatory, manufacturing, marketing and sales capabilities or contract with third parties to provide for these capabilities. Our future financial performance and our ability to commercialize our product candidates and to compete effectively will depend, in part, on our ability to manage any future growth effectively. To manage this growth, we must expand our facilities, augment our operational, financial and management systems, and hire and train additional qualified personnel. If we are unable to manage our growth effectively, our business may be harmed.

Our business will subject us to the risk of liability claims associated with the use of hazardous materials and chemicals.

Our contract research and development activities may involve the controlled use of hazardous materials and chemicals. Although we believe that our safety procedures for using, storing, handling and disposing of these materials comply with federal, state and local laws and regulations, we cannot completely eliminate the risk of accidental injury or contamination from these materials. In the event of such an accident, we could be held liable for any resulting damages and any liability could have a materially adverse effect on our business, financial condition, and results of operations. In addition, the federal, state and local laws and regulations governing the use, manufacture, storage, handling and disposal of hazardous or radioactive materials and waste products may require our contractors to incur substantial compliance costs that could materially adversely affect our business, financial condition, and results of operations.

****We will need to attract, recruit and hire key executives and we will continue to rely on key scientific and medical advisors, and their knowledge of our business and technical expertise would be difficult to replace.***

In 2021, we experienced transitions in our senior management. In February 2021, our Board appointed Heidi Hagen, formerly our lead independent director, as our interim Chief Executive Officer and principal executive officer to replace Dr. Laurence J.N. Cooper. On February 17, 2021, we appointed Timothy Cunningham as our interim Chief Financial Officer and principal financial officer. In August 2021, our Board appointed Kevin S. Boyle, Sr. Chief Executive Officer and a member of the Board, and Ms. Hagen returned to her Board director position. Management transition is often difficult and inherently causes some loss of institutional knowledge and creates potential uncertainty in strategy execution.

In addition, we may not be able to attract or retain qualified management and commercial, scientific and clinical personnel due to the intense competition for qualified personnel among biotechnology, pharmaceutical and other businesses. If we are not able to attract and retain necessary personnel to accomplish our business objectives, we may experience constraints that will significantly impede the achievement of our development objectives, our ability to raise additional capital and our ability to implement our business strategy.

We are highly dependent on our principal scientific, regulatory, and medical advisors. The loss of any of our key personnel, could result in delays in product development, loss of key personnel or partnerships, and diversion of management resources, which could adversely affect our operating results. We do not carry “key person” life insurance policies on any of our officers or key employees.

****Restructuring activities could disrupt our business and effect our results of operations. In addition, we may not achieve anticipated benefits and saving from such restructuring activities***.

In September 2021, we announced a restructuring enabling us to focus on and enhance our TCR program. Approximately 60 positions have been eliminated, representing more than 50% of our workforce. As a result of our restructuring and cash management efforts, we anticipate cash resources will be sufficient to fund operations into the second quarter of 2023. We estimate we will incur total expenses relating to the restructuring of approximately $3.7 million for severance and termination costs. The restructuring resulted in the loss of longer-term employees, the loss of institutional knowledge and expertise, and the reallocation of and combination of certain roles and responsibilities across the organization, all of which could adversely affect our operations. Further, the restructuring and possible additional cost containment measures may yield unintended consequences, such as attrition beyond our intended workforce reduction and reduced employee morale. In addition, we may not achieve anticipated benefits from the restructuring. Due to our limited resources, we may not be able to effectively manage our operations or retain qualified personnel, which may result in weaknesses to our infrastructure and operations, risks that we may be unable to comply with legal and regulatory requirements, and loss of employees and reduced productivity among remaining employees. For example, the workforce reduction may negatively impact our clinical and regulatory functions, which would have a negative impact on our ability to successfully develop and, ultimately, commercialize our product candidates. If our management is unable to successfully manage this transition and restructuring activities, our expenses may be more than expected and we may be unable to implement our business strategy. As a result, our future financial performance and our ability to commercialize our product candidates successfully would be negatively affected.

If we are unable to hire additional qualified personnel, our ability to grow our business may be harmed.

We will need to hire additional qualified personnel with expertise in preclinical and clinical research and testing, government regulation, formulation and manufacturing, and eventually, sales and marketing. We compete for qualified individuals with numerous biopharmaceutical companies, universities, and other research institutions. Competition for such individuals is intense and we cannot be certain that our search for such personnel will be successful. Attracting and retaining qualified personnel will be critical to our success. If we are unable to hire additional qualified personnel, our ability to grow our business may be harmed.

We may incur substantial liabilities and may be required to limit commercialization of our products in response to product liability lawsuits.

The testing and marketing of medical products entail an inherent risk of product liability. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our products, if approved. Even a successful defense would require significant financial and management resources. Regardless of the merit or eventual outcome, liability claims may result in:

- Decreased demand for our product candidates;
- Injury to our reputation;
- Withdrawal of clinical trial participants;
- Withdrawal of prior governmental approvals;
- Costs of related litigation;
- Substantial monetary awards to patients;
- Product recalls;
- Loss of revenue; and
- The inability to commercialize our product candidates.

We currently carry clinical trial insurance and product liability insurance. However, an inability to renew our policies or to obtain sufficient insurance at an acceptable cost could prevent or inhibit the commercialization of pharmaceutical products that we develop, alone or with collaborators.

Our business and operations would suffer in the event of system failures.

Despite the implementation of security measures, our internal computer systems and those of our current and future contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. While we are not aware of any such material system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations. For example, the loss of clinical trial data from completed or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Likewise, we rely on third parties to manufacture our product candidates and conduct clinical trials, and similar events relating to their computer systems could also have a material adverse effect on our business. 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, we could incur liability and the further development and commercialization of our product candidates could be delayed.

RISKS RELATED TO THE CLINICAL TESTING, REGULATORY APPROVAL AND MANUFACTURING OF OUR PRODUCT CANDIDATES

If we are unable to obtain the necessary U.S. or worldwide regulatory approvals to commercialize any product candidate, our business will suffer.

We may not be able to obtain the approvals necessary to commercialize our product candidates, or any product candidate that we may acquire or develop in the future for commercial sale. We will need FDA approval to commercialize our product candidates in the United States and approvals from regulatory authorities in foreign jurisdictions equivalent to the FDA to commercialize our product candidates in those jurisdictions. In order to obtain FDA approval of any product candidate, we must submit to the FDA a Biologics License Application, or BLA, demonstrating that the product candidate is safe for humans and effective for its intended use. This demonstration requires significant research and animal tests, which are referred to as preclinical studies, as well as human tests, which are referred to as clinical trials. Satisfaction of the FDA's regulatory requirements typically takes many years, depending upon the type, complexity, and novelty of the product candidate, and will require substantial resources for research, development, and testing.

We cannot predict whether our research, development, and clinical approaches will result in products that the FDA will consider safe for humans and effective for their intended uses. The FDA has substantial discretion in the approval process and may require us to conduct additional preclinical and clinical testing or to perform post-marketing studies. The approval process may also be delayed by changes in government regulation, future legislation, or administrative action or changes in FDA policy that occur prior to or during our regulatory review. Delays in obtaining regulatory approvals may:

- Delay commercialization of, and our ability to derive product revenues from, our product candidates;
- Impose costly procedures on us; and
- Diminish any competitive advantages that we may otherwise enjoy.

Even if we comply with all FDA requests, the FDA may ultimately reject one or more of our BLAs. We cannot be sure that we will ever obtain regulatory approval for any of our product candidates. Failure to obtain FDA approval for our product candidates will severely undermine our business by leaving us without a saleable product, and therefore without any potential revenue source, until another product candidate can be developed. There is no guarantee that we will ever be able to develop or acquire another product candidate or that we will obtain FDA approval if we are able to do so.

In foreign jurisdictions, we similarly must receive approval from applicable regulatory authorities before we can commercialize any of our product candidates. Foreign regulatory approval processes generally include all of the risks associated with the FDA approval procedures described above.

Our product candidates are in various stages of clinical trials, which are very expensive and time-consuming. We cannot be certain when we will be able to submit a BLA to the FDA and any failure or delay in completing clinical trials for our product candidates could harm our business.

Our product candidates are in various stages of development and require extensive clinical testing. Notwithstanding our current clinical trial plans for each of our existing product candidates, we may not be able to commence additional trials or see results from these trials within our anticipated timelines. As they enter later stages of development, our product candidates generally will become subject to more stringent regulatory requirements, including the FDA's requirements for chemistry, manufacturing and controls for product candidates entering Phase 3 clinical trials. There is no guarantee the FDA will allow us to commence Phase 3 clinical trials for product candidates studied in early clinical trials.

If the FDA does not allow our product candidates to enter later stage clinical trials, or requires changes to the formulation or manufacture of our product candidates before commencing Phase 3 clinical trials, our ability to further develop, or seek approval for, such product candidates may be materially impacted. As such, we cannot predict with any certainty if or when we might submit a BLA for regulatory approval of our product candidates or whether such a BLA will be accepted. Because we do not anticipate generating revenues unless and until we submit one or more BLAs and thereafter obtain requisite FDA approvals, the timing of our BLA submissions and FDA determinations regarding approval thereof, will directly affect if and when we are able to generate revenues.

Our product candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial profile of an approved label, or result in significant negative consequences following any potential marketing approval.

As with many pharmaceutical and biological products, treatment with our product candidates may produce undesirable side effects or adverse reactions or events, including potential adverse side effects related to cytokine release. If our product candidates or similar products or product candidates under development by third parties demonstrate unacceptable AEs, we may be required to halt or delay further clinical development of our product candidates. The FDA or other foreign regulatory authorities could order us to cease further development of or deny approval of our product candidates for any or all targeted indications.

The product-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. In addition, these side effects may not be appropriately or timely recognized or managed by the treating medical staff, particularly outside of the institutions that collaborate with us, as toxicities resulting from our novel technologies may not be normally encountered in the general patient population and by medical personnel. We expect to have to train medical personnel using our product candidates to understand their side effect profiles, both for our planned clinical trials and upon any commercialization of any product candidates. Inadequate training in recognizing or managing the potential side effects of our product candidates could result in adverse effects to patients, including death.

Additionally, if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects caused by such products, including during any long-term follow-up observation period recommended or required for patients who receive treatment using our products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw approvals of such product;
- regulatory authorities may require additional warnings on the label;
- we may be required to create a risk evaluation and mitigation strategy plan, which could include a medication guide outlining the risks of such side effects for distribution to patients, a communication plan for healthcare providers, and/or other elements to assure safe use;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of the foregoing could prevent us from achieving or maintaining market acceptance of the particular product candidate, if approved. Furthermore, any of these occurrences may harm our business, financial condition and prospects significantly.

Our cell-based therapy immuno-oncology products rely on the availability of reagents, specialized equipment, and other specialty materials and infrastructure, which may not be available to us on acceptable terms or at all. For some of these reagents, equipment, and materials, we rely or may rely on sole source vendors or a limited number of vendors, which could impair our ability to manufacture and supply our products.

Manufacturing our product candidates will require many reagents, which are substances used in our manufacturing processes to bring about chemical or biological reactions, and other specialty materials and equipment, some of which are manufactured or supplied by small companies with limited resources and experience to support commercial biologics production. We currently depend on a limited number of vendors for certain materials and equipment used in the manufacture of our product candidates. Some of these suppliers may not have the capacity to support commercial products manufactured under current good manufacturing practices by biopharmaceutical firms or may otherwise be ill-equipped to support our needs. We also do not have supply contracts with many of these suppliers and may not be able to obtain supply contracts with them on acceptable terms or at all. Accordingly, we may experience delays in receiving key materials and equipment to support clinical or commercial manufacturing.

For some of these reagents, equipment, infrastructure, and materials, we rely and may in the future rely on sole source vendors or a limited number of vendors. An inability to continue to source product from any of these suppliers, which could be due to regulatory actions or requirements affecting the supplier, adverse financial or other strategic developments experienced by a supplier, labor disputes or shortages, unexpected demands, or quality issues, could adversely affect our ability to satisfy demand for our product candidates, which could adversely and materially affect our product sales and operating results or our ability to conduct clinical trials, either of which could significantly harm our business.

In addition, some of the reagents and products used by us, including in our clinical trials, may be stored at a single vendor. The loss of materials located at a single vendor, or the failure of such a vendor to manufacture clinical product in accordance with our specifications, would impact our ability to conduct ongoing or planned clinical trials and continue the development of our products. Further, manufacturing replacement material may be expensive and require a significant amount of time, which may further impact our clinical programs.

As we continue to develop and scale our manufacturing process, we expect that we will need to obtain rights to and supplies of certain materials and equipment to be used as part of that process. We may not be able to obtain rights to such materials on commercially reasonable terms, or at all, and if we are unable to alter our process in a commercially viable manner to avoid the use of such materials or find a suitable substitute, it would have a material adverse effect on our business. Even if we are able to alter our process so as to use other materials or equipment, such a change may lead to a delay in our clinical development and/or commercialization plans. If such a change occurs for product candidate that is already in clinical testing, the change may require us to perform both ex vivo comparability studies and to collect additional data from patients prior to undertaking more advanced clinical trials.

The results of our clinical trials may not support our product candidate claims.

Even if our clinical trials are completed as planned, we cannot be certain that their results will support approval of our product candidates. The FDA normally expects two randomized, well-controlled Phase 3 pivotal trials in support of approval of a BLA. Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be certain that the results of later clinical trials will replicate the results of prior clinical trials and preclinical testing. The clinical trial process may fail to demonstrate that our product candidates are safe for humans and effective for the indicated uses. This failure would cause us to abandon a product candidate and may delay development of other product candidates. Any delay in, or termination

of, our clinical trials will delay the submission of our BLAs with the FDA and, ultimately, our ability to commercialize our product candidates and generate product revenues. In addition, our clinical trials involve small patient populations. Because of the small sample size, the results of these clinical trials may not be indicative of future results.

Our immuno-oncology product candidates are based on a novel technology, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. Currently, a limited number of cell therapy products have been approved in the United States and Europe.

We are currently focused on developing products in immuno-oncology that employ novel gene expression, control and cell technologies to deliver safe, effective and scalable cell- and viral-based therapies for the treatment of cancer. Due to the novelty of this technology, there can be no assurance that any development problems we experience in the future related to our immuno-oncology platforms will not cause significant delays or unanticipated costs, or that such development problems can be solved. We may also experience unanticipated problems or delays in expanding our manufacturing capacity or transferring our manufacturing process to commercial partners, which may prevent us from completing our clinical trials or commercializing our immuno-oncology product candidates on a timely or profitable basis, if at all.

In addition, the clinical study requirements of the FDA, the EMA and other regulatory agencies and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty and intended use and market of the potential products. The regulatory approval process for novel product candidates such as ours can be more expensive and take longer than for other, better known or extensively studied pharmaceutical or other product candidates. These factors make it difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in either the United States or Europe. Approvals by the EMA may not be indicative of what the FDA may require for approval.

Regulatory requirements governing cell therapy products have changed frequently and may continue to change in the future. For example, the FDA has established the Office of Tissue and Advanced Therapies within its Center for Biologics Evaluation and Research, or CBER, to consolidate the review of gene therapy and related products, and the Cellular, Tissue and Gene Therapies Advisory Committee to advise CBER on its review. Also, before a clinical trial can begin at an institution, that institution's institutional review board, or IRB, and its Institutional Biosafety Committee will have to review the proposed clinical trial to assess the safety of the trial. In addition, adverse developments in clinical trials of gene therapy products conducted by others may cause the FDA or other regulatory bodies to change the requirements for approval of any of our product candidates.

These regulatory review committees and advisory groups and the new guidelines they promulgate may lengthen the regulatory review process, require us to perform additional studies, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of these treatment candidates or lead to significant post-approval limitations or restrictions. As we advance our immuno-oncology product candidates, we will be required to consult with these regulatory and advisory groups, and comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of our product candidates. These additional processes may result in a review and approval process that is longer than we otherwise would have expected for oncology product candidates. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a potential product to market could decrease our ability to generate sufficient product revenue to maintain our business.

Because we are dependent upon clinical research institutions and other contractors for clinical testing and for research and development activities, the results of our clinical trials and such research activities are, to a certain extent, beyond our control.

We materially rely upon independent investigators and collaborators, such as universities and medical institutions, to conduct our preclinical and clinical trials under agreements with us. These collaborators are not our employees and we cannot control the amount or timing of resources that they devote to our programs. These investigators may not assign as great a priority to our programs or pursue them as diligently as we would if we were undertaking such programs ourselves. If outside collaborators fail to devote sufficient time and resources to our product development programs, or if their performance is substandard, the approval of our FDA applications, if any, and our introduction of new products, if any, will be delayed. These institutions may also have, or implement in the future, policies and procedures that limit their ability to advance our programs. For instance, our partners may take measures in response to the COVID-19 pandemic, that may impact enrollment in our clinical trials. These collaborators may also have relationships with other commercial entities, some of whom may compete with us. If our collaborators assist our competitors to our detriment, our competitive position would be harmed.

Our reliance on third parties to formulate and manufacture our product candidates exposes us to a number of risks that may delay the development, regulatory approval and commercialization of our products or result in higher product costs.

We have limited experience in biopharmaceutical manufacturing. We currently lack the internal resources and expertise to formulate or manufacture our own product candidates and, therefore, contract the manufacture of our product candidates with third parties. We intend to contract with one or more manufacturers to manufacture, supply, store, and distribute supplies for our clinical trials. If a product candidate we develop or acquire in the future receives FDA approval, we may rely on one or more third-party contractors to manufacture our products. Our anticipated future reliance on a limited number of third-party manufacturers exposes us to the following risks:

- We may be unable to identify manufacturers on acceptable terms or at all because the number of potential manufacturers is limited and the FDA must approve any replacement contractor. This approval would require new testing and compliance inspections. In addition, a new manufacturer would have to be educated in, or develop substantially equivalent processes for, production of our products after receipt of FDA approval, if any.
- Our third-party manufacturers might be unable to formulate and manufacture our products in the volume and of the quality required to meet our clinical needs and commercial needs, if any.
- Resources at 3rd party manufacturers should be called out here. For example, competition for these scare resources, skills required, and on going training/certifications of employees.
- Our future contract manufacturers may not perform as agreed or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store, and distribute our products.
- Biopharmaceutical manufacturers are subject to ongoing periodic unannounced inspection by the FDA, the Drug Enforcement Administration and corresponding state and foreign agencies to ensure strict compliance with current good manufacturing practices, or cGMP, and other government regulations and corresponding foreign standards. We do not have control over third-party manufacturers' compliance with these regulations and standards.
- If any third-party manufacturer makes improvements in the manufacturing process for our products, we may not own, or may have to share, the intellectual property rights to the innovation.
- Further third-party manufacturers may encounter difficulties in achieving volume production, quality control, and quality assurance and also may experience shortages in qualified personnel and obtaining materials for our product candidates, including delays or shortages due to limited supply or capacity of production facilities as a result of the recent COVID-19 pandemic.
- Our third-party manufacturers may not be able to comply with cGMP regulations or similar regulatory requirements outside the United States. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including clinical holds, fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our products.

Each of these risks could delay our clinical trials, the approval, if any, of our product candidates by the FDA or the commercialization of our product candidates or result in higher costs or deprive us of potential product revenues.

Any product candidate for which we obtain marketing approval could be subject to post-marketing 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 products, when and if any of them are approved.

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, among other things, submissions of safety and other post-marketing information and reports, registration and listing requirements, cGMP requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, 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, including the requirement to implement a risk evaluation and mitigation strategy, or REMS, which could include requirements for a restricted distribution system. If any of our product candidates receives marketing approval, the accompanying label may limit the approved uses, which could limit sales of the product.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of our approved products. The FDA closely regulates the post-approval marketing and promotion of products to ensure that

they are marketed only for the approved indications and in accordance with the provisions of the approved labeling. However, companies may share truthful and not misleading information that is otherwise consistent with the labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we market our products outside of their approved indications, we may be subject to enforcement action for off-label marketing. Violations of the Federal Food, Drug and Cosmetic Act relating to the promotion of prescription drugs may lead to investigations alleging violations of federal and state health care fraud and abuse laws, as well as state consumer protection laws.

In addition, later discovery of previously unknown AEs or other problems with our products, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

- Litigation involving patients taking our product;
- Restrictions on such products, manufacturers or manufacturing processes;
- Restrictions on the labeling or marketing of a product;
- Restrictions on product distribution or use;
- Requirements to conduct post-marketing studies or clinical trials;
- Warning letters;
- Withdrawal of the products from the market;
- Refusal to approve pending applications or supplements to approved applications that we submit;
- Recall of products;
- Fines, restitution or disgorgement of profits or revenues;
- Suspension or withdrawal of marketing approvals;
- Damage to relationships with existing and potential collaborators;
- Unfavorable press coverage and damage to our reputation;
- Refusal to permit the import or export of our products;
- Product seizure; or
- Injunctions or the imposition of civil or criminal penalties.

Noncompliance with requirements regarding safety monitoring or pharmacovigilance can also result in significant financial penalties. Similarly, failure to comply with U.S. and foreign regulatory requirements regarding the development of products for pediatric populations and the protection of personal health information can also lead to significant penalties and sanctions.

RISKS RELATED TO OUR ABILITY TO COMMERCIALIZE OUR PRODUCT CANDIDATES

If we are unable either to create sales, marketing and distribution capabilities or enter into agreements with third parties to perform these functions, we will be unable to commercialize our product candidates successfully.

We currently have no marketing, sales, or distribution capabilities. If, and when we become reasonably certain that we will be able to commercialize our current or future product candidates, we anticipate allocating resources to the marketing, sales and distribution of our proposed products in North America and in certain other countries; however, we cannot assure that we will be able to market, sell, and distribute our products successfully. Our future success also may depend, in part, on our ability to enter into and maintain collaborative relationships for such capabilities and to encourage the collaborator's strategic interest in the products under development, and such collaborator's ability to successfully market and sell any such products. Although we intend to pursue certain collaborative arrangements regarding the sale and marketing of certain of our product candidates, there are no assurances that we will be able to establish or maintain collaborative arrangements or, if we are able to do so, whether we would be able to conduct our own sales efforts. There can also be no assurance that we will be able to establish or maintain relationships with third-party collaborators or develop in-house sales and distribution capabilities. To the extent that we depend on third parties for marketing and distribution, any revenues we receive will depend upon the efforts of such third parties, and there can be no assurance that such efforts will be successful. In addition, there can also be no assurance that we will be able to market and sell our product candidates in the United States or overseas.

If we are not able to partner with a third party and are not successful in recruiting sales and marketing personnel or in building a sales and marketing infrastructure, we will have difficulty commercializing our product candidates, which would harm our business. If we

rely on pharmaceutical or biotechnology companies with established distribution systems to market our products, we will need to establish and maintain partnership arrangements, and we may not be able to enter into these arrangements on acceptable terms or at all. To the extent that we enter into co-promotion or other arrangements, any revenues we receive will depend upon the efforts of third parties that may not be successful and that will be only partially in our control.

If we cannot compete successfully for market share against other biopharmaceutical companies, we may not achieve sufficient product revenues and our business will suffer.

The market for our product candidates is characterized by intense competition and rapid technological advances. If a product candidate receives FDA approval, it will compete with a number of existing and future products and therapies developed, manufactured and marketed by others. Existing or future competing products may provide greater therapeutic convenience or clinical or other benefits for a specific indication than our products or may offer comparable performance at a lower cost. If our products fail to capture and maintain market share, we may not achieve sufficient product revenues and our business will suffer.

We will compete against fully integrated pharmaceutical companies and smaller companies that are collaborating with larger pharmaceutical companies, academic institutions, government agencies and other public and private research organizations. Many of these competitors have products already approved or in development. In addition, many of these competitors, either alone or together with their collaborative partners, operate larger research and development programs or have substantially greater financial resources than we do, as well as significantly greater experience in:

- Developing drugs and biopharmaceuticals;
- Undertaking preclinical testing and human clinical trials;
- Obtaining FDA and other regulatory approvals of drugs and biopharmaceuticals;
- Formulating and manufacturing drugs and biopharmaceuticals; and
- Launching, marketing, and selling drugs and biopharmaceuticals.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. In addition, our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of generic products.

If physicians and patients do not accept and use our product candidates, our ability to generate revenue from sales of our products will be materially impaired.

Even if the FDA and/or foreign equivalents thereof approve our product candidates, physicians and patients may not accept and use them. Acceptance and use of our products will depend upon a number of factors including:

- Perceptions by members of the healthcare community, including physicians, about the safety and effectiveness of our products;
- Pharmacological benefit and cost-effectiveness of our products relative to competing products;
- Availability of coverage and adequate reimbursement for our products from government or other third-party payors;
- Effectiveness of marketing and distribution efforts by us and our licensees and distributors, if any; and
- The price at which we sell our products.

Because we expect sales of our current product candidates, if approved, to generate substantially all of our product revenues for the foreseeable future, the failure of a product to find market acceptance would harm our business and could require us to seek additional financing in order to fund the development of future product candidates.

Our ability to generate product revenues will be diminished if our products do not obtain coverage and adequate reimbursement from payors.

Our ability to commercialize our product candidates, if approved, alone or with collaborators, will depend in part on the extent to which coverage and reimbursement will be available from third-party payors, including government and health administration authorities, private health maintenance organizations and health insurers and other payors.

Patients who are prescribed medicine for the treatment of their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their prescription drugs. Sufficient coverage and adequate reimbursement from third-party payors are critical to new product acceptance. Coverage decisions may depend upon clinical and economic standards that disfavor new drug products when more established or lower cost therapeutic alternatives are already available or subsequently become available. It is difficult to predict the coverage and reimbursement decisions that will be made by third-party payors for novel gene and cell therapy products such as ours. Even if we obtain coverage for our product candidates, the resulting reimbursement payment rates might not be adequate or may require co-payments that patients find unacceptably high. Patients are unlikely to use our product candidates unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our product candidates.

In addition, the market for our product candidates for which we may receive regulatory approval will depend significantly on access to third-party payors' drug formularies or lists of medications for which third-party payors provide coverage and reimbursement, which might not include all of the FDA-approved drugs for a particular indication. The industry competition to be included in such formularies often leads to downward pricing pressures on pharmaceutical companies. Also, third-party payors may refuse to include a particular branded drug in their formularies or otherwise restrict patient access to a branded drug when a less costly generic equivalent or other alternative is available.

Third-party payors, whether foreign or domestic, or governmental or commercial, are developing increasingly sophisticated methods of controlling healthcare costs. In addition, in the United States, no uniform policy of coverage and reimbursement for drug products exists among third-party payors. Therefore, coverage and reimbursement for drug products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that requires us to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that approval will be obtained. If we are unable to obtain coverage of and adequate payment levels for our product candidates from third-party payors, physicians may limit how much or under what circumstances they will prescribe or administer our products and patients may decline to purchase them. This in turn could affect our ability to successfully commercialize our products and impact our profitability, results of operations, financial condition, and future success.

In addition, in many foreign countries, particularly the countries of the European Union, or EU, the pricing of prescription drugs is subject to government control. In some non-U.S. jurisdictions, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the EU provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. We may face competition for our product candidates from lower-priced products in foreign countries that have placed price controls on pharmaceutical products. In addition, there may be importation of foreign products that compete with our own products, which could negatively impact our profitability.

The market opportunities for our product candidates may be limited to those patients who are ineligible for or have failed prior treatments and may be small.

Cancer therapies are sometimes characterized as first line, second line, or third line, and the FDA often approves new therapies initially only for third line use. When cancer is detected early enough, first line therapy is sometimes adequate to cure the cancer or prolong life without a cure. Whenever first line therapy, usually chemotherapy, hormone therapy, surgery, or a combination of these, proves unsuccessful, second line therapy may be administered. Second line therapies often consist of more chemotherapy, radiation, antibody drugs, tumor targeted small molecules, or a combination of these. Third line therapies can include bone marrow transplantation, antibody and small molecule targeted therapies, more invasive forms of surgery, and new technologies. We expect to initially seek approval of our product candidates as a third line therapy for patients who have failed other approved treatments.

Subsequently, for those products that prove to be sufficiently beneficial, if any, we would expect to seek approval as a second line therapy and potentially as a first line therapy, but there is no guarantee that our product candidates, even if approved, would be approved for second line or first line therapy. In addition, we may have to conduct additional clinical trials prior to gaining approval for second line or first line therapy.

Our projections of both the number of people who have the cancers we are targeting, as well as the subset of people with these cancers in a position to receive therapy and who have the potential to benefit from treatment with our product candidates, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, or market research and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these cancers. The number of patients may turn out to be lower than expected. Additionally, the potentially addressable patient population for our product candidates may be limited or may not be amenable to treatment with our product candidates.

Our market opportunities may also be limited by competitor treatments that may enter the market. See also "Risks Related to Our Ability to Commercialize Our Product Candidates—*If we cannot compete successfully for market share against other biopharmaceutical companies, we may not achieve sufficient product revenues and our business will suffer*."

Healthcare legislative reform measures may have a material adverse effect on our business and results of operations.

In both the United States and certain foreign jurisdictions, there have been a number of legislative and regulatory enactments in recent years that change the healthcare system in ways that could impact our future ability to sell our product candidates profitably.

Furthermore, there have been and continue to be a number of initiatives at the federal and state level that seek to reduce healthcare costs. Most significantly, in March 2010, President Obama signed into law the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively the ACA, which included measures that have significantly changed the way healthcare is financed by both governmental and private insurers. Among the provisions of the ACA of importance to the pharmaceutical industry are the following:

- Created an annual, nondeductible fee on any entity that manufactures or imports certain branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs;
- Increased the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13% of the average manufacturer price for most branded and generic drugs, respectively;
- Created a new Medicare Part D coverage gap discount program, in which manufacturers must now agree to offer 70% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- Extended manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- Created new methodologies by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, and for drugs that are line extensions;
- Expanded eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals with income at or below 133% of the Federal Poverty Level, thereby potentially increasing both the volume of sales and manufacturers' Medicaid rebate liability;
- Expanded the entities eligible for discounts under the Public Health Service pharmaceutical pricing program;
- Created a new requirement to annually report drug samples that certain manufacturers and authorized distributors provide to physicians;
- Expanded healthcare fraud and abuse laws, including the False Claims Act and the federal Anti-Kickback Statute, new government investigative powers, and enhanced penalties for noncompliance;
- Created a licensure framework for follow-on biologic products;
- Created new requirements under the federal Physician Payments Sunshine Act for certain drug manufacturers to annually report information related to payments and other transfers of value made to physicians, as defined by such law, and teaching hospitals as well as ownership or investment interests held by physicians and their immediate family members;
- Created a Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research; and
- Established a Center for Medicare & Medicaid Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

There have been executive, legal and political challenges to certain aspects of the ACA. For example, President Trump signed several executive orders and other directives designed to delay, circumvent, or loosen certain requirements mandated by the ACA. Concurrently, Congress considered legislation to repeal or repeal and replace all or part of the ACA. While Congress has not passed comprehensive repeal legislation, several bills affecting the implementation of certain taxes under the ACA have been signed into law. In December 2017, Congress repealed the tax penalty, effective January 1, 2019, for an individual's failure to maintain ACA-mandated health insurance as part of the Tax Cuts and Jobs Act of 2017, or Tax Act. On June 17, 2021, the U.S. Supreme Court dismissed a challenge on procedural grounds that argued that ACA is unconstitutional in its entirety because the "individual mandate" was repealed by Congress. Thus, the ACA will remain in effect in its current form. Further, prior to the U.S. Supreme Court ruling on

January 28, 2021, President Biden issued an executive order that initiated a special enrollment period for purposes of obtaining health care coverage through the ACA marketplace, which began on February 21, 2021 and remained open through August 15, 2021. The executive order also instructed certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the ACA. It is possible that the ACA will be subject to judicial or Congressional challenges in the future. It is unclear how any such challenges and the healthcare reform measures of the Biden administration will impact ACA and our business. The ultimate content, timing or effect of any healthcare reform measures on the U.S. healthcare industry is unclear.

Further, there has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. As a result, there have been several U.S. Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. At the federal level, the Trump administration used several means to propose or implement drug pricing reform, including through federal budget proposals, executive orders and policy initiatives. For example, on July 24, 2020 and September 13, 2020, the Trump administration announced several executive orders related to prescription drug pricing that attempt to implement several of the administration's proposals.

The FDA also released a final rule, effective November 30, 2020, implementing a portion of the importation executive order providing guidance for states to build and submit importation plans for drugs from Canada. Further, on November 20, 2020, the U.S. Department of Health and Human Services, or 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 implementation of the rule has been delayed by the Biden administration from January 1, 2022 to January 1, 2023 in response to ongoing litigation. The rule also creates a new safe harbor for price reductions reflected at the point-of-sale, as well as a new safe harbor for certain fixed fee arrangements between pharmacy benefit managers and manufacturers, the implementation of which have also been delayed until January, 2023. On November 20, 2020, CMS issued an interim final rule implementing President Trump's Most Favored Nation, or MFN, executive order, which would tie Medicare Part B payments for certain physician-administered drugs to the lowest price paid in other economically advanced countries, effective January 1, 2021. As a result of litigation, challenging the MFN model on August 10, 2021, CMS published a proposed rule that seeks to rescind the MFN model interim rule. In addition, on March 11, 2021 President Biden signed the American Rescue Plan Act of 2021 into law, which eliminates the statutory Medicaid drug rebate price cap, currently set at 100% of a drug's average manufacturer price for single source and innovator multiple source products, beginning on January 1, 2024. Further, in July 2021, the Biden Administration released an executive order that included multiple provisions aimed at prescription drugs. In response to Biden's executive order, on September 9, 2021, HHS released a Comprehensive Plan for Addressing High Drug Prices that outlines principles for drug price reform. The plan sets out a variety of potential legislative policies that Congress could pursue as well as potential administrative actions by HHS. No legislative or administrative actions have been finalized to implement these principles. In addition, Congress is considering drug pricing as part of the budget reconciliation process. Individual states in the United States also have increasingly passed legislation and implemented regulations designed to control pharmaceutical 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.

It is possible that additional governmental action is taken in response to the COVID-19 pandemic.

We expect that healthcare reform measures that may be adopted in the future may result in more rigorous coverage criteria and in additional downward pressure on the price that we may receive for any approved product. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability, or if we receive regulatory approval, commercialize our products.

If we fail to comply with federal and state healthcare laws, including fraud and abuse and health information privacy and security laws, we could face substantial penalties and our business, results of operations, financial condition and prospects could be adversely affected.

As a pharmaceutical company, even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third-party payors, certain federal and state healthcare laws and regulations pertaining to fraud and abuse and patients' rights are and will be applicable to our business. For example, we could be subject to healthcare fraud and abuse and patient privacy regulation by both the federal government and the states in which we conduct our business. The laws that may affect our ability to operate include, among others:

- The federal Anti-Kickback Statute, which regulates our business activities, including our clinical research and relationships with healthcare providers or other entities as well as our future marketing practices, educational programs,

pricing policies, and by prohibiting, among other things, soliciting, receiving, offering or paying remuneration, directly or indirectly, to induce, or in return for, either the referral of an individual or the purchase or recommendation of an item or service reimbursable under a federal healthcare program, such as the Medicare and Medicaid programs;

- Federal civil and criminal false claims laws, including the False Claims Act which permits a private individual acting as a "whistleblower" to bring actions on behalf of the federal government alleging violations of the False Claims Act, and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent;
- The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created new federal civil and criminal statutes that prohibit, among other things, executing 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 of 2009, or HITECH, and their implementing regulations, which imposes certain requirements relating to the privacy, security and transmission of individually identifiable health information on entities and individuals subject to the law including certain healthcare providers, health plans, and healthcare clearinghouses, known as covered entities, as well as individuals and entities that perform services for them which involve the use, or disclosure of, individually identifiable health information, known as business associates and their subcontractors that use, disclose or otherwise process individually identifiable health information;
- Requirements under the Physician Payments Sunshine Act to report annually to CMS certain financial arrangements with physicians, (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as defined in the ACA and its implementing regulations, including reporting any "transfer of value" made or distributed to teaching hospitals, and physicians, as defined by such law and reporting any ownership and investment interests held by physicians and their immediate family members and applicable group purchasing organizations during the preceding calendar year, which will be expanded beginning in 2022, to require applicable manufacturers to report such information regarding its payments and other transfers of value made to physician assistants, nurse practitioners, clinical nurse specialists, anesthesiologist assistants, certified registered nurse anesthetists and certified nurse midwives during the previous year; and
- State and foreign law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the industry's voluntary compliance guidelines and the applicable compliance guidance promulgated by the federal government that otherwise restricts certain payments that may be made to healthcare providers and entities; state laws that require drug manufacturers to report information related to payments and other transfer of value to physicians and other healthcare providers and entities; state laws that require the reporting of information related to drug pricing; state and local laws that require the registration of pharmaceutical sales representatives; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

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, including our consulting agreements with physicians, some of whom receive stock or stock options as compensation for their services, could be subject to challenge under one or more of such laws. In addition, recent health care reform legislation has further strengthened these laws. For example, the ACA, among other things, amended the intent requirement of the federal Anti-Kickback Statute and certain criminal healthcare fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. Moreover, the ACA provides that the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act.

To the extent that any of our product candidates is ultimately sold in a foreign country, we may be subject to similar foreign laws and regulations.

Efforts to ensure that our business arrangements comply with applicable healthcare laws involve substantial costs. It is possible that governmental and enforcement authorities will conclude that our business practices do not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, we may be subject to significant penalties, including administrative, civil and criminal penalties, damages, fines, exclusion from participation in United States federal or state health care programs, such as Medicare and Medicaid, disgorgement, imprisonment, integrity oversight and reporting

obligations, and the curtailment or restructuring of our operations any of which could materially adversely affect our ability to operate our business and our financial results. Although compliance programs can mitigate the risk of investigation and prosecution for violations of these laws, the risks cannot be entirely eliminated. Any action against us for violation of these laws, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business. Moreover, achieving and sustaining compliance with applicable federal and state privacy, security and fraud laws may prove costly.

Our immuno-oncology product candidates may face competition in the future from biosimilars and/or new technologies.

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, provides an abbreviated pathway for the approval of follow-on biological products. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product was approved under a BLA. However, there is a risk that the U.S. Congress could amend the BPCIA to significantly shorten this exclusivity period, potentially creating the opportunity for generic competition sooner than anticipated. Further, this data exclusivity does not prevent another company from developing a product that is highly similar to the original branded product, generating its own data and seeking approval. Data exclusivity only assures that another company cannot rely upon the data within the innovator's application to support the biosimilar product's approval.

We rely significantly on information technology and any failure, inadequacy, interruption or security lapse of that technology or loss of data, including any cyber security incidents, could compromise sensitive information related to our business, prevent us from accessing critical information or expose us to liability which could harm our ability to operate our business effectively and adversely affect our business and reputation.

In the ordinary course of our business, we, our contract research organizations and other third parties on which we rely collect and store sensitive data, including legally protected patient health information, personally identifiable information about our employees, intellectual property, and proprietary business information. We manage and maintain our applications and data utilizing on-site systems. These applications and data encompass a wide variety of business-critical information including research and development information and business and financial information.

The secure processing, storage, maintenance and transmission of this critical information is vital to our operations and business strategy. Because of the work-from-home policies we implemented due to COVID-19, information that is normally protected, including company confidential information, may be less secure. Additionally, despite the implementation of security measures, our internal computer systems and those of third parties with which we contract are vulnerable to damage from cyber-attacks, computer viruses, breaches, unauthorized access, interruptions due to employee error or malfeasance or other disruptions, or damage from natural disasters, terrorism, war and telecommunication and electrical failures. In addition, due to the COVID-19 pandemic, we have enabled many of our employees to work remotely, which may make us more vulnerable to cyberattacks. Any such event could compromise our networks and the information stored there could be accessed by unauthorized parties, publicly disclosed, lost or stolen. We have measures in place that are designed to detect and respond to such security incidents and breaches of privacy and security mandates. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, government enforcement actions and regulatory penalties. Unauthorized access, loss or dissemination could also disrupt our operations, including our ability to conduct research, development and commercialization activities, process and prepare company financial information, manage various general and administrative aspects of our business and damage our reputation, in addition to possibly requiring substantial expenditures of resources to remedy, any of which could adversely affect our business. The loss of clinical trial data could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. In addition, there can be no assurance that we will promptly detect any such disruption or security breach, if at all. 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, we could incur liability and our research, development and commercialization efforts could be delayed.

RISKS RELATED TO OUR INTELLECTUAL PROPERTY

If we or our licensors fail to adequately protect or enforce our intellectual property rights or secure rights to patents of others, the value of our intellectual property rights would diminish and our ability to successfully commercialize our products may be impaired.

Our success, competitive position, and future revenues will depend in part on our ability and the abilities of our licensors to obtain and maintain patent protection for our products, methods, processes and other technologies, to preserve confidential information, including trade secrets, to prevent third parties from infringing our proprietary rights, and to operate without infringing the proprietary rights of third parties.

To date, we have exclusive rights in the field of cancer treatment to certain U.S. and foreign intellectual property with respect to certain cell therapy and related technologies from MD Anderson and NCI, as well as with respect to the PGEN technology, including

Ad-RTS-IL-12 plus veledimex. Under the MD Anderson License, future filings and applications require the agreement of each of MD Anderson, PGEN and us, and MD Anderson has the right to control the preparation and filing of additional patent applications unless the parties agree that we or PGEN may prosecute the application directly. Although under the agreement MD Anderson has agreed to review and incorporate any reasonable comments that we or PGEN may have regarding licensed patents and patent applications, we cannot guarantee that our comments will be solicited or followed. Under the patent license agreement with the NCI for certain TCRs, the NCI is responsible for the preparation, filing, prosecution, and maintenance of patent applications or patents licensed to us. Although under the agreement, the NCI is required to consult with us in the preparation, filing, prosecution, and maintenance of all patent applications or patents licensed to us, we cannot guarantee that our comments will be solicited or followed. Under our License Agreement with PGEN, PGEN has the right, but not the obligation, to prepare, file, prosecute, and maintain the patents and patent applications licensed to us and shall bear any related costs incurred by it in regard to those actions. PGEN is required to consult with us and keep us reasonably informed of the status of the patents and patent applications licensed to us, and to confer with us prior to submitting any related filings and correspondence. Although under the agreement PGEN has agreed to consider in good faith and consult with us regarding any comments we may have regarding these patents and patent applications, we cannot guarantee that our comments will be solicited or followed. Without direct control of the in-licensed patents and patent applications, we are dependent on MD Anderson, the NCI or PGEN, as applicable, to keep us advised of prosecution, particularly in foreign jurisdictions where prosecution information may not be publicly available. We anticipate that we, MD Anderson, the NCI and PGEN will file additional patent applications both in the United States and in other countries. However, we cannot predict or guarantee:

- The degree and range of protection any patents will afford us against competitors, including whether third parties will find ways to invalidate or otherwise circumvent our patents;
- If and when patents will be issued;
- Whether or not others will obtain patents claiming subject matter related to or relevant to our product candidates; or
- Whether we will need to initiate litigation or administrative proceedings that may be costly whether we win or lose.

The patent prosecution process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost, in a timely manner, or in all jurisdictions. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. Moreover, in some circumstances, we do not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, covering technology that we license from third parties. We may also require the cooperation of our licensors in order to enforce the licensed patent rights, and such cooperation may not be provided. Therefore, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. In addition, the laws of foreign countries may not protect our rights to the same extent as the laws of the United States and we may fail to seek or obtain patent protection in all major markets. For example, European patent law restricts the patentability of methods of treatment of the human body more than United States law does. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all.

Changes in patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property or narrow the scope of our patent protection. In September 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law, resulting in a number of significant changes to United States patent law. These changes include provisions that affect the way patent applications are prosecuted and may also affect patent litigation. In addition, the United States Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. This combination of events has created uncertainty with respect to the value of patents, once obtained, and with regard to our ability to obtain patents in the future. As the USPTO continues to implement the Leahy-Smith Act, and as the federal courts have the opportunity to interpret the Leahy-Smith Act, the laws and regulations governing patents, and the rules regarding patent procurement could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future.

Certain technologies utilized in our research and development programs are already in the public domain. Moreover, a number of our competitors have developed technologies, filed patent applications or obtained patents on technologies, compositions and methods of use that are related to our business and may cover or conflict with our owned or licensed patent applications, technologies or product candidates. Such conflicts could limit the scope of the patents that we may be able to obtain or may result in the rejection of claims in our patent applications. Because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, or in some cases not at all, and because publications of discoveries in the scientific literature often lag behind actual discoveries, neither we nor our licensors can be certain that others have not filed or maintained patent applications for technology used by us or covered by our pending patent applications without our being aware of these applications. Therefore, we cannot know with certainty whether we were the first to make the inventions claimed in our owned patents or pending patent

applications, or that we were the first to file for patent protection of such inventions, nor can we know whether those from whom we license patents were the first to make the inventions claimed or were the first to file. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our technology or products, in whole or in part, or which effectively prevent others from commercializing competitive technologies and products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. In addition, our own earlier filed patents and applications or those of MD Anderson, NCI or PGEN may limit the scope of later patents we obtain or may result in the rejection of claims in our later filed patent applications. If third parties filed patent applications or obtained patents on technologies, compositions and methods of use that are related to our business and that cover or conflict with our owned or licensed patent applications, technologies or product candidates, we may be required to challenge such protection, terminate or modify our programs impacted by such protection or obtain licenses from such third parties, which might not be available on acceptable terms, or at all.

Even if our owned and licensed patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our owned or licensed patents by developing similar or alternative technologies or products in a non-infringing manner.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

If we are unable to protect the confidentiality of our confidential information, our business and competitive position would be harmed.

Our success also depends upon the skills, knowledge, and experience of our scientific and technical personnel, our consultants and advisors, as well as our licensors and contractors. To help protect our proprietary know-how and our inventions for which patents may be unobtainable or difficult to obtain, and to maintain our competitive position, we rely on trade secret protection and confidentiality agreements. To this end, it is our general policy to require our employees, consultants, advisors, and contractors to enter into agreements that prohibit the disclosure of confidential information and, where applicable, require disclosure and assignment to us of the ideas, developments, discoveries, and inventions important to our business. These agreements may not provide adequate protection for our trade secrets, know-how, confidential information or other proprietary information in the event of any unauthorized use or disclosure or the lawful development by others of such information. Moreover, we may not be able to obtain adequate remedies for any breaches of these agreements. Our trade secrets or other confidential information may also be obtained by third parties by other means, such as breaches of our physical or computer security systems. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret or other confidential information is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets. If any of our trade secrets or other confidential information were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent them, or those to whom they communicate it, from using that technology or information to compete with us. If any of our trade secrets, know-how or other proprietary information is disclosed, the value of our trade secrets, know-how and other proprietary rights would be significantly impaired and our business and competitive position would suffer.

Third-party claims of intellectual property infringement would require us to spend significant time and money and could prevent us from developing or commercializing our products.

In order to protect or enforce patent rights, we may initiate patent infringement litigation against third parties. Similarly, we may be sued by others for patent infringement. We also may become subject to proceedings conducted in the United States Patent and Trademark Office, including interference proceedings to determine the priority or derivation of inventions, or post-grant review, inter partes review, or reexamination proceedings reviewing the patentability of our patented claims. In addition, any foreign patents that are granted may become subject to opposition, nullity, or revocation proceedings in foreign jurisdictions having such proceedings. The defense and prosecution, if necessary, of intellectual property actions are costly and divert technical and management personnel away from their normal responsibilities.

Our commercial success depends upon our ability, and the ability of our collaborators, to develop, manufacture, market and sell our product candidates without infringing the proprietary rights of third parties. There is considerable intellectual property litigation in the biotechnology and pharmaceutical industries. While no such litigation has been brought against us and we have not been held by any

court to have infringed a third party's intellectual property rights, we cannot guarantee that our products or use of our products do not infringe third-party patents. It is also possible that we have failed to identify relevant third-party patents or applications. For example, applications filed before November 29, 2000 and certain applications filed after that date that will not be filed outside the United States remain confidential until patents issue. Patent applications in the United States and elsewhere are published approximately 18 months after the earliest filing, which is referred to as the priority date. Therefore, patent applications covering our products or technology could have been filed by others without our knowledge. Additionally, pending patent applications which have been published can, subject to certain limitations, be later amended in a manner that could cover our products or the use of our products.

Our research, development and commercialization activities, as well as any product candidates or products resulting from these activities, may infringe or be claimed to infringe patents or patent applications under which we do not hold licenses or other rights. A patent does not protect its owner from a claim of infringement of another owner's patent. Therefore, our patent position cannot and does not provide any assurance that we are not infringing the patent rights of another.

The patent landscape in the field of immuno-oncology is particularly complex. We are aware of numerous United States and foreign patents and pending patent applications of third parties that cover compositions, methods of use and methods of manufacture of immuno-oncology products. In addition, there may be patents and patent applications in the field of which we are not aware. The technology we license from MD Anderson, NCI and PGEN is early-stage technology and we are in the process of designing and developing products using this technology. Although we will seek to avoid pursuing the development of products that may infringe any patent claims that we believe to be valid and enforceable, we may fail to do so. Moreover, given the breadth and number of claims in patents and pending patent applications in the field of immuno-oncology and the complexities and uncertainties associated with them, third parties may allege that we are infringing patent claims even if we do not believe such claims to be valid and enforceable.

If a claim for patent infringement is asserted, there can be no assurance that the resolution of the claim would permit us to continue marketing the relevant product on commercially reasonable terms, if at all. We may not have sufficient resources to bring these actions to a successful conclusion. If we do not successfully defend any infringement actions to which we become a party or are unable to have infringed patents declared invalid or unenforceable, we may have to pay substantial monetary damages, which can be tripled if the infringement is deemed willful, or we may be required to discontinue or significantly delay commercialization and development of the affected products.

Any legal action against us or our collaborators claiming damages and seeking to enjoin developmental or marketing activities relating to affected products could, in addition to subjecting us to potential liability for damages, require us or our collaborators to obtain licenses to continue to develop, manufacture, or market the affected products. Such a license may not be available to us on commercially reasonable terms, if at all.

An adverse determination in a proceeding involving our owned or licensed intellectual property may allow entry of substitutes, including biosimilar or generic substitutes, for our products.

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

Periodic maintenance fees on any issued patent are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of the patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Noncompliance events that could result in abandonment or lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. In such an event, our competitors might be able to enter the market, which would have a material adverse effect on our business.

We license rights to products and technology that are important to our business, and we expect to enter into additional licenses in the future. For instance, we have exclusively licensed patents and patent applications under the MD Anderson License and our patent license agreement with the NCI as well as under our License Agreement with PGEN. Under these agreements, we are subject to a range of commercialization and development, sublicensing, royalty, patent prosecution and maintenance, insurance and other obligations.

Any failure by us to comply with any of these obligations or any other breach by us of our license agreements could give the licensor the right to terminate the license in whole, terminate the exclusive nature of the license or bring a claim against us for damages. Any

such termination or claim could have a material adverse effect on our financial condition, results of operations, liquidity or business. Even if we contest any such termination or claim and are ultimately successful, such dispute could lead to delays in the development or commercialization of potential products and result in time-consuming and expensive litigation or arbitration. On termination we may be required to license to the licensor any related intellectual property that we developed.

In addition, in certain cases, the rights licensed to us are rights of a third party licensed to our licensor. In such instances, if our licensors do not comply with their obligations under such licenses, our rights under our license agreements with our licensor may be adversely affected.

We may be subject to claims by third parties asserting that our employees or we have misappropriated their intellectual property or claiming ownership of what we regard as our own intellectual property.

Many of our employees were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that these employees or we have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. Litigation may be necessary to defend against these claims.

In addition, while it is our policy to require our employees and contractors who may be involved in the development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who in fact develops intellectual property that we regard as our own. Our and their assignment agreements may not be self-executing or may be breached, and we may be forced to bring claims against third parties, or defend claims they may bring against us, to determine the ownership of what we regard as our intellectual property.

If we fail in prosecuting or defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in prosecuting or defending against such claims, litigation could result in substantial costs and be a distraction to management.

OTHER RISKS RELATED TO OUR COMPANY

Our stock price has been, and may continue to be, volatile.

The market price for our common stock is volatile and may fluctuate significantly in response to a number of factors, most of which we cannot control, including:

- Price and volume fluctuations in the overall stock market;
- Changes in operating results and performance and stock market valuations of other biopharmaceutical companies generally, or those that develop and commercialize cancer drugs in particular;
- Market conditions or trends in our industry or the economy as a whole;
- Preclinical studies or clinical trial results;
- Public concern as to the safety of drugs developed by us or others;
- The financial or operational projections we may provide to the public, any changes in these projections or our failure to meet these projections;
- Comments by securities analysts or changes in financial estimates or ratings by any securities analysts who follow our common stock, our failure to meet these estimates or failure of those analysts to initiate or maintain coverage of our common stock;
- The public's response to press releases or other public announcements by us or third parties, including our filings with the SEC, as well as announcements of the status of development of our products, announcements of technological innovations or new therapeutic products by us or our competitors, announcements regarding collaborative agreements and other announcements relating to product development, litigation and intellectual property impacting us or our business;
- Government regulation;
- FDA determinations on the approval of a product candidate BLA submission;
- The sustainability of an active trading market for our common stock;
- Future sales of our common stock by us, our executive officers, directors and significant stockholders;

- Announcements of mergers or acquisition transactions;
- Our inclusion or deletion from certain stock indices;
- Developments in patent or other proprietary rights;
- Changes in reimbursement policies;
- Announcements of medical innovations or new products by our competitors;
- Announcements of changes in our senior management or directors;
- General economic, industry, political and market conditions, including, but not limited to, the ongoing impact of the COVID 19 pandemic;
- Other events or factors, including those resulting from war, incidents of terrorism, natural disasters, pandemics or responses to these events; and
- Changes in accounting principles.

In addition, the stock market in general and our stock in particular from time to time experiences significant price and volume fluctuations unrelated to the operating performance of particular companies, including in connection with the ongoing COVID-19 pandemic, which has resulted in decreased stock prices for many companies notwithstanding the lack of a fundamental change in their underlying business models or prospects. Public debt and equity markets, and in particular the Nasdaq Global Select Market, have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many biopharmaceutical companies.

Stock prices of many biopharmaceutical companies have fluctuated in a manner unrelated or disproportionate to the operating performance of those companies. In the past, stockholders have instituted securities class action litigation following periods of market volatility. If we were involved in securities litigation, we could incur substantial costs and our resources, and the attention of management could be diverted from our business.

Anti-takeover provisions in our charter documents and under Delaware law may make an acquisition of us, which may be beneficial to our stockholders, more difficult.

Provisions of our amended and restated certificate of incorporation and bylaws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us, even if doing so would benefit our stockholders. These provisions authorize the issuance of “blank check” preferred stock that could be issued by our board of directors to increase the number of outstanding shares and hinder a takeover attempt, and limit who may call a special meeting of stockholders. In addition, Section 203 of the Delaware General Corporation Law generally prohibits a publicly-held Delaware corporation from engaging in a business combination with a party that owns at least 15% of its common stock unless the business combination is approved by the company’s board of directors before the person acquires the 15% ownership stake or later by its board of directors and two-thirds of its stockholders. Section 203 could have the effect of delaying, deferring or preventing a change in control that our stockholders might consider to be in their best interests.

Because we do not expect to pay dividends, you will not realize any income from an investment in our common stock unless and until you sell your shares at profit.

We have never paid dividends on our common stock and we do not anticipate that we will pay any dividends for the foreseeable future. Accordingly, any return on an investment in us will be realized, if at all, only when you sell shares of our common stock.

Our ability to use net operating loss carryforwards and research 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 carry forwards and Section 383 imposes an annual limitation on the amount of tax a corporation may offset with business credit (including the R&D credit) carry forwards.

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.

If securities and/or industry analysts fail to continue publishing research about our business, if they change their recommendations adversely or if our results of operations do not meet their expectations, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. If one or more of these analysts cease coverage of our company or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline. In addition, it is likely that in some future period our operating results will be below the expectations of securities analysts or investors. If one or more of the analysts who cover us downgrade our stock, or if our results of operations do not meet their expectations, our stock price could decline.

Our business could be negatively affected as a result of the actions of activist stockholders.

Recently, we were engaged in a consent solicitation led by WaterMill Asset Management Corp. where two new directors were added to our Board. We could experience other stockholder activism in the future, including another consent solicitation or a proxy contest. Activist shareholders may advocate for certain governance and strategic changes at our company. In the event of stockholder activism, particularly with respect to matters which our Board, in exercising their fiduciary duties, disagree with or have determined not to pursue, our business could be adversely affected because responding to actions by activist stockholders can be costly and time-consuming, disrupting our operations and diverting the attention of management, and perceived uncertainties as to our future direction may result in the loss of potential business opportunities and may make it more difficult to attract and retain qualified personnel, business partners, and customers.

In addition, if faced with a consent solicitation or proxy contest, we may not be able to respond successfully to the contest or dispute, which would be disruptive to our business. If individuals are elected to our Board with a differing agenda, our ability to effectively and timely implement our strategic plan and create additional value for our stockholders may be adversely affected.

****Our principal stockholders, executive officers and directors have substantial control over the Company, which may prevent you and other stockholders from influencing significant corporate decisions and may harm the market price of our common stock.***

As of September 30, 2021, our executive officers, directors and holders of five percent or more of our outstanding common stock, beneficially owned, in the aggregate, 51.4% of our outstanding common stock. These stockholders may have interests that conflict with our other stockholders and, if acting together, have the ability to influence the outcome of matters submitted to our stockholders for approval, including the election and removal of directors and any merger, consolidation or sale of all or substantially all of our assets. Accordingly, this concentration of ownership may harm the market price of our common stock by:

- Delaying, deferring or preventing a change in control;
- Impeding a merger, consolidation, takeover or other business combination involving us; or
- Discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of us.

In addition, this significant concentration of stock ownership may adversely affect the trading price of our common stock should investors perceive disadvantages in owning shares of common stock in a company that has such concentrated ownership.

****The Tax Cuts and Jobs Act, signed into law in 2017 could adversely affect our business and financial condition.***

On December 22, 2017, President Trump signed into law legislation, known as the Tax Cuts and Jobs Act of 2017, or Tax Act, that significantly revises the Code. The federal income tax law is referred to as the Tax Act, and contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses), limitation of the deduction for NOLs to 80% of current year taxable income and elimination of NOL carrybacks, one time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or

repealing many business deductions and credits. The CARES Act, enacted in 2020, modified certain of these tax changes, and enacted other tax changes applicable to corporations. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the Tax Act and the CARES Act is uncertain and our business and financial condition could be adversely affected. In addition, it is uncertain if and to what extent various states will conform to the Tax Act or the CARES Act. Currently, bills introduced in Congress, including the "Build Back Better Act," contain additional changes to the taxation of corporations, which could adversely affect our business and financial condition. The impact of the Tax Act, the CARES Act and any other tax legislation on holders of our common stock is also uncertain and could be adverse. We urge our stockholders to consult with their legal and tax advisors with respect to this legislation and the potential tax consequences of investing in or holding our common stock.

RISKS RELATED TO INDEBTEDNESS

We have incurred indebtedness, the funding of which is, in part, dependent on our future performance and our ability to raise additional capital.

On August 6, 2021, we, as borrower, entered into a loan and security agreement with Silicon Valley Bank, as lender, which agreement provides for term loans in an aggregate principal amount of up to $50.0 million, or the SVB Facility. The SVB Facility consists of two tranches of term loans, the first of which was funded on August 6, 2021 and the second of which is conditioned upon achieving certain milestones. Several of those milestones relate to the performance of certain drugs in development, and one milestone relates to the receipt of additional capital. If we do not reach those milestones, we will be unable to draw on the second term loan tranche, thereby reducing our liquidity, and we will be required to make principal payments on the SVB Facility beginning one year earlier than if we were to draw on the second term loan tranche.

We have incurred indebtedness to increase liquidity and servicing our debt will require a significant amount of cash. We may not have sufficient cash flow from our operations to pay our substantial debt.

Our ability to make scheduled payments of the principal of, to pay interest on or to further refinance our indebtedness depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control as well as our ability to raise additional capital. We may also seek additional debt financing to meet the financing milestone under the SVB Facility and to support our ongoing activities. Debt financing can have significant adverse consequences for our business, including:

- requiring us to dedicate a substantial portion of cash flows from operations to payment on our debt, which would reduce available funds for further research and development;
- increasing the amount of interest that we must pay on debt with variable interest rates, if market rates of interest increase;
- subjecting us to restrictive covenants that reduce our ability to take certain corporate actions, acquire companies, products or technology, or obtain further debt financing;
- requiring us to pledge our non-intellectual property assets as collateral, which could limit our ability to obtain additional debt financing;
- requiring us to cash collateralize a portion of the SVB Facility if we do not raise additional capital prior to the end of the year.

We may not have sufficient funds or be able to obtain additional financing to pay the amounts due under our indebtedness. In addition, failure to comply with the covenants and payment obligations under the SVB Facility could result in an event of default under that agreement. An event of default could result in the acceleration of amounts due under the SVB Facility, and we may not have sufficient funds to pay or be able to obtain additional financing to make any accelerated payments. Under these circumstances, our lenders could seek to enforce security interests in our assets securing our indebtedness.

Our current indebtedness restricts and any additional debt financing may restrict the operation of our business and limit the cash available for investment in our business operations.

The SVB Facility includes a $25.0 million term loan, which was funded on the effective date of the facility, and the ability to borrow an additional $25.0 million term loan, subject to the achievement of certain milestones. We may also seek additional debt financing to meet the financing milestone under the SVB Facility and to support our ongoing activities. Debt financing can have significant adverse consequences for our business, including:

- the ability to enter into certain licensing arrangements;
- the ability to maintain flexible cash management arrangements;

- the payment obligations under our indebtedness;
- the scope, progress, results and costs of our development activities.

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

None.

Item 3. Defaults upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

Termination of Consulting Agreement with Interim Chief Financial Officer

On November 4, 2021, the Company provided written notice of termination of that certain consulting agreement by and between the Company and Danforth Advisors, LLC, a financial consultancy firm specializing in working with life sciences companies (the "Cunningham Consulting Agreement"). Pursuant to the terms of the Cunningham Consulting Agreement, Tim Cunningham, the Company's interim Chief Financial Officer and principal financial officer, provided services to the Company. The Cunningham Consulting Agreement will terminate effective immediately. Neither the decision to terminate the Cunningham Consulting Agreement or Mr. Cunningham's services was not the result of any dispute or disagreement with the Company or the Company's Board of Directors on any matter relating to the operations, policies or practices of the Company.

Designation of Principal Financial Officer

In connection with the termination of the Cunningham Consulting Agreement, effective immediately, the Company has designated Kevin S. Boyle, the Company's Chief Executive Officer, as its principal financial officer in addition to his designation as principal executive officer. Mr. Boyle will receive no additional compensation for this designation.

Extension of Employment of Principal Accounting Officer

As previously disclosed, Kevin G. Lafond, the Company's Senior Vice President Finance, Chief Accounting Officer and Treasurer, will be separating from the Company in connection with the Company's workforce reduction. The Company has extended his employment and Mr. Lafond's last day with the Company will be November 9, 2021.

Appointment of Principal Accounting Officer

In connection with Mr. Lafond's separation, the Board of Directors has designated Michael Wong, the Company's Vice President, Finance, to serve as its principal accounting officer effective November 9, 2021.

Mr. Wong, age 41, has served as the Company's Vice President, Finance since September 2021. Previously, Mr. Wong was Director, Technical Accounting at McDermott International, Ltd., where he also served as Interim Head, Audit. Prior to joining McDermott, Mr. Wong was an Audit Senior Manager at Ernst & Young LLP in Houston, and also spent part of his 14 year career with Ernst & Young in both the London, U.K. and Toronto, Canada offices. Michael is a licensed CPA in Texas and Canada and has a Bachelor of Commerce from Queen's University, Canada.

Mr. Wong was not appointed to serve as principal accounting officer pursuant to any arrangements or understandings with the Company or with any other person, and there are no related party transactions between Mr. Wong and the Company that would require disclosure under Item 404(a) of Regulation S-K. The Company has not entered into any material plan, contract, arrangement or amendment with Mr. Wong, and no compensatory grants or awards were made to Mr. Wong in connection with his appointment as principal accounting officer. Mr. Wong is eligible to receive grants under the Company's equity incentive plans.

Item 6. Exhibits

Exhibit Number	Description
3.1	Amended and Restated Certificate of Incorporation of the Registrant, as filed with the Delaware Secretary of State on April 26, 2006 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, SEC File No. 000-32353, filed April 26, 2006).
3.2	Amendment to Amended and Restated Certificate of Incorporation effective as of May 19, 2021 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed May 21, 2021).
3.3	Amended and Restated Certificate of Designation, Preferences and Rights of Series 1 preferred stock, as filed with the Delaware Secretary of State on July 1, 2016 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K/A, SEC File No. 001-33038, filed July 1, 2016).
4.1+	Form of Warrant to Purchase Shares of Common Stock dated August 6, 2021
10.1+	Loan and Security Agreement by and among the Registrant, the lenders party thereto and Silicon Valley Bank, as administrative agent and collateral agent, dated August 6, 2021.
10.2*	Employment Agreement by and between the Registrant and Kevin S. Boyle, Sr., dated August 24, 2021 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed August 30, 2021).
31.1+	Certification of Principal Executive Officer pursuant to Exchange Act Rules 13a-14 or 15d-14 under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2+	Certification of Principal Accounting Officer pursuant to Exchange Act Rules 13a-14 or 15d-14 under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1++	Certifications of Principal Executive Officer and Principal Accounting Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS+	Inline XBRL Instance Document (the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document).
101.SCH+	Inline XBRL Taxonomy Extension Schema Document
101.CAL+	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF+	Inline XBRL Taxonomy Definition Linkbase Document
101.LAB+	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE+	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104+	Cover Page Interactive Data File—the cover page interactive data is embedded within the Inline XBRL document or included within the Exhibit 101 attachments

\+ Filed herewith.

++ This certification is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

* Indicates a management contract or compensatory plan.

SIGNATURES

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

ZIOPHARM ONCOLOGY, INC.

By:

/s/ Kevin S. Boyle Sr.

Kevin S. Boyle Sr.
Chief Executive Officer
(On Behalf of the Registrant and as Principal Executive Officer)
Dated: November 8, 2021

By:

/s/ Kevin G. Lafond

Kevin G. Lafond
Chief Accounting Officer and Treasurer
(Principal Accounting Officer)
Dated: November 8, 2021

Exhibit 4.1

THIS WARRANT AND THE SHARES ISSUABLE HEREUNDER HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "**ACT**"), OR THE SECURITIES LAWS OF ANY STATE AND, EXCEPT AS SET FORTH IN SECTIONS 6.3 AND 6.4 BELOW, MAY NOT BE OFFERED, SOLD, PLEDGED OR OTHERWISE TRANSFERRED UNLESS AND UNTIL REGISTERED UNDER SAID ACT AND LAWS OR, IN THE OPINION OF LEGAL COUNSEL IN FORM AND SUBSTANCE SATISFACTORY TO THE COMPANY, SUCH OFFER, SALE, PLEDGE OR OTHER TRANSFER IS EXEMPT FROM SUCH REGISTRATION.

WARRANT TO PURCHASE STOCK

This WARRANT TO PURCHASE STOCK (as amended and in effect from time to time, this "**Warrant**") is issued as of the issue date set forth on Schedule I hereto (the "**Issue Date**") by the company set forth on Schedule I hereto (the "**Company**") to INNOVATION CREDIT FUND VIII-A, L.P. in connection with that certain Loan and Security Agreement of even date herewith between them (as amended and/or modified and in effect from time to time, the "**Loan Agreement**"). The parties agree as follows:

SCHEDULE I. WARRANT PROVISIONS.

Warrant Section	**Warrant Provision**
Recitals – "Issue Date"	August 6, 2021.
Recitals – "Company"	ZIOPHARM ONCOLOGY, INC., a Delaware corporation.
1.1 – "Class"	Common Stock, $0.001 par value per share.
1.1 – "Exercise Price"	$2.22 per Share.
1.2– "Initial Shares"	86,569.
1.3 – "Additional Shares"	86,568.
1.3(a) – Conditions for issuance of Additional Shares	Achievement by the Company of the Term B Milestone (as defined in the Loan Agreement).
4.1(b) – Share percentage as of the Issue Date	0.40% of the Company's total fully-diluted issued and outstanding shares of capital stock.
6.1(a) – "Expiration Date"	August 6, 2031.

SECTION 1. RIGHT TO PURCHASE SHARES.

1.1. Grant of Right. For good and valuable consideration, the Company hereby grants to INNOVATION CREDIT FUND VIII-A, L.P. (together with any successor or permitted assignee or transferee of this Warrant or of any shares issued upon exercise hereof, "**Holder**") the right, and Holder is entitled, to purchase from the Company up to the number of fully paid and non-assessable shares (as determined pursuant to Section 1.2 below) of the class set forth on Schedule I hereto (the "**Class**"), at a purchase price per Share set forth on Schedule I hereto (the "**Exercise Price**"), subject to the provisions and upon the terms and conditions set forth in this Warrant.

1.2. Number of Shares. This Warrant shall be exercisable for the number of initial shares of the Class as set forth on Schedule I hereto (the "**Initial Shares**"), plus the Additional Shares (as hereinafter defined), if any (collectively, and as may be adjusted from time to time in accordance with the provisions of this Warrant, the "**Shares**").

1.3. Additional Shares. All shares, if any, for which this Warrant shall become exercisable pursuant to this Section 1.3 are referred to herein cumulatively and collectively as the "**Additional Shares**." The number of Additional Shares may be adjusted from time to time in accordance with the provisions of this Warrant, including, without limitation, adjustments in respect of events occurring prior to the date, if any, on which this Warrant becomes exercisable for such shares as if they constituted "Shares" hereunder for such purpose at all times from the Issue Date.

(a) This Warrant shall automatically become exercisable for the number of additional shares of the Class as set forth on Schedule I hereto (the "**Additional Shares**") upon the occurrence of events set forth on Schedule I hereto.

SECTION 2. EXERCISE.

2.1. Method of Exercise. Holder may exercise this Warrant in whole or in part at any time and from time to time prior to the expiration or earlier termination of this Warrant, by delivering to the Company the original of this Warrant together with a duly executed Notice of Exercise in substantially the form attached hereto as Appendix 1 and, unless Holder is exercising this Warrant pursuant to a cashless exercise set forth in Section 2.2 below, a check, wire transfer of same-day funds (to an account designated by the Company), or other form of payment acceptable to the Company for the aggregate Exercise Price for the Shares being purchased. Notwithstanding any contrary provision herein, to the extent that the original of this Warrant is an electronic original, in no event shall an original ink-signed paper copy of this Warrant be required for any exercise of a Holder's rights hereunder, nor shall this Warrant or any physical copy hereof be required to be physically surrendered at the time of any exercise hereof.

2.2. Cashless Exercise. On any exercise of this Warrant, in lieu of payment of the aggregate Exercise Price in the manner specified in Section 2.1 above, Holder may elect to surrender to the Company Shares having an aggregate value equal to the aggregate Exercise Price. If Holder makes such election, the Company shall issue to Holder such number of fully paid and non-assessable Shares determined by the following formula:

$$X = Y(A-B)/A$$

where:

X = the number of Shares to be issued to Holder;

Y = the number of Shares with respect to which this Warrant is being exercised (inclusive of the Shares surrendered to the Company in payment of the aggregate Exercise Price);

A = the fair market value (as determined pursuant to Section 2.3 below) of one Share; and

B = the Exercise Price.

2.3. Fair Market Value. If shares of the Company's common stock are then traded or quoted on a nationally recognized securities exchange, inter-dealer quotation system or over-the-counter market (a "**Trading Market**") and the Class is common stock, the fair market value of a Share shall be the closing price or last sale price of a share of the Company's common stock reported for the Business Day immediately before the date on which Holder delivers this Warrant together with its Notice of Exercise to the Company. If shares of the Company's common stock are not then traded in a Trading Market, the Board of Directors of the Company shall determine the fair market value of a Share in its reasonable good faith judgment.

2.4. Delivery of Certificate and New Warrant. Within a reasonable time after Holder exercises this Warrant in the manner set forth in Sections 2.1 or 2.2 above, the Company shall deliver to Holder a certificate, which may be in electronic form (or, in the case of uncertificated securities, provide notice of book entry) representing the Shares issued to Holder upon such exercise and, if this Warrant has not been fully exercised and has not expired, a new warrant of like tenor representing the Shares not so acquired (or surrendered in payment of the aggregate Exercise Price).

2.5. Replacement of Warrant.

(a) Paper Original Warrant. To the extent that the original of this Warrant is a paper original, on receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant and, in the case of loss, theft or destruction, on delivery of an indemnity agreement reasonably satisfactory in form, substance and amount to the Company or, in the case of mutilation, on surrender of this Warrant to the Company for cancellation, the Company shall, within a reasonable time, execute and deliver to Holder, in lieu of this Warrant, a new warrant of like tenor and amount.

(b) Electronic Original Warrant. To the extent that the original of this Warrant is an electronic original, if at any time this Warrant is rejected by any person (including, but not limited to, paying or escrow agents) or any such person fails to comply with the terms of this Warrant based on this Warrant being presented to such person as an electronic record or a printout hereof, or any signature hereto being in electronic form, the Company shall, promptly upon Holder's request and without indemnity, execute and deliver to Holder, in lieu of electronic original versions of this Warrant, a new warrant of like tenor and amount in paper form with original ink signatures.

2.6. Treatment of Warrant Upon Acquisition of Company.

(a) Acquisition. "**Acquisition**" means any transaction or series of related transactions involving: (i) the sale, lease, exclusive license, or other disposition of all or substantially all of the assets of the Company; (ii) any merger or consolidation of the Company into or with another person or entity (other than a merger or consolidation effected exclusively to change the Company's domicile), or any other corporate reorganization, in which the stockholders of the Company in their capacity as such immediately prior to such merger, consolidation or reorganization, own less than a majority of the Company's (or the surviving or successor entity's) outstanding voting power immediately after such merger, consolidation or reorganization; or (iii) any sale or other transfer by the stockholders of the Company of shares representing at least a majority of the Company's then-total outstanding combined voting power. For the avoidance of doubt, "Acquisition" shall not include any sale and issuance by the Company of shares of its capital stock or of securities or instruments exercisable for or convertible into, or otherwise representing the right to acquire, shares of its capital stock to one or more investors for cash in a transaction or series of related transactions the primary purpose of which is a bona fide equity financing of the Company.

(b) Treatment of Warrant in Cash/Public Acquisition. In the event of an Acquisition in which the consideration to be received by the holders of the outstanding shares of the Class (in their capacity as such) consists solely of cash, solely of Marketable Securities (as hereinafter defined) or a combination of cash and Marketable Securities (a "**Cash/Public Acquisition**"), and the fair market value of one Share as determined in accordance with Section 2.3 above would be greater than the Exercise Price in effect as of immediately prior to the closing of such Cash/Public Acquisition, and Holder has not previously exercised this Warrant in full, then, in lieu of Holder's exercise of the unexercised portion of this Warrant, this Warrant shall, as of immediately prior to such closing (but subject to the occurrence thereof) automatically cease to represent the right to purchase Shares and shall, from and after such closing, represent solely the right to receive the aggregate consideration that would have been payable in such Acquisition on and in respect of all Shares for which this Warrant was exercisable as of immediately prior to the closing thereof, net of the aggregate Exercise Price therefor, as if such Shares had been issued and outstanding to Holder as of immediately prior to such closing, as and when such consideration is paid to the holders of the outstanding shares of the Class. In the event of a Cash/Public Acquisition in which the fair market value of one Share as determined in accordance with Section 2.3 above would be equal to or less than the Exercise Price in effect as of immediately prior to the closing of such Cash/Public Acquisition, then this Warrant will automatically and without further action of any party terminate as of immediately prior to such closing.

(c) Treatment of Warrant in non-Cash/Public Acquisition. Upon the closing of any Acquisition other than a Cash/Public Acquisition, the acquiring, surviving or successor entity shall assume this Warrant and the Company's obligations hereunder, and this Warrant shall thereafter be exercisable for the same securities and/or other property as would have been paid for the Shares issuable upon exercise of the unexercised portion of this Warrant as if such Shares were outstanding on and as of the closing of such Acquisition, at an aggregate Exercise Price equal to the aggregate Exercise Price in effect as of immediately prior to such closing, all subject to further adjustment from time to time thereafter in accordance with the provisions of this Warrant.

(d) Marketable Securities. "**Marketable Securities**" means securities meeting all of the following requirements (determined as of immediately prior to the closing of the Acquisition): (i) the issuer thereof is then subject to the reporting requirements of Section 13 or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), and is then current in its filing of all required reports and other information under the Act and the Exchange Act; (ii) the class and series of shares or other security of the issuer that would be received by Holder in connection with the Acquisition were Holder to exercise this Warrant on or prior to the closing thereof is then traded in a Trading Market, and (iii) following the closing of such Acquisition, Holder would not be restricted from publicly re-selling all of the issuer's shares and/or other securities that would be received by Holder in such Acquisition were Holder to exercise this Warrant in full on or prior to the closing of such Acquisition, except to the extent that any such restriction (x) arises solely under federal or state securities laws, rules or regulations, and (y) does not extend beyond six (6) months from the closing of such Acquisition. Notwithstanding the foregoing provisions of this Section 2.6(d), securities held in escrow or subject to holdback to cover indemnification-related claims shall be deemed to be Marketable Securities if they would otherwise be Marketable Securities but for the fact that they are held in escrow or subject to holdback to cover indemnification-related claims.

SECTION 3. CERTAIN ADJUSTMENTS TO THE SHARES, CLASS AND EXERCISE PRICE.

3.1. Stock Dividends, Splits, Etc. If the Company declares or pays a dividend or distribution on the outstanding shares of the Class payable in additional shares of the Class (including fractional shares) or other securities or property (other than cash), then upon exercise of this Warrant, for each Share acquired, Holder shall receive, without additional cost to Holder, the total number and kind of securities and property which Holder would have received had Holder owned the Shares of record as of the date the dividend or distribution occurred. If the Company subdivides the outstanding shares of the Class by reclassification or otherwise into a greater number of shares, the number of Shares purchasable hereunder shall be proportionately increased, even if such number would include fractional shares, and the Exercise Price shall be proportionately decreased. If the outstanding shares of the Class are combined or consolidated, by reclassification or otherwise, into a lesser number of shares, the Exercise Price shall be proportionately increased and the number of Shares shall be proportionately decreased, even if such number would include fractional shares.

3.2. Reclassification, Exchange, Combination or Substitution. Upon any event whereby all of the outstanding shares of the Class are reclassified, exchanged, combined, substituted, or replaced for, into, with or by Company securities of a different class and/or series, then from and after the consummation of such event, "Class" shall mean such securities and this Warrant will be exercisable for the number of such securities that Holder would have received had the Shares been outstanding on and as of the consummation of such event, at an aggregate Exercise Price equal to the aggregate Exercise Price in effect as of immediately prior to such event, all subject to further adjustment thereafter from time to time in accordance with the provisions of this Warrant. The provisions of this Section 3.2 shall similarly apply to successive reclassifications, exchanges, combinations, substitutions, replacements or other similar events.

3.3. Adjustment to Exercise Price on Cash Dividend. In the event that the Company at any time or from time to time prior to the exercise in full of this Warrant pays any cash dividend on the outstanding shares of the Class or makes any cash distribution on or in respect of all outstanding shares of the Class (other than a distribution of cash proceeds received by the Company in connection with an Acquisition described in Section 2.6(a)(i) above), then on and as of the date of each such dividend payment and/or distribution, the Exercise Price shall be reduced by an amount equal to the amount paid or distributed upon or in respect of each outstanding share of the Class; provided that in no event shall the Exercise Price be reduced below the then-par value, if any, of a share of the Class.

3.4. No Fractional Share. No fractional Share shall be issued upon exercise of this Warrant, and the number of Shares to be issued shall be rounded down to the nearest whole Share. If a fractional Share interest arises upon any exercise of this Warrant, the Company shall eliminate such fractional Share interest by paying Holder in cash an amount equal to (a) such fractional interest, multiplied by (b)(i) the fair market value (as determined in accordance with Section 2.3 above) of a full Share, less (ii) the then-effective Exercise Price (the "**Fractional Share Value**"), unless Holder otherwise elects, in its sole discretion, to waive such payment. Notwithstanding any contrary provision herein, if this Warrant becomes exercisable for a fractional Share interest at any time or from time to time prior to the exercise in full of this Warrant, and the Company eliminates such fractional Share interest prior to any

exercise of this Warrant, then the then-effective Exercise Price shall be reduced by an amount equal to the Fractional Share Value, unless Holder otherwise elects, in its sole discretion, to waive such reduction.

3.5. Certificate as to Adjustments. Within a reasonable time following each adjustment of the Exercise Price, Class and/or number of Shares pursuant to the terms of this Warrant, the Company, at its expense, shall deliver a certificate of its Chief Financial Officer or other authorized officer to Holder setting forth the adjustments to the Exercise Price, Class and/or number of Shares and the facts upon which such adjustments are based. The Company shall, at any time and from time to time within a reasonable time following Holder's written request and at the Company's expense, furnish Holder with a certificate of its Chief Financial Officer or other authorized officer setting forth the then-current Exercise Price, Class and number of Shares and the computations or other determinations thereof.

SECTION 4. REPRESENTATIONS AND COVENANTS OF THE COMPANY.

4.1. Representations and Warranties. The Company represents and warrants to, and agrees with, Holder as follows:

(a) All Shares which may be issued upon the exercise of this Warrant, shall, upon issuance, be duly authorized, validly issued, fully paid and non-assessable, and free of any liens and encumbrances except for restrictions on transfer provided for herein or under the Company's Certificate of Incorporation or Bylaws, each as amended and in effect from time to time (the "**Charter Documents**") or applicable federal and state securities laws. The Company covenants that it shall at all times cause to be reserved and kept available out of its authorized and unissued capital stock such number of shares of the Class and other securities as will be sufficient to permit the exercise in full of this Warrant.

4.2. Notice of Certain Events. If the Company proposes at any time to:

(a) declare any dividend or distribution upon the outstanding shares of the Class, whether in cash, stock or other securities or property and whether or not a regular cash dividend;

(b) effect any redemption (excluding repurchases of unvested shares on termination of service) reclassification, exchange, combination, substitution, reorganization or recapitalization of the outstanding shares of the Class; or

(c) effect an Acquisition, or to liquidate, dissolve or wind up the Company;

then, in connection with each such event, the Company shall give Holder (pursuant to Section 6.5 below):

(1) in the case of the matters referred to in (a) above, at least seven (7) Business Days prior written notice of the earlier to occur of the effective date thereof or the date on which a record will be taken for such dividend, distribution, or subscription rights (and specifying the date on which the holders of outstanding shares of the Class will be entitled thereto) or for determining rights to vote, if any; and

(2) in the case of the matters referred to in (c) and (d) above, at least seven (7) Business Days prior written notice of the date when the same will take place (and specifying the date on which the holders of outstanding shares of the Class will be entitled to exchange their shares for the securities or other property deliverable upon the occurrence of such event and such reasonable information as Holder may reasonably require regarding the treatment of this Warrant in connection with such event giving rise to the notice).

4.3. Certain Company Information. The Company will provide such information requested by Holder from time to time, within a reasonable time following each such request, that is reasonably necessary to enable Holder to comply with Holder's accounting or reporting requirements.

SECTION 5. REPRESENTATIONS AND COVENANTS OF HOLDER.

Holder represents and warrants to, and agrees with, the Company as follows:

5.1. Investment Representations.

(a) Purchase for Own Account. This Warrant and the Shares to be acquired upon exercise hereof are being acquired for investment for Holder's account, not as a nominee or agent, and not with a view to the public resale or distribution within the meaning of the Act. Holder also represents that it has not been formed for the specific purpose of acquiring this Warrant or the Shares.

(b) Disclosure of Information. Holder is aware of the Company's business affairs and financial condition and has received or has had full access to all the information it considers necessary or appropriate to make an informed investment decision with respect to the acquisition of this Warrant and its underlying securities. Holder further has had an opportunity to ask questions of and receive answers from the Company regarding the terms and conditions of the offering of this Warrant and its underlying securities and to obtain additional information (to the extent the Company possessed such information or could acquire it without unreasonable effort or expense) necessary to verify any information furnished to Holder or to which Holder has access.

(c) Investment Experience. Holder understands that the purchase of this Warrant and its underlying securities involves substantial risk. Holder has experience as an investor in securities of companies in the development stage and acknowledges that Holder can bear the economic risk of such Holder's investment in this Warrant and its underlying securities for an indefinite period of time, and has such knowledge and experience in financial or business matters that Holder is capable of evaluating the merits and risks of its investment in this Warrant and its underlying securities and/or has a preexisting personal or business relationship with the Company and certain of its officers, directors or controlling persons of a nature and duration that enables Holder to be aware of the character, business acumen and financial circumstances of such persons.

(d) Accredited Investor Status. Holder is an "accredited investor" within the meaning of Regulation D promulgated under the Act.

(e) The Act. Holder understands that this Warrant and the Shares issuable upon exercise hereof have not been registered under the Act or registered or qualified under the securities laws of any state, and are issued in reliance upon specific exemptions therefrom, which exemptions depend upon, among other things, the bona fide nature of the Holder's investment intent as expressed herein. Holder understands that the Company is under no obligation to so register or qualify this Warrant, the Shares or such other securities. Holder understands that this Warrant and the Shares issued upon any exercise hereof are "restricted securities" under applicable federal and state securities laws and must be held indefinitely unless subsequently registered under the Act and registered or qualified under applicable state securities laws, or unless exemptions from such registration and qualification are otherwise available. Holder is aware of the provisions of Rule 144 promulgated under the Act.

5.2. No Stockholder Rights. Without limiting any provision of this Warrant, Holder agrees that as a Holder of this Warrant it will not have any rights (including, but not limited to, voting rights) as a stockholder of the Company with respect to the Shares issuable hereunder unless and until the exercise of this Warrant and then only with respect to the Shares issued on such exercise.

5.3. Confidential Information. Holder agrees to treat and hold all information provided by the Company pursuant to this Warrant in confidence in accordance with the provisions of Section 12.8 of the Loan Agreement (regardless of whether the Loan Agreement shall then be in effect).

SECTION 6. MISCELLANEOUS.

6.1. Term; Automatic Cashless Exercise Upon Expiration.

(a) Term. Subject to the provisions of Section 2.6 above, this Warrant is exercisable in whole or in part at any time and from time to time on or before 6:00 PM, Pacific time, on the expiration date set forth on Schedule I hereto (the "**Expiration Date**") and shall be void thereafter; provided that if the Company does not deliver to Holder written confirmation of the fair market value of a Share pursuant to Section 6.1(b) below, then the Expiration Date shall automatically be extended until the earlier to occur of (i) such date as the Company delivers such written confirmation and (ii) one (1) year after the Expiration Date.

(b) Automatic Cashless Exercise upon Expiration. In the event that, upon the Expiration Date, the fair market value of one Share as determined in accordance with Section 2.3 above is greater than the Exercise Price in effect on such date, then this Warrant shall automatically be deemed on and as of such date to be exercised pursuant to Section 2.2 above as to all Shares for which it shall not previously have been exercised, and the Company shall, within a reasonable time following Holder's written request, deliver a certificate, which may be in electronic form (or, in the case of uncertificated securities, provide notice of book entry) representing the Shares issued to Holder upon such exercise. If shares of the Company's common stock are not then traded in a Trading Market, the Company shall deliver to Holder, prior to the Expiration Date, written confirmation of the fair market value of a Share (as determined pursuant to Section 2.3 above) to be used in determining whether this Warrant shall automatically exercise on the Expiration Date pursuant to this Section 6.1(b).

6.2. Legends. Each certificate or notice of book entry evidencing Shares shall be imprinted with a legend in substantially the following form (together with such additional legends as may be required by the Charter Documents or otherwise subject thereto in accordance with the provisions of Section 5.3 above)):

> THE SHARES EVIDENCED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "**ACT**"), OR THE SECURITIES LAWS OF ANY STATE AND, EXCEPT AS SET FORTH IN THAT CERTAIN WARRANT TO PURCHASE STOCK ISSUED BY THE ISSUER TO INNOVATION CREDIT FUND VIII-A, L.P. DATED AUGUST 6, 2021, MAY NOT BE OFFERED, SOLD, PLEDGED OR OTHERWISE TRANSFERRED UNLESS AND UNTIL REGISTERED UNDER SAID ACT AND LAWS OR, IN THE OPINION OF LEGAL COUNSEL IN FORM AND SUBSTANCE SATISFACTORY TO THE ISSUER, SUCH OFFER, SALE, PLEDGE OR OTHER TRANSFER IS EXEMPT FROM SUCH REGISTRATION.

6.3. Compliance with Securities Laws on Transfer. This Warrant and the Shares issued upon exercise hereof may not be transferred or assigned in whole or in part except in compliance with applicable federal and state securities laws by the transferor and the transferee (including, without limitation, the delivery of investment representation letters and legal opinions reasonably satisfactory to the Company, as reasonably requested by the Company). The Company shall not require Holder to provide an opinion of counsel if the transfer is to SVB Financial Group (Silicon Valley Bank's parent company) or any other affiliate of Holder; provided that any such transferee is an "accredited investor" as defined in Regulation D promulgated under the Act.

6.4. Transfer Procedure. Subject to the provisions of Section 6.3 and upon providing the Company with written notice, Holder and any subsequent Holder may transfer all or part of this Warrant or the Shares issued upon exercise of this Warrant to any transferee; provided that in connection with any such transfer, SVB Financial Group or any subsequent Holder will give the Company notice of the portion of the Warrant and/or Shares being transferred with the name, address and taxpayer identification number of the transferee, and Holder will surrender this Warrant, or the certificates or other evidence of such Shares or other securities, to the Company for reissuance to the transferee(s) (and to Holder if applicable); and provided further, that any subsequent transferee shall make substantially the representations set forth in Section 5.1 above and shall agree in writing with the Company to be bound by all of the terms and conditions of this Warrant.

6.5. Notices. All notices and other communications hereunder from the Company to the Holder, or vice versa, shall be deemed delivered and effective (i) when given personally, (ii) on the third (3rd) Business Day after being mailed by first-class registered or certified mail, postage prepaid, (iii) upon actual receipt if given by electronic mail and such receipt is confirmed in writing by the recipient, or (iv) on the first Business Day following delivery to a reliable overnight courier service, courier fee prepaid, in any case at such address as may have been furnished to the Company or Holder, as the case may be, in writing by the Company or such Holder from time to time in accordance with the provisions of this Section 6.5. All notices to Holder shall be addressed as follows until the Company receives notice of a change of address in connection with a transfer or otherwise:

Innovation Credit Fund VIII-A, L.P.
c/o SVB Capital
2770 Sand Hill Road
Menlo Park, California 94025
Attn: SVB Capital Finance and Operations
Email: svbcapitalcredit@svb.com; and SVBCapCreditFinance@svb.com

All notices to the Company shall be addressed as follows until Holder receives notice of a change in address:

Ziopharm Oncology, Inc.
Attn: Heidi Hagen, Interim CEO
1 First Avenue, Parris Building #34
Navy Yard Plaza
Boston, MA 02129
Email:

With a copy (which shall not constitute notice) to:

Cooley LLP
Attn: Joshua Rottner
500 Boylston Street, 14th Floor
Boston, MA 02116
Telephone: (617) 937-2338
Email: jrottner@cooley.com

6.6. Amendment and Waiver. Notwithstanding any contrary provision herein or in the Loan Agreement, this Warrant may be amended and any provision hereof waived (either generally or in a particular instance and either retroactively or prospectively) only by an instrument in writing signed by Holder and any party against which enforcement of such amendment or waiver is sought.

6.7. Counterparts; Electronic Signatures; Status as Certificated Security. This Warrant may be executed by one or more of the parties hereto in any number of separate counterparts, all of which together shall constitute one and the same instrument. The Company, Holder and any other party hereto may execute this Warrant by electronic means and each party hereto recognizes and accepts the use of electronic signatures and the keeping of records in electronic form by any other party hereto in connection with the execution and storage hereof. To the extent that this Warrant or any agreement subject to the terms hereof or any amendment hereto is executed, recorded or delivered electronically, it shall be binding to the same extent as though it had been executed on paper with an original ink signature, as provided under applicable law, including, without limitation, any state law based on the Uniform Electronic Transactions Act. The fact that this Warrant is executed, signed, stored or delivered electronically shall not prevent the transfer by any Holder of this Warrant pursuant to Section 6.4 or the enforcement of the terms hereof. To the extent that the original of this Warrant is an electronic original, this Warrant, and any copies hereof, shall NOT be deemed to be a "certificated security" within the meaning of Section 8102(a)(4) of the California Commercial Code. Physical possession of the original of this Warrant or any paper copy thereof shall confer no special status to the bearer thereof.

6.8. Headings. The headings in this Warrant are for purposes of reference only and shall not limit or otherwise affect the meaning of any provision of this Warrant.

6.9. Business Days. "**Business Day**" means any day that is not a Saturday, Sunday or a day on which banks in California are closed.

SECTION 7. GOVERNING LAW, VENUE AND JURY TRIAL WAIVER; JUDICIAL REFERENCE.

7.1. Governing Law. This Warrant shall be governed by and construed in accordance with the laws of the State of Delaware, without giving effect to its principles regarding conflicts of law.

7.2. Jurisdiction and Venue. The Company and Holder each irrevocably and unconditionally submit to the exclusive jurisdiction of the State and Federal courts in New York, New York; provided, however, that nothing in this Warrant shall be deemed to operate to preclude Holder from bringing suit or taking other legal action in any other jurisdiction to enforce a judgment or other court order in favor of Holder. The Company expressly, irrevocably and unconditionally submits and consents in advance to such jurisdiction in any action or suit commenced in any such court, and the Company hereby irrevocably and unconditionally waives, to the fullest extent permitted by applicable law, any objection that it may have based upon lack of personal jurisdiction, improper venue, or forum non conveniens and hereby irrevocably and unconditionally consents to the granting of such legal or equitable relief as is deemed appropriate by such court. The Company hereby waives personal service of the summons, complaints, and other process issued in such action or suit and agrees that service of such summons, complaints, and other process may be made by registered or certified mail addressed to the Company in accordance with Section 6.5 of this Warrant and that service so made shall be deemed completed upon the earlier to occur of the Company's actual receipt thereof of three (3) days after deposit in the U.S. mails, proper postage prepaid.

7.3. Jury Trial Waiver. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE COMPANY AND HOLDER EACH WAIVES ITS RIGHT TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION ARISING OUT OF OR BASED UPON THIS WARRANT, THE LOAN AGREEMENT OR ANY CONTEMPLATED TRANSACTION, INCLUDING CONTRACT, TORT, BREACH OF DUTY AND ALL OTHER CLAIMS. THIS WAIVER IS A MATERIAL INDUCEMENT FOR THE PARTIES' AGREEMENT TO THIS WARRANT. EACH PARTY HERETO HAS REVIEWED THIS WAIVER WITH ITS COUNSEL.

7.4. Survival. This Section 7 shall survive the termination of this Warrant.

[Signature page follows]

IN WITNESS WHEREOF, the parties have caused this Warrant to Purchase Stock to be executed by their duly authorized representatives effective as of the Issue Date written above.

COMPANY:

ZIOPHARM ONCOLOGY, INC.

By: /s/ Heidi Hagen

Name: Heidi Hagen

Title: Interim Chief Executive Officer

INNOVATION CREDIT FUND VIII-A, L.P.
By: SVB Innovation Credit Partners VIII-A, LLC, a
Delaware limited liability company, its General Partner

By: /s/ Ryan Grammer

Name: Ryan Grammer

Title: Senior Managing Director

APPENDIX 1

Form of Notice of Exercise of Warrant

1. The undersigned Holder hereby exercises its right to purchase _____ shares of the Common Stock of Ziopharm Oncology, Inc. (the "**Company**") in accordance with the attached Warrant to Purchase Stock, and tenders payment of the aggregate Exercise Price for such shares as follows:

[ ] Check in the amount of $_____ payable to the order of the Company enclosed herewith

[ ] Wire transfer of immediately available funds to the Company's account

[ ] Cashless exercise pursuant to Section 2.2 of the Warrant, resulting in the issuance of _____ shares of the Common Stock of the Company

[ ] Other [Describe] _____

2. Please issue a certificate or certificates (or evidence of book entry) representing the Shares in the name specified below:

_____
Holder's Name

_____

_____
(Address)

3. By its execution below and for the benefit of the Company, Holder hereby makes each of the representations and warranties set forth in Section 5.1 of the Warrant To Purchase Stock as of the date hereof.

HOLDER:

By: _____
Name: _____
Title: _____
(Date): _____

Exhibit 10.1

LOAN AND SECURITY AGREEMENT

THIS LOAN AND SECURITY AGREEMENT (this "**Agreement**") is dated as of the Effective Date among (a) **SILICON VALLEY BANK**, a California corporation ("**SVB**"), in its capacity as administrative agent and collateral agent ("**Agent**"), (b) SVB, as a lender, (c) **SVB INNOVATION CREDIT FUND VIII, L.P.**, a Delaware limited partnership ("**SVB Capital**"), as a lender (SVB and SVB Capital and each of the other "Lenders" from time to time a party hereto are referred to herein collectively as the "**Lenders**" and each individually as a "**Lender**"), and (d) the borrower listed on Schedule I hereto ("**Borrower**"). The parties agree as follows:

1 LOAN AND TERMS OF PAYMENT

1.1 Term Loan Advances.

(a) Availability. Subject to the terms and conditions of this Agreement, on or about the Effective Date, the Lenders, severally and not jointly, shall make one (1) term loan advance to Borrower in an original principal amount equal to Twenty-Five Million Dollars ($25,000,000) according to each Lender's Term A Loan Advance Commitment as set forth on Schedule II hereto (the "**Term A Loan Advance**"). Thereafter, subject to the terms and conditions of this Agreement, upon Borrower's request, during the Draw Period, the Lenders, severally and not jointly, shall make one additional term loan advance to Borrower in an original principal amount equal to Twenty-Five Million Dollars ($25,000,000) according to each Lender's Term B Loan Advance Commitment as set forth on Schedule II hereto (the "**Term B Loan Advance**"). The Term A Loan Advance and the Term B Loan Advance are hereinafter referred to singly as a "**Term Loan Advance**" and collectively as the "**Term Loan Advances**". Borrower may request Term Loan Advances as set forth on Schedule I hereto. The aggregate principal amount of the Term Loan Advances made by the Lenders to Borrower shall not, at any time, exceed the Term Loan Availability Amount. After repayment, no Term Loan Advance (or any portion thereof) may be reborrowed.

(b) Repayment. Borrower shall repay the aggregate outstanding Term Loan Advances as set forth in Schedule I hereto. The periodic installments set forth herein include interest, and such installments are based upon the original principal amount of the Term Loan Advance, an assumed fixed rate of interest, and an assumed amortization term, notwithstanding the fact that the interest rate applicable to the Term Loan Advance may change from time to time. In the event that the applicable interest rate changes at any time as a result of any changes in the Prime Rate, Agent may, in its sole discretion, but shall not be required to, recalculate the installments of principal and interest, and Borrower shall pay such installments as they may be recalculated by Agent. Borrower acknowledges and agrees that any such recalculation shall not affect the Term Loan Maturity Date or any other terms or provisions in this Agreement or any other Loan Document, and that if Agent elects not to recalculate such installments, the Term Loan Advance may not fully amortize on the Term Loan Maturity Date. All outstanding principal and accrued and unpaid interest with respect to the Term Loan Advances, and all other outstanding Obligations under the Term Loan Advances, are due and payable in full on the Term Loan Maturity Date.

(c) Permitted Prepayment. Borrower shall have the option to make up to two (2) prepayments of the Term Loan Advances advanced by the Lenders under this Agreement, each in a minimum amount of at least Five Million Dollars ($5,000,000), provided Borrower (i) provides written notice to Agent of its election to prepay such Term Loan Advances at least five (5) Business Days prior to such prepayment, and (ii) pays to Agent, for the account of the Lenders in accordance with their respective Pro Rata Shares, on the date of such prepayment (A) all outstanding principal plus accrued and unpaid interest on the portion of the Term Loan Advances being prepaid, (B) the pro-rata portion of the Prepayment Premium due in connection with the Term Loan Advance being prepaid, (C) the pro-rata portion of the Final Payment due in connection with the Term Loan Advances being prepaid, and (D) all other sums, if any, that shall have become due and payable, including Lenders' Expenses and interest at the Default Rate with respect to any past due amounts.

(d) Mandatory Prepayment Upon an Acceleration. If the Term Loan Advances are accelerated by Agent, following the occurrence and during the continuance of an Event of Default, Borrower shall immediately pay to Agent, for the account of the Lenders in accordance with their respective Pro Rata Shares, an amount equal to the sum of (i) all outstanding principal plus accrued and unpaid interest with respect to the Term Loan Advances, (ii)

the Prepayment Premium, (iii) the Final Payment and (iv) all other sums, if any, that shall have become due and payable, including Lenders' Expenses and interest at the Default Rate with respect to any past due amounts.

1.2 Payment of Interest on the Credit Extensions.

(a) Interest Payments. Interest on the principal amount of each Term Loan Advance is payable as set forth on Schedule I hereto.

(b) Interest Rate. Subject to Section 1.2(c), the outstanding principal amount of any Term Loan Advance shall accrue interest as set forth on Schedule I hereto.

(c) Default Rate. Immediately upon the occurrence and during the continuance of an Event of Default, the outstanding Obligations shall bear interest at a rate per annum which is three percent (3.0%) above the rate that is otherwise applicable thereto (the "**Default Rate**"). Fees and expenses which are required to be paid by Borrower pursuant to the Loan Documents (including, without limitation, Lenders' Expenses) but are not paid when due shall bear interest until paid at a rate equal to the highest rate applicable to the Obligations. Payment or acceptance of the increased interest rate provided in this Section 1.2(c) is not a permitted alternative to timely payment and shall not constitute a waiver of any Event of Default or otherwise prejudice or limit any rights or remedies of Agent or any Lender.

(d) Adjustment to Interest Rate. Each change in the interest rate applicable to any amounts payable under the Loan Documents based on changes to the Prime Rate shall be effective on the effective date of any change to the Prime Rate and to the extent of such change.

(e) Interest Computation. Interest shall be computed as set forth on Schedule I hereto. In computing interest, the date of the making of any Credit Extension shall be included and the date of payment shall be excluded; provided, however, that if any Credit Extension is repaid on the same day on which it is made, such day shall be included in computing interest on such Credit Extension.

1.3 Fees and Expenses. Borrower shall pay to Agent:

(a) Final Payment. The Final Payment, when due hereunder, to be shared between the Lenders pursuant to their respective Term Loan Commitment Percentages, which shall be fully earned and non-refundable as of such date;

(b) Prepayment Premium. The Prepayment Premium, when due hereunder, to be shared between the Lenders pursuant to their respective Term Loan Commitment Percentages, which shall be fully earned and non-refundable as of such date; and

(c) Lenders' Expenses. All Lenders' Expenses (including reasonable attorneys' fees and expenses for documentation and negotiation of this Agreement) incurred through and after the Effective Date, when due (or, if no stated due date, upon demand by Agent). Borrower has paid to Agent a good faith deposit of Seventy-Five Thousand Dollars ($75,000) (the "**Good Faith Deposit**") to initiate Lenders' due diligence review process. The Good Faith Deposit will be applied to Lenders' Expenses incurred as of the Effective Date.

Unless otherwise provided in this Agreement or in a separate writing by Agent, Borrower shall not be entitled to any credit, rebate, or repayment of any fees earned by Agent or any Lender pursuant to this Agreement notwithstanding any termination of this Agreement or the suspension or termination of any Lender's obligation to make loans and advances hereunder. Agent may deduct amounts owing by Borrower under the clauses of this Section 1.3 pursuant to the terms of Section 1.4(e). Agent shall provide Borrower written notice of deductions made pursuant to the terms of the clauses of this Section 1.3.

1.4 Payments; Pro Rata Treatment; Application of Payments; Debit of Accounts.

(a) All payments (including prepayments) to be made by Borrower under any Loan Document shall be made to Agent for the account of Lenders, in immediately available funds in Dollars, without setoff, counterclaim, or deduction, before 12:00 p.m. Pacific time on the date when due. Agent shall distribute such payments to Lenders in like funds as set forth in Section 1.5. Payments of principal and/or interest received after 12:00 p.m. Pacific time are considered received at the opening of business on the next Business Day. When a payment is due on a day that is not a Business Day, the payment shall be due the next Business Day, and additional fees or interest, as applicable, shall continue to accrue until paid.

(b) Each borrowing by Borrower from Lenders hereunder shall be made according to the respective Term Loan Commitment Percentages of the relevant Lenders.

(c) Except as otherwise provided herein, each payment (including each prepayment) by Borrower on account of principal or interest on the Term Loan Advances shall be applied according to each Lender's Pro Rata Share of the outstanding principal amount of the Term Loan Advances. The amount of each principal prepayment of the Term Loan Advances shall be applied to reduce the then remaining installments of the Term Loan Advances based upon each Pro Rata Share of Term Loan Advances.

(d) Agent has the exclusive right to determine the order and manner in which all payments with respect to the Obligations may be applied. Borrower shall have no right to specify the order or the accounts to which Agent shall allocate or apply any payments required to be made by Borrower to Agent or otherwise received by Agent or any Lender under this Agreement when any such allocation or application is not specified elsewhere in this Agreement.

(e) Agent may debit any of Borrower's deposit accounts maintained with Agent, including the Designated Deposit Account, for principal and interest payments or any other amounts Borrower owes Agent or any Lender when due under the Loan Documents. These debits shall not constitute a set-off.

(f) Unless Agent shall have been notified in writing by Borrower prior to the date of any payment due to be made by Borrower hereunder that Borrower will not make such payment to Agent, Agent may assume that Borrower is making such payment, and Agent may, but shall not be required to, in reliance upon such assumption, make available to Lenders their respective Pro Rata Share of a corresponding payment amount. If such payment is not made to Agent by Borrower within three (3) Business Days after such due date, Agent shall be entitled to recover, on demand, from each Lender to which any amount which was made available pursuant to the preceding sentence, such amount with interest thereon at the rate per annum equal to the daily average Federal Funds Effective Rate. Nothing herein shall be deemed to limit the rights of Agent or any Lender against Borrower.

1.5 Settlement Procedures. If Agent receives any payment for the account of Lenders on or prior to 12:00 p.m. (Pacific time) on any Business Day, Agent shall pay to each applicable Lender such Lender's Pro Rata Share of such payment on such Business Day. If Agent receives any payment for the account of Lenders after 12:00 p.m. (Pacific time) on any Business Day, Agent shall pay to each applicable Lender such Lender's Pro Rata Share of such payment on the next Business Day.

1.6 Withholding by Borrower. Payments received by Agent, for the account of Lenders, from Borrower under this Agreement will be made free and clear of and without deduction for any and all present or future taxes, levies, imposts, duties, deductions, withholdings, assessments, fees or other charges imposed by any Governmental Authority (including any interest, additions to tax or penalties applicable thereto). Specifically, however, if at any time any Governmental Authority, applicable law, regulation or international agreement requires Borrower to make any withholding or deduction from any such payment or other sum payable hereunder to Agent, Borrower hereby covenants and agrees that the amount due from Borrower with respect to such payment or other sum payable hereunder will be increased to the extent necessary to ensure that, after the making of such required withholding or deduction, Agent receives a net sum equal to the sum which it would have received had no withholding or deduction been required, and Borrower shall pay the full amount withheld or deducted to the relevant Governmental Authority. Borrower will, upon request, furnish Agent with proof reasonably satisfactory to Agent indicating that Borrower has

made such withholding payment; provided, however, that Borrower need not make any withholding payment if the amount or validity of such withholding payment is contested in good faith by appropriate and timely proceedings and as to which payment in full is bonded or reserved against by Borrower. The agreements and obligations of Borrower contained in this Section 1.6 shall survive the termination of this Agreement.

1.7 Change in Circumstances.

(a) Increased Costs. If any Change in Law shall: (i) impose, modify or deem applicable any reserve, special deposit, compulsory loan, insurance charge or similar requirement against assets of, deposits with or for the account of, or advances, loans or other credit extended or participated in by, Agent, (ii) subject Agent to any Taxes (other than (A) Indemnified Taxes, (B) Taxes described in clauses (b) through (d) of the definition of Excluded Taxes, and (C) Connection Income Taxes) on its loans, loan principal, letters of credit, commitment, or other obligations, or its deposits, reserves, other liabilities or capital attributable thereto, or (iii) impose on Agent any other condition, cost or expense (other than Taxes) affecting this Agreement or Credit Extensions made by Agent, and the result of any of the foregoing shall be to increase the cost to Agent of making, converting to, continuing or maintaining any Credit Extension (or of maintaining its obligation to make any such Credit Extension), or to reduce the amount of any sum received or receivable by Agent hereunder (whether of principal, interest or any other amount) then, upon written request of Agent, Borrower shall promptly pay to Agent such additional amount or amounts as will compensate Agent for such additional costs incurred or reduction suffered.

(b) Capital Requirements. If Agent determines that any Change in Law affecting Agent regarding capital or liquidity requirements, has or would have the effect of reducing the rate of return on Agent's capital as a consequence of this Agreement, any term loan facility, or the Credit Extensions made by Agent to a level below that which Agent could have achieved but for such Change in Law (taking into consideration Agent's policies with respect to capital adequacy and liquidity), then from time to time upon written request of Agent, Borrower shall promptly pay to Agent such additional amount or amounts as will compensate Agent for any such reduction suffered.

(c) Delay in Requests. Failure or delay on the part of Agent to demand compensation pursuant to this Section 1.7 shall not constitute a waiver of Agent's right to demand such compensation; provided that Borrower shall not be required to compensate Agent pursuant to subsection (a) for any increased costs incurred or reductions suffered more than nine (9) months prior to the date that Agent notifies Borrower of the Change in Law giving rise to such increased costs or reductions (except that if the Change in Law giving rise to such increased costs or reductions is retroactive, then the nine (9) month period shall be extended to include the period of retroactive effect).

1.8 Taxes.

(a) Payments Free of Taxes. Any and all payments by or on account of any obligation of Borrower under any Loan Document shall be made without deduction or withholding for any Taxes, except as required by Applicable Law. If any Applicable Law (as determined in the good faith discretion of Borrower) requires the deduction or withholding of any Tax from any such payment by Borrower, then (i) Borrower shall be entitled to make such deduction or withholding, (ii) Borrower shall timely pay the full amount deducted or withheld to the relevant Governmental Authority in accordance with Applicable Law, and (iii) if such Tax is an Indemnified Tax, the sum payable by Borrower shall be increased as necessary so that after such deduction or withholding has been made (including such deductions and withholdings applicable to additional sums payable under this Section 1.8) Agent receives an amount equal to the sum it would have received had no such deduction or withholding been made.

(b) Payment of Other Taxes by Borrower. Without limiting the provisions of subsection (a) above, Borrower shall timely pay any Other Taxes to the relevant Governmental Authority in accordance with Applicable Law.

(c) Tax Indemnification. Without limiting the provisions of subsections (a) and (b) above, Borrower shall, and does hereby, indemnify Agent, within ten (10) days after demand therefor, for the full amount of any Indemnified Taxes (including Indemnified Taxes imposed or asserted on or attributable to amounts payable under this Section 1.8) payable or paid by Agent or required to be withheld or deducted from a payment to Agent and any reasonable expenses arising therefrom or with respect thereto, whether or not such Indemnified Taxes were correctly

or legally imposed or asserted by the relevant Governmental Authority. A certificate as to the amount of such payment or liability delivered to Borrower by Agent shall be conclusive absent manifest error.

(d) Evidence of Payments. As soon as practicable after any payment of Taxes by Borrower to a Governmental Authority pursuant to this Section 1.8, Borrower shall deliver to Agent a certified copy of a receipt issued by such Governmental Authority evidencing such payment, a copy of the return reporting such payment or other evidence of such payment reasonably satisfactory to Agent.

(e) Status of Agent. If Agent (including any assignee or successor) is entitled to an exemption from or reduction of withholding tax with respect to payments made under any Loan Document, it shall deliver to Borrower, at the time or times reasonably requested by Borrower, such properly completed and executed documentation reasonably requested by Borrower as will permit such payments to be made without withholding or at a reduced rate of withholding. In addition, Agent, if reasonably requested by Borrower, shall deliver such other documentation prescribed by Applicable Law or reasonably requested by Borrower as will enable Borrower to determine whether or not Agent is subject to backup withholding or information reporting requirements. Without limiting the generality of the foregoing, Agent shall deliver whichever of IRS Form W-9, IRS Form W-8BEN-E, IRS Form W-8ECI or W-8IMY is applicable, as well as any applicable supporting documentation or certifications.

1.9 Procedures for Borrowing.

(a) Term Loan Advances. Subject to the prior satisfaction of all other applicable conditions to the making of a Credit Extension set forth in this Agreement (which must be satisfied no later than 12:00 p.m. Pacific time on the applicable Funding Date), to obtain a Credit Extension, Borrower shall notify Agent (which notice shall be irrevocable) by 12:00 p.m. Pacific time at least five (5) Business Days prior to the proposed Funding Date of such Credit Extension. Such notice shall be made by electronic mail, facsimile, or telephone, and, together with any such notification, Borrower shall deliver to Agent by electronic mail or facsimile a completed Disbursement Letter (and Payment/Advance Form) executed by an Authorized Signer. Agent may rely on any telephone notice given by a person whom Agent believes is an Authorized Signer. Borrower will indemnify Agent for any loss Agent suffers due to such belief or reliance. Agent shall have received satisfactory evidence that the Board has approved that such Authorized Signer may provide such notices and request Credit Extensions (which requirement may be deemed satisfied by the prior delivery of Borrowing Resolutions that certifies as to such Board approval).

(b) On the Funding Date, Agent shall credit the Credit Extensions to the Designated Deposit Account. Agent may make Credit Extensions under this Agreement based on instructions from an Authorized Signer or without instructions if the Credit Extensions are necessary to meet Obligations which have become due.

(c) Funding. In determining compliance with any condition hereunder to the making of a Credit Extension that, by its terms, must be fulfilled to the satisfaction of a Lender, Agent may presume that such condition is satisfactory to such Lender unless Agent shall have received notice to the contrary from such Lender prior to the making of such Credit Extension. Unless Agent shall have been notified in writing by any Lender prior to the date of any Credit Extension, that such Lender will not make the amount that would constitute its share of such borrowing available to Agent, Agent may assume that such Lender is making such amount available to Agent, and Agent may, in reliance upon such assumption, make available to Borrower a corresponding amount. If such amount is not made available to Agent by the required time on the Funding Date therefor, such Lender shall pay to Agent, on demand, such amount with interest thereon, at a rate equal to the greater of (i) the Federal Funds Effective Rate or (ii) a rate determined by Agent in accordance with banking industry rules on interbank compensation, for the period until such Lender makes such amount immediately available to Agent. If such Lender's share of such Credit Extension is not made available to Agent by such Lender within three (3) Business Days after such Funding Date, Agent shall also be entitled to recover such amount with interest thereon at the rate per annum applicable to the Term Loan Advances, on demand, from Borrower.

2 CONDITIONS OF CREDIT EXTENSIONS

2.1 Conditions Precedent to Initial Credit Extension. Each Lender's obligation to make the initial Credit Extension hereunder is subject to the condition precedent that Agent shall have received, in form and substance

satisfactory to Agent and the Lenders, such documents, and completion of such other matters, as Agent may reasonably deem necessary or appropriate, including, without limitation:

(a) duly executed Loan Documents;

(b) duly executed signatures to a Warrant to Purchase Common Stock issued by Borrower in favor of SVB together with a copy of Borrower's current capitalization table;

(c) duly executed signatures to a Warrant to Purchase Common Stock issued by Borrower in favor of SVB Capital together with a copy of Borrower's current capitalization table;

(d) duly executed signatures to a Warrant to Purchase Common Stock issued by Borrower in favor of INNOVATION CREDIT FUND VIII-A, L.P. together with a copy of Borrower's current capitalization table;

(e) the Operating Documents of Borrower and long-form good standing certificates of Borrower certified by the Secretary of State of the State of Delaware and the Secretary of State (or equivalent agency) of each other jurisdiction in which Borrower is qualified to conduct business, in each case dated as of a date no earlier than thirty (30) days prior to the Effective Date;

(f) a secretary's certificate/officer's certificate (as applicable) duly executed by a Responsible Officer or secretary of Borrower with respect to Borrower's Operating Documents, incumbency, specimen signatures and resolutions authorizing the execution and delivery of this Agreement and the other Loan Documents to which it is a party;

(g) duly executed Borrowing Resolutions for Borrower;

(h) duly executed Payment/Advance Form;

(i) certified copies, dated as of a recent date, of searches for Liens (including without limitation, UCC searches) filed in the central filing office of the State of Delaware, accompanied by written evidence (including any UCC termination statements and other Lien releases) that the Liens indicated in any such financing statements or other filings either constitute Permitted Liens or have been or, in connection with the initial Credit Extension hereunder, will be terminated or released;

(j) duly executed Perfection Certificate of Borrower;

(k) [reserved]; and

(l) payment of the fees and Lenders' Expenses then due as specified in Section 1.3 hereof.

2.2 Conditions Precedent to all Credit Extensions. Each Lender's obligation to make each Credit Extension, including the initial Credit Extension, is subject to the following conditions precedent:

(a) receipt of Borrower's (i) executed Disbursement Letter and (ii) executed Payment/Advance Form;

(b) the representations and warranties in this Agreement shall be true and correct in all material respects as of the date of the Disbursement Letter (and the Payment/Advance Form) and as of the Funding Date of each Credit Extension; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true and correct in all material respects as of such date, and no Default or Event of Default shall have occurred and be continuing or result from the Credit Extension. Each Credit Extension is Borrower's representation and warranty on that date that the representations and warranties in this Agreement remain true and correct in all material respects; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by

materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true and correct in all material respects as of such date; and

(c) a Material Adverse Change shall not have occurred and be continuing.

2.3 Covenant to Deliver. Borrower shall deliver to Agent and each Lender each item required to be delivered to Agent and each Lender under this Agreement as a condition precedent to any Credit Extension. A Credit Extension made prior to the receipt by Agent and each Lender of any such item shall not constitute a waiver by Agent or Lenders of Borrower's obligation to deliver such item, and the making of any Credit Extension in the absence of a required item shall be in each Lender's sole discretion.

3 CREATION OF SECURITY INTEREST

3.1 Grant of Security Interest.

(a) Borrower hereby grants Agent, for the ratable benefit of the Lenders, to secure the payment and performance in full of all of the Obligations, a continuing security interest in, and pledges to Agent, for the ratable benefit of the Lenders, the Collateral, wherever located, whether now owned or hereafter acquired or arising, and all proceeds and products thereof. For clarity, any reference to "Agent's Lien" or any granting of collateral to Agent in this Agreement or any Loan Document means the Lien granted to Agent for the ratable benefit of the Lenders.

(b) Borrower acknowledges that it previously has entered, or may in the future enter, into Bank Services Agreements with SVB. Regardless of the terms of any Bank Services Agreement, Borrower agrees that any amounts Borrower owes SVB thereunder shall be deemed to be Obligations hereunder and that it is the intent of Borrower and SVB to have all such Obligations secured by the first priority perfected security interest in the Collateral granted herein (subject to Permitted Liens).

3.2 Authorization to File Financing Statements. Borrower hereby authorizes Agent, on behalf of the Lenders, to file financing statements, without notice to Borrower, with all jurisdictions deemed necessary or appropriate by Agent to perfect or protect Agent's and Lenders' interest or rights hereunder, including a notice that any disposition of the Collateral, by Borrower or any other Person, shall be deemed to violate the rights of Agent under the Code. Such financing statements may indicate the Collateral as "all assets of the Debtor" or words of similar effect.

3.3 Termination. If this Agreement is terminated, Agent's Lien in the Collateral shall continue until the Obligations (other than inchoate indemnity obligations) are repaid in full in cash. Upon payment in full in cash of the Obligations (other than inchoate indemnity obligations) and at such time as the Lenders' obligation to make Credit Extensions has terminated, Agent shall, at Borrower's sole cost and expense, terminate its security interest in the Collateral and all rights therein shall revert to Borrower. In the event (a) all Obligations (other than inchoate indemnity obligations), except for Bank Services, are satisfied in full, and (b) this Agreement is terminated, Agent shall terminate the security interest granted herein upon Borrower providing to SVB cash collateral acceptable to SVB in its sole discretion for Bank Services, if any. In the event such Bank Services consist of outstanding Letters of Credit, Borrower shall provide to SVB cash collateral in an amount equal to at least (i) one hundred five percent (105.0%) of the face amount of all such Letters of Credit denominated in Dollars and (ii) one hundred ten percent (110.0%) of the Dollar Equivalent of the face amount of all such Letters of Credit denominated in a Foreign Currency, plus, in each case, all interest, fees, and costs due or estimated by SVB to become due in connection therewith, to secure all of the Obligations relating to such Letters of Credit.

4 REPRESENTATIONS AND WARRANTIES

Borrower represents and warrants as follows:

4.1 Due Organization, Authorization; Power and Authority.

(a) Borrower and each of its Subsidiaries are each duly existing and in good standing as a Registered Organization in their respective jurisdiction of organization and are qualified and licensed to do business and is in good standing in any jurisdiction in which the conduct of their respective business or their ownership of property requires that they be qualified except where the failure to do so could not reasonably be expected to have a material adverse effect on Borrower's business or operations.

(b) All information set forth on the Perfection Certificate pertaining to Borrower and each of its Subsidiaries is true and correct (it being understood and agreed that Borrower may from time to time update certain information in the Perfection Certificate after the Effective Date to the extent permitted by one or more specific provisions in this Agreement and the Perfection Certificate shall be deemed to be updated to the extent such notice is provided to Agent of such permitted update).

(c) The execution, delivery and performance by Borrower and each of its Subsidiaries of the Loan Documents to which it is a party have been duly authorized, and do not (i) conflict with any of Borrower's or any such Subsidiary's organizational documents, (ii) contravene, conflict with, constitute a default under or violate any material Applicable Law, (iii) contravene, conflict with or violate any applicable order, writ, judgment, injunction, decree, determination or award of any Governmental Authority by which Borrower or any of its Subsidiaries or any of their property or assets may be bound or affected, (iv) require any action by, filing, registration, or qualification with, or Governmental Approval from, any Governmental Authority (except such Governmental Approvals which have already been obtained and are in full force and effect), or (v) conflict with, contravene, constitute a default or breach under, or result in or permit the termination or acceleration of, any material agreement by which Borrower or any of its Subsidiaries is bound. Neither Borrower nor any of its Subsidiaries are in default under any agreement to which it is a party or by which it is bound in which the default could reasonably be expected to have a material adverse effect on Borrower's or any of its Subsidiary's business or operations.

4.2 Collateral.

(a) The security interests granted herein are and shall at all times continue to be a first priority perfected security interests in the Collateral (subject to Permitted Liens). Borrower has good title to, rights in, and the power to transfer each item of the Collateral upon which it purports to grant a Lien hereunder, free and clear of any and all Liens except Permitted Liens.

(b) Borrower has no Collateral Accounts at or with any bank or financial institution other than SVB or SVB's Affiliates except for the Collateral Accounts described in the Perfection Certificate delivered to Agent and each Lender in connection herewith and which Borrower has taken such actions as are necessary to give Agent, for the ratable benefit of the Lenders, a perfected security interest therein, to the extent required pursuant to the terms of Section 5.7(c). The Accounts are bona fide, existing obligations of the Account Debtors.

(c) The Collateral is not in the possession of any third party bailee (such as a warehouse) except as otherwise provided in the Perfection Certificate or as permitted pursuant to Section 6.2. None of the components of the Collateral shall be maintained at locations other than as provided in the Perfection Certificate or as permitted pursuant to Section 6.2.

(d) All Inventory is in all material respects of good and marketable quality, free from material defects.

(e) Borrower owns, or possesses the right to use to the extent necessary in its business, all Intellectual Property, licenses and other intangible assets that are used in the conduct of its business as now operated, except to the extent that such failure to own or possess the right to use such asset would not reasonably be expected to have a material adverse effect on Borrower's business or operations, and no such asset, to the best knowledge of Borrower, conflicts with the valid Intellectual Property, license, or intangible asset of any other Person to the extent that such conflict could reasonably be expected to have a material adverse effect on Borrower's business or operations.

(f) Except as noted on the Perfection Certificate or for which notice has been given to Agent pursuant to and in accordance with Section 5.9(b), Borrower is not a party to, nor is it bound by, any Restricted License.

4.3 Litigation. Other than as set forth in the Perfection Certificate or as disclosed to Agent pursuant to Section 5.3(i), there are no actions, investigations or proceedings pending or, to the knowledge of any Responsible Officer, threatened in writing by or against Borrower or any of its Subsidiaries involving more than, individually or in the aggregate, One Million Dollars ($1,000,000) not covered by independent third party insurance as to which liability has been accepted by the carrier providing such insurance.

4.4 Financial Statements; Financial Condition. All consolidated financial statements for Borrower and any of its Subsidiaries delivered to Agent and the Lenders by submission to the Financial Statement Repository or otherwise submitted to Agent and the Lenders fairly present in all material respects Borrower's consolidated financial condition and Borrower's consolidated results of operations for the periods covered thereby, subject, in the case of unaudited financial statements, to normal year-end adjustments and the absence of footnote disclosures. There has not been any material deterioration in Borrower's consolidated financial condition since the date of the most recent financial statements submitted to the Financial Statement Repository or otherwise submitted to Agent and the Lenders.

4.5 Solvency. The fair salable value of Borrower's consolidated assets (including goodwill minus disposition costs) exceeds the fair value of Borrower's liabilities; Borrower is not left with unreasonably small capital after the transactions in this Agreement; and Borrower and each of its Subsidiaries, taken as a whole, are able to pay their debts (including trade debts) as they mature.

4.6 Regulatory Compliance. Borrower is not an "investment company" or a company "controlled" by an "investment company" under the Investment Company Act of 1940, as amended. Borrower is not engaged as one of its important activities in extending credit for margin stock (under Regulations X, T and U of the Federal Reserve Board of Governors). Borrower and each of its Subsidiaries (a) have complied in all material respects with all Applicable Law, and (b) have not violated any Applicable Law the violation of which could reasonably be expected to have a material adverse effect on Borrower's business or operations. Borrower and each of its Subsidiaries have duly complied with, and their respective facilities, business, assets, property, leaseholds, real property and Equipment are in compliance with, Environmental Laws, except where the failure to do so could not reasonably be expected to have a material adverse effect on Borrower's business or operations; there are no outstanding citations, notices or orders of non-compliance issued to Borrower or any of its Subsidiaries or relating to their respective facilities, businesses, assets, property, leaseholds, real property or Equipment under such Environmental Laws. Borrower and each of its Subsidiaries have obtained all consents, approvals and authorizations of, made all declarations or filings with, and given all notices to, all Governmental Authorities that are necessary to continue their respective businesses as currently conducted, except where the failure to obtain or make or file the same would not reasonably be expected to have a material adverse effect on Borrower's business or operations.

4.7 Subsidiaries; Investments. Borrower does not own any stock, partnership, or other ownership interest or other equity securities except for Permitted Investments.

4.8 Tax Returns and Payments; Pension Contributions.

(a) Borrower and each of its Subsidiaries have timely filed, or submitted extensions for, all required tax returns and reports, and Borrower and each of its Subsidiaries have timely paid all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower and each of its Subsidiaries except (i) to the extent such taxes are being contested in good faith by appropriate proceedings promptly instituted and diligently conducted, so long as such reserve or other appropriate provision, if any, as shall be required in conformity with GAAP shall have been made therefor, or (ii) if such taxes, assessments, deposits and contributions do not, individually or in the aggregate, exceed One Hundred Thousand Dollars ($100,000). Borrower is unaware of any claims or adjustments proposed for any of Borrower's or any of its Subsidiary's prior tax years which could result in additional taxes becoming due and payable by Borrower or any of its Subsidiaries in excess of One Hundred Thousand Dollars ($100,000) individually or in the aggregate.

(b) Borrower and each of its Subsidiaries have paid all amounts necessary to fund all present pension, profit sharing and deferred compensation plans in accordance with their terms, and neither Borrower nor any of its Subsidiaries has withdrawn from participation in, and has not permitted partial or complete termination of, or permitted the occurrence of any other event with respect to, any such plan which could reasonably be expected to result in any liability of Borrower or any of its Subsidiaries, including any liability to the Pension Benefit Guaranty Corporation or its successors or any other Governmental Authority.

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

4.10 Sanctions. Neither Borrower nor any of its Subsidiaries is: (a) in violation of any Sanctions; or (b) a Sanctioned Person. Neither Borrower nor any of its Subsidiaries, directors, officers, employees, agents or Affiliates: (i) conducts any business or engages in any transaction or dealing with any Sanctioned Person, including making or receiving any contribution of funds, goods or services to or for the benefit of any Sanctioned Person; (ii) deals in, or otherwise engages in any transaction relating to, any property or interests in property blocked pursuant to any Sanctions; (iii) engages in or conspires to engage in any transaction that evades or avoids, or has the purpose of evading or avoiding, or attempts to violate, any of the prohibitions set forth in any Sanctions; or (iv) otherwise engages in any transaction that could cause Agent or the Lenders to violate any Sanctions.

4.11 Healthcare Permits. To the extent applicable to Borrower, (a) Borrower has obtained all Healthcare Permits and other rights from, and has made all declarations and filings with, all applicable Governmental Authorities, all self-regulatory authorities and all courts and other tribunals necessary to engage in the management and/or operation of their respective business; (b) each such Healthcare Permit is valid and in full force and effect, and Borrower is in compliance with the terms and conditions of all such Healthcare Permits; and (c) Borrower has not received notice from any Governmental Authority with respect to the revocation, suspension, restriction, limitation or termination of any Healthcare Permit nor, to the knowledge of Borrower, is any such action proposed or threatened in writing.

4.12 Compliance with Healthcare Laws.

(a) To the extent applicable to Borrower, Borrower is in compliance with all applicable Healthcare Laws. Without limiting the generality of the foregoing, Borrower has not received written notice by a governmental authority of any violation (or of any investigation, audit, or other proceeding involving allegations of any violation) of any Healthcare Laws, and no investigation, inspection, audit or other proceeding involving allegations of any violation is, to the knowledge of Borrower, threatened in writing or contemplated.

(b) To the knowledge of Borrower, Borrower is not in default or violation of any law which is applicable to Borrower or its respective assets or the conduct of its respective businesses and Borrower has not been debarred or excluded from participation under a state or federal health care program, including any state or federal workers compensation program.

(c) Borrower is not a party to any corporate integrity agreements, deferred prosecution agreements, monitoring agreements, consent decrees, settlement orders or similar agreements with or imposed by any governmental authority.

5 AFFIRMATIVE COVENANTS

Borrower shall do all of the following:

5.1 Use of Proceeds. Cause the proceeds of the Credit Extensions to be used (a) as working capital or (b) to fund its general business purposes, and not for personal, family, household or agricultural purposes.

5.2 Government Compliance.

(a) Maintain its and all of its Subsidiaries' legal existence (except as permitted under Section 6.3 with respect to Subsidiaries only) and good standing in their respective jurisdictions of formation and maintain qualification in each jurisdiction in which the failure to so qualify would reasonably be expected to have a material adverse effect on Borrower's business or operations. Borrower shall comply, and have each Subsidiary comply, in all material respects, with all laws, ordinances and regulations to which it is subject.

(b) Obtain all of the Governmental Approvals necessary for the performance by Borrower and each of its Subsidiaries of their obligations under the Loan Documents to which it is a party, including any grant of a security interest to Agent, for the ratable benefit of the Lenders, in all of its property. Borrower shall promptly provide copies of any such obtained Governmental Approvals to Agent.

(c) Cause the operations and property of Borrower, each of its Subsidiaries to comply with all applicable Healthcare Laws. Without limiting the foregoing, the operations and property of Borrower and each of its Subsidiaries shall comply with HIPAA in all material respects. Borrower established and maintains a corporate compliance program that (i) addresses the material Requirements of Law, including all applicable Healthcare Laws, of Governmental Authorities having jurisdiction over its business and operations, and (ii) has been structured to account for the guidance issued by the U.S. Department of Health and Human Services regarding characteristics of effective corporate compliance programs. As of the Effective Date, Borrower has delivered to Agent and the Lenders an accurate and complete copy of each material report, study, survey or other document of which Borrower has knowledge that addresses or otherwise relates to the compliance by Borrower and each of its Subsidiaries, with applicable Healthcare Laws.

5.3 Financial Statements, Reports. Deliver to Agent and each Lender by submitting to the Financial Statement Repository:

(a) Quarterly Bank Statements. Together with the statements in Section 5.3(b), copies of account statements from each financial institution, other than SVB, where Borrower or its Subsidiaries maintains operating accounts, deposit accounts or securities accounts.

(b) Quarterly Financial Statements. Subject to Section 5.3(f) below, no later than forty-five (45) days after the last day of each calendar quarter (ninety (90) days for the last quarter of Borrower's fiscal year), a company prepared consolidated balance sheet, cash flow statement, and income statement covering Borrower's and each of its Subsidiaries' operations for such calendar quarter in a form consistent with those filed with SEC; provided, however, that if any of the aforementioned deliverables are prepared but not filed with the SEC, such deliverables should be provided to each Lender;

(c) Quarterly Compliance Statement. Together with the statements set forth in Section 5.3(b), a duly completed Compliance Statement, confirming that as of the end of such quarterly end, Borrower was in compliance, in all material respects, with all of the terms and conditions of this Agreement, and setting forth calculations showing compliance with the financial covenants (if any) set forth in this Agreement and such other information as Agent or the Lenders may reasonably request;

(d) Annual Operating Budget and Financial Projections. Within thirty (30) days after the last day of Borrower's fiscal year, and within ten (10) Business Days of any updates or amendments thereto, (i) annual operating budgets (including income statements, balance sheets and cash flow statements, by quarter) for the upcoming fiscal year of Borrower, and (ii) annual financial projections for the following fiscal year (on a quarterly basis), in each case as approved by the Board, together with any related business forecasts used in the preparation of such annual financial projections;

(e) Annual Audited Financial Statements. Within one hundred eighty (180) days after the last day of Borrower's fiscal year, audited consolidated financial statements prepared under GAAP, consistently applied, together with an unqualified opinion on the financial statements from an independent certified public accounting firm reasonably acceptable to Agent and in a form consistent with those filed with SEC;

(f) SEC Filings. Within five (5) Business Days of filing, notification of the filing and copies of all periodic and other reports, proxy statements and other materials filed by Borrower and/or any of its Subsidiaries with the SEC, any Governmental Authority succeeding to any or all of the functions of the SEC or with any national securities exchange, or distributed to its shareholders, as the case may be. Documents required to be delivered pursuant to the terms hereof (to the extent any such documents are included in materials otherwise filed with the SEC) may be delivered electronically and if so delivered, shall be deemed to have been delivered on the date on which Borrower or any of its Subsidiaries posts such documents, or provides a link thereto, on Borrower's or any of its Subsidiaries' website on the internet at Borrower's or any of its Subsidiaries' website address; provided, however, Borrower shall promptly notify Agent and the Lenders in writing (which may be by electronic mail) of the posting of any such documents;

(g) Security Holder and Subordinated Debt Holder Reports. Within five (5) Business Days of delivery, copies of all statements, reports and notices made available to Borrower's security holders or to any holders of Subordinated Debt;

(h) [Reserved].

(i) Legal Action Notice. Within five (5) Business Days, written notice of any legal actions, investigations or proceedings pending or threatened in writing against Borrower or any of its Subsidiaries that could reasonably be expected to result in damages or costs to Borrower or any of its Subsidiaries of, individually or in the aggregate, One Million Dollars ($1,000,000) or more;

(j) Tort Claim Notice. If Borrower shall acquire a commercial tort claim with an expected value in excess of Five Hundred Thousand Dollars ($500,000), Borrower shall, within five (5) Business Days, notify Agent in a writing signed by Borrower of the general details thereof and grant to Agent, for the ratable benefit of the Lenders, in such writing a security interest therein and in the proceeds thereof, all upon the terms of this Agreement, with such writing to be in form and substance reasonably satisfactory to Agent;

(k) Government Filings. Within five (5) Business Days after the same are sent or received, copies of all correspondence, reports, documents and other filings by Borrower or any of its Subsidiaries with any Governmental Authority regarding compliance with or maintenance of Governmental Approvals or Applicable Law or that could reasonably be expected to have a material effect on any of the Governmental Approvals or otherwise on the business of Borrower or any of its Subsidiaries;

(l) Registered Organization. If Borrower is not a Registered Organization as of the Effective Date but later becomes one, promptly notify Agent of such occurrence and provide Agent with Borrower's organizational identification number;

(m) Default. Written notice within five (5) Business Days of the occurrence of a Default or Event of Default; and

(n) Other Financial Information. Other financial information regarding Borrower or any of its Subsidiaries reasonably requested by Agent or any Lender.

Any submission by Borrower of a Compliance Statement or any other financial statement submitted to the Financial Statement Repository pursuant to this Section 5.3 or otherwise submitted to Agent and the Lenders shall be deemed to be a representation by Borrower that as of the date of such Compliance Statement or other financial statement, the information and calculations set forth therein are true and correct. Any submission by Borrower of a Compliance Statement shall be deemed to be a representation by Borrower that (i) as of the end of the compliance period set forth in such submission, Borrower is in complete compliance with all required covenants except as noted

in such Compliance Statement or other financial statement, as applicable, (ii) as of the date of such submission, no Events of Default have occurred or are continuing, (iii) all representations and warranties other than any representations or warranties that are made as of a specific date in Section 4 remain true and correct in all material respects as of the date of such submission except as noted in such Compliance Statement or other financial statement, as applicable, (iv) as of the date of such submission, Borrower and each of its Subsidiaries has timely filed all required tax returns and reports, and Borrower has timely paid all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower except as otherwise permitted pursuant to the terms of Section 4.8, and (v) as of the date of such submission, no Liens have been levied or claims made against Borrower or any of its Subsidiaries relating to unpaid employee payroll or benefits of which Borrower has not previously provided written notification to Agent and Lenders.

5.4 Taxes; Pensions.

(a) Timely file, and require each of its Subsidiaries to timely file (in each case, unless subject to a valid extension), all required tax returns and reports and timely pay, and require each of its Subsidiaries to timely pay, all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower and each of its Subsidiaries, except for deferred payment of any taxes contested pursuant to the terms of Section 4.8(a) hereof, and shall deliver to Agent, on demand, appropriate certificates attesting to such payments, and pay, and require each of its Subsidiaries to pay, all amounts necessary to fund all present pension, profit sharing and deferred compensation plans in accordance with their terms.

(b) To the extent Borrower or any of its Subsidiaries defers payment of any contested taxes, (i) notify Agent in writing of the commencement of, and any material development in, the proceedings, and (ii) post bonds or take any other steps required to prevent the Governmental Authority levying such contested taxes from obtaining a Lien upon any of the Collateral that is other than a "Permitted Lien."

5.5 Access to Collateral; Books and Records. Allow Agent or its agents, at reasonable times, on five (5) Business Days' notice (provided no notice is required if an Event of Default has occurred and is continuing), to inspect the Collateral and audit and copy Borrower's Books. Such inspections or audits shall be conducted no more than once during any twelve-month period unless an Event of Default shall have occurred and be continuing, in which case such inspections and audits shall occur as often as Agent shall determine is necessary. The foregoing inspections and audits shall be at Borrower's expense, and the charge therefor shall be One Thousand Dollars ($1,000) per person per day (or such higher amount as shall represent Agent's then-current standard charge for the same), plus reasonable out-of-pocket expenses. In the event Borrower and Agent schedule an audit more than eight (8) days in advance, and Borrower cancels or seeks to reschedule the audit with less than eight (8) days written notice to Agent, then (without limiting any of Agent's or any Lender's rights or remedies), Borrower shall pay Agent a fee of Two Thousand Dollars ($2,000) plus any out-of-pocket expenses incurred by Agent to compensate Agent for the anticipated costs and expenses of the cancellation or rescheduling.

5.6 Insurance.

(a) Keep its business and the Collateral insured for risks and in amounts customary for companies of Borrower's size in Borrower's industry and location and as Agent may reasonably request. Insurance policies shall be in a form, with financially sound and reputable insurance companies that are not Affiliates of Borrower, and in amounts that are reasonably satisfactory to Agent.

(b) All property policies shall have a lender's loss payable endorsement showing Agent as lender loss payee. All liability policies shall show, or have endorsements showing, Agent as an additional insured. Agent shall be named as lender loss payee and/or additional insured with respect to any such insurance providing coverage in respect of any Collateral.

(c) Ensure that proceeds payable under any property policy are, at Agent's option, payable to Agent for the ratable benefit of the Lenders on account of the Obligations. Notwithstanding the foregoing, so long as no Event of Default has occurred and is continuing, Borrower shall have the option of applying up to Five Hundred Thousand Dollars ($500,000) with respect to any loss, but not exceeding One Million Five Hundred Thousand Dollars

($1,500,000) in the aggregate for all losses under all casualty policies in any one (1) year, toward the replacement or repair of destroyed or damaged property; provided that any such replaced or repaired property shall be deemed Collateral in which Agent and the Lenders have been granted a first priority security interest.

(d) At Agent's request, Borrower shall deliver certified copies of insurance policies and evidence of all premium payments. Each provider of any such insurance required under this Section 5.6 shall agree, by endorsement upon the policy or policies issued by it or by independent instruments furnished to Agent, that it will give Agent 30 days prior written notice before any such policy or policies shall be canceled or altered in any material respect. If Borrower fails to timely obtain insurance as required under this Section 5.6 or to timely pay any amount or furnish any required proof of payment to third persons and Agent, Agent may make all or part of such payment or obtain such insurance policies required in this Section 5.6, and take any action under the policies Agent deems prudent.

5.7 Operating Accounts.

(a) Maintain all of Borrower's, any of its Subsidiaries', and any Guarantor's operating accounts, depository accounts and excess cash with SVB or SVB's Affiliates; provided, however, notwithstanding the foregoing, (i) for a period of time not to exceed ninety (90) days after the Effective Date, Borrower shall be permitted to maintain up to Four Million Two Hundred Fifty Thousand Dollars ($4,250,000) in the aggregate in Borrower's accounts at Citizens Bank, Stephens, Inc., and JP Morgan Chase Bank, N.A. listed on the Perfection Certificate delivered by Borrower to Agent and the Lenders on or prior to the Effective Date (the "**Transition Accounts**") provided, further, that all amounts in the Transition Accounts shall by transferred into Borrower's accounts at SVB and the Transition Accounts shall be closed on or prior to the date that is ninety (90) days after the Effective Date, and (ii) Borrower and/or any of its Subsidiaries' shall be permitted to maintain an aggregate amount not to exceed Two Hundred Fifty Thousand Dollars ($250,000) in accounts outside of the United States with financial institutions other than Bank (the "**Foreign Accounts**").

(b) In addition to the foregoing, Borrower, any Subsidiary of Borrower and any Guarantor, shall obtain any business credit card, Letter of Credit, and cash management services exclusively from SVB; provided, however, notwithstanding the foregoing, for a period of time not to exceed one (1) year from and after the Effective Date, Borrower shall be permitted to maintain its business credit cards with JP Morgan Chase Bank, N.A.

(c) In addition to and without limiting the restrictions in (a), Borrower shall provide Agent five (5) Business Days prior written notice before establishing any Collateral Account at or with any bank or financial institution other than SVB or SVB's Affiliates. For each Collateral Account that Borrower at any time maintains, Borrower shall cause the applicable bank or financial institution (other than SVB) at or with which any Collateral Account is maintained to execute and deliver a Control Agreement or other appropriate instrument with respect to such Collateral Account to perfect Agent's Lien in such Collateral Account in accordance with the terms hereunder which Control Agreement may not be terminated without the prior written consent of the Lenders. The provisions of the previous sentence shall not apply to (i) deposit accounts exclusively used for payroll, payroll taxes, and other employee wage and benefit payments to or for the benefit of Borrower's employees and identified to Agent and the Lenders by Borrower as such, (ii) subject to the limitations set forth in Section 5.7(a) above, the Transition Accounts, or (iii) the Foreign Accounts.

5.8 Reserved.

5.9 Protection of Intellectual Property Rights.

(a) (i) Protect, defend and maintain the validity and enforceability of Borrower's and each Subsidiary's Intellectual Property, except to the extent that such failure to do so would not reasonably be expected to have a material adverse effect on Borrower's business or operations; (ii) promptly advise Agent in writing of infringements or any other event that could reasonably be expected to materially and adversely affect the value Borrower's and each Subsidiary's Intellectual Property, taken as a whole; and (iii) not allow any Intellectual Property material to Borrower's and its Subsidiaries' business to be abandoned, forfeited or dedicated to the public without Agent's written consent.

(b) Provide written notice to Agent within thirty (30) days of entering or becoming bound by any Restricted License (other than over-the-counter software that is commercially available to the public). Borrower shall take such steps as Agent reasonably requests to attempt to obtain the consent of, or waiver by, any person whose consent or waiver is necessary for (i) any such Restricted License to be deemed "Collateral" and for Agent to have a security interest in it that might otherwise be restricted or prohibited by law or by the terms of any such Restricted License, whether now existing or entered into in the future, and (ii) Agent to have the ability in the event of a liquidation of any Collateral to dispose of such Collateral in accordance with Agent's and the Lenders' rights and remedies under this Agreement and the other Loan Documents.

5.10 Litigation Cooperation. From the date hereof and continuing through the termination of this Agreement, make available to Agent, upon reasonable request without expense to Agent or any Lender, Borrower and its officers, employees and agents and Borrower's books and records, to the extent that Agent and/or the Lenders may deem them reasonably necessary to prosecute or defend any third-party suit or proceeding instituted by or against Agent and/or any Lender with respect to any Collateral or relating to Borrower.

5.11 Formation or Acquisition of Subsidiaries. Notwithstanding and without limiting the negative covenants contained in Sections 6.3 and 6.7 hereof, at the time that Borrower forms any Subsidiary or acquires any Subsidiary after the Effective Date (including, without limitation, pursuant to a Division), Borrower shall, (a) cause such new Domestic Subsidiary to provide to Lenders a joinder to this Agreement to cause such Domestic Subsidiary to become a co-Borrower or secured Guarantor hereunder (as determined by Agent in its sole discretion), together with documentation, all in form and substance reasonably satisfactory to Agent and Lenders (including being sufficient to grant Lenders a first priority Lien (subject to Permitted Liens) in and to the assets of such newly formed or acquired Domestic Subsidiary), (b) provide to Lenders appropriate certificates, powers and financing statements, pledging (i) all of the direct or beneficial ownership interest in such new Domestic Subsidiary, or (ii) up to sixty-five percent (65%) of the direct beneficial ownership interest in any new Foreign Subsidiary, in each case, in form and substance reasonably satisfactory to Agent and Lenders; and (c) provide to Lenders all other documentation in form and substance reasonably satisfactory to Agent and Lenders, if requested by Agent in its reasonable discretion, including one or more opinions of counsel reasonably satisfactory to Lenders, which in its opinion is appropriate with respect to the execution and delivery of the applicable documentation referred to above. Any document, agreement, or instrument executed or issued pursuant to this Section 5.11 shall be a Loan Document.

5.12 Inventory; Returns. Keep all Inventory in good and marketable condition, free from material defects. Returns and allowances between Borrower and its Account Debtors shall follow Borrower's customary practices as they exist at the Effective Date. Borrower shall promptly notify Agent and the Lenders of all returns, recoveries, disputes and claims that involve more than Two Hundred Fifty Thousand Dollars ($250,000).

5.13 Further Assurances. Execute any further instruments and take such further action as Agent and the Lenders reasonably request to perfect, protect, ensure the priority of or continue Agent's Lien on the Collateral or to effect the purposes of this Agreement.

5.14 Sanctions. (a) Not, and not permit any of its Subsidiaries to, engage in any of the activities described in Section 4.9 in the future; (b) not, and not permit any of its Subsidiaries to, become a Sanctioned Person; (c) ensure that the proceeds of the Obligations are not used to violate any Sanctions; and (d) deliver to Agent any certification or other evidence requested from time to time by Agent in its sole discretion, confirming each such Person's compliance with this Section 5.14. In addition, have implemented, and will consistently apply while this Agreement is in effect, procedures to ensure that the representations and warranties in Section 4.9 remain true and correct while this Agreement is in effect.

5.15 Cash Collateralization. If Borrower fails to achieve the Equity Milestone on or prior to December 31, 2021, Borrower hereby (a) agrees to, on or prior to December 31, 2021, execute a Pledge Agreement in favor of SVB as Agent, and (b) authorizes and directs Agent to immediately transfer to the Pledged Account (from any one or a combination of Borrower's accounts at SVB) an amount of cash and/or Cash Equivalents equal to fifty percent (50.0%) of the sum of (i) the then-outstanding principal balance of the Term Loan Advances, plus (ii) an amount equal to the Final Payment, in order to cash collateralize amounts owing from Borrower to Lenders in connection with the Term Loan Advances and the Final Payment (a "**Cash Collateralization**"), it being understood that the foregoing

authorization shall constitute an immediate Cash Collateralization of the Obligations, irrespective of any delay by Agent in effecting such transfer.

5.16 Post-Closing Obligations.

(a) As soon as possible, but in any event not later than the date that is thirty (30) days after the Effective Date, Borrower shall deliver to Agent and the Lenders, evidence satisfactory to Agent that the insurance policies and endorsements required by Section 5.5 hereof are in full force and effect with respect to Borrower, together with appropriate evidence showing lender loss payable and additional insured clauses or endorsements in favor of Agent.

(b) As soon as possible, but in any event not later than the date that is thirty (30) days after the Effective Date, Borrower shall deliver to Agent and the Lenders evidence, satisfactory to Agent and the Lenders confirming the Lien filed against Borrower on August 3, 2020 in favor of the U.S. Small Business Administration as instrument no. 202068993430 has been terminated/discharged.

6 NEGATIVE COVENANTS

Borrower shall not do any of the following without the prior written consent of the Lenders:

6.1 Dispositions. Convey, sell, lease, transfer, assign, or otherwise dispose of (including, without limitation, pursuant to a Division) (collectively, a "**Transfer**"), or permit any of its Subsidiaries to Transfer, all or any part of its business or property, except for Transfers (a) of Inventory in the ordinary course of business; (b) of worn-out or obsolete Equipment that is, in the reasonable judgment of Borrower, no longer economically practicable to maintain or useful in the ordinary course of business of Borrower; (c) consisting of Permitted Liens and Permitted Investments; (d) consisting of the sale or issuance of any stock, partnership, membership, or other ownership interest or other equity securities of Borrower permitted under Section 6.2 of this Agreement; (e) consisting of Borrower's or its Subsidiaries' use or transfer of money or Cash Equivalents in the ordinary course of its business for the payment of ordinary course business expenses in a manner that is not prohibited by the terms of this Agreement or the other Loan Documents; (f) of (i) non-exclusive licenses for the use of the property of Borrower or its Subsidiaries in the ordinary course of business, (ii) licenses that could not result in a legal transfer of title of the licensed property but that may be exclusive in respects other than territory and that may be exclusive as to territory only as to discrete geographical areas outside of the United States, and (iii) licenses that are exclusive as to territory with respect to geographical areas within the United States with the prior written consent of the Lenders which shall be granted or denied by the Lenders in their sole discretion; (g) consisting of the discounting of Accounts in the ordinary course of business consistent with past practices of Borrower as of the Effective Date; (h) Sale and Leasebacks Transactions with respect to the equipment located at the Houston Facility; and (i) of assets in the ordinary course of business not otherwise permitted by this Section 6.1 provided that the aggregate value of such Transfers does not exceed Fifty Thousand Dollars ($50,000) in the aggregate in any fiscal year.

6.2 Changes in Business, Management, Control, or Business Locations. (a) Engage in or permit any of its Subsidiaries to engage in any business other than the businesses currently engaged in by Borrower and such Subsidiary, as applicable, or reasonably related thereto; (b) liquidate or dissolve or permit any of its Subsidiaries to liquidate or dissolve; (c) fail to provide notice to Agent and Lenders of any Key Person departing from or ceasing to be employed by Borrower within ten (10) Business Days after such Key Person's departure; (d) permit, allow or suffer to occur any Change in Control; or (e) without at least ten (10) days prior written notice to Agent, (i) add any new offices or business locations, including warehouses (unless such new offices or business locations contain less than Two Hundred Fifty Thousand Dollars ($250,000) in Borrower's assets or property) or deliver any portion of the Collateral valued, individually or in the aggregate, in excess of Two Hundred Fifty Thousand Dollars ($250,000) to a bailee at a location other than to a bailee and at a location already disclosed in the Perfection Certificate, (ii) change its jurisdiction of organization, (iii) change its organizational structure or type, (iv) change its legal name, or (v) change any organizational number (if any) assigned by its jurisdiction of organization. If Borrower intends to add any new offices or business locations, including warehouses, containing in excess of Two Hundred Fifty Thousand Dollars ($250,000) of Borrower's assets or property, then Borrower will cause the landlord of any such new offices or business locations, including warehouses, to execute and deliver a landlord consent in form and substance satisfactory to Agent.

If Borrower intends to deliver any portion of the Collateral valued, individually or in the aggregate, in excess of Two Hundred Fifty Thousand Dollars ($250,000) to a bailee, and Agent and such bailee are not already parties to a bailee agreement governing both the Collateral and the location to which Borrower intends to deliver the Collateral, then Borrower will cause such bailee to execute and deliver a bailee agreement in form and substance reasonably satisfactory to Agent. Notwithstanding the foregoing, at no time shall Collateral valued, individually or in the aggregate in excess of One Million Dollars ($1,000,000) be stored at a location(s) that are not subject to landlord or bailee waivers in favor of Agent.

6.3 Mergers or Acquisitions. Merge or consolidate, or permit any of its Subsidiaries to merge or consolidate, with any other Person, or acquire, or permit any of its Subsidiaries to acquire, all or substantially all of the stock, partnership, membership, or other ownership interest or other equity securities or property of another Person (including, without limitation, by the formation of any Subsidiary or pursuant to a Division). A Subsidiary may merge or consolidate into another Subsidiary or into Borrower.

6.4 Indebtedness. Create, incur, assume, or be liable for any Indebtedness, or permit any Subsidiary to do so, other than Permitted Indebtedness.

6.5 Encumbrance. Create, incur, allow, or suffer to exist any Lien on any of its property, or assign or convey any right to receive income, including the sale of any Accounts, or permit any of its Subsidiaries to do so, except for Permitted Liens, permit any Collateral not to be subject to the first priority security interest granted herein except as permitted herein, or enter into any agreement, document, instrument or other arrangement (except with or in favor of Agent, for the ratable benefit of the Lenders) with any Person which directly or indirectly prohibits or has the effect of prohibiting Borrower or any Subsidiary from assigning, mortgaging, pledging, granting a security interest in or upon, or encumbering any of Borrower's or any Subsidiary's Intellectual Property, except as is otherwise permitted in Section 6.1 hereof and the definition of "Permitted Liens" herein.

6.6 Maintenance of Collateral Accounts. Maintain any Collateral Account except pursuant to the terms of Section 5.7.

6.7 Distributions; Investments. (a) Pay any dividends or make any distribution or payment or redeem, retire or purchase any stock, partnership, membership, or other ownership interest or other equity securities provided that Borrower may (i) convert any of its convertible securities into other securities pursuant to the terms of such convertible securities or otherwise in exchange thereof, (ii) pay dividends solely in common stock, and (iii) repurchase the stock, partnership, membership, or other ownership interest or other equity securities of former employees, officers, directors or consultants pursuant to stock repurchase agreements so long as an Event of Default does not exist at the time of any such repurchase and would not exist after giving effect to any such repurchase, provided that the aggregate amount of all such repurchases does not exceed One Hundred Thousand Dollars ($100,000) per fiscal year; or (b) directly or indirectly make any Investment other than Permitted Investments, or permit any of its Subsidiaries to do so. Notwithstanding the foregoing, Subsidiaries of Borrower shall be permitted to pay dividends to Borrower or make distributions to Borrower.

Notwithstanding the foregoing, and for the avoidance of doubt, this Section 6.7 shall not prohibit (A) the conversion by holders of any Permitted Convertible Indebtedness in accordance with the terms of the indenture governing such Permitted Convertible Indebtedness or the Borrower's delivery of the conversion consideration in connection therewith or the delivery of common stock of the Borrower and cash in lieu of fractional shares of the Borrower's common stock in exchange for, or to induce the conversion of, Permitted Convertible Indebtedness; provided that the conversion consideration (or exchange or inducement consideration) paid to such holders is limited to (1) shares of common stock of the Borrower, or (2) cash in lieu of fractional shares of common stock of the Borrower, and (3) in the limited case of exchange or inducement consideration only, cash in an aggregate amount that is approved by the Lenders in their sole discretion, in advance in writing, or (B) the making of any interest payments with respect to any Permitted Convertible Indebtedness in accordance with the terms set forth in Section 6.12 below.

6.8 Transactions with Affiliates. Directly or indirectly enter into or permit to exist any material transaction with any Affiliate of Borrower, except for (a) transactions that are in the ordinary course of Borrower's business, upon

fair and reasonable terms that are no less favorable to Borrower than would be obtained in an arm's length transaction with a non-affiliated Person, (b) reasonable and customary compensation arrangements approved by the Board or a duly authorized committee thereof and (c) repurchases permitted pursuant to Section 6.7(a).

6.9 Subordinated Debt. Except as expressly permitted under the terms of the subordination, intercreditor, or other similar agreement to which any Subordinated Debt is subject: (a) make or permit any payment on such Subordinated Debt; or (b) amend any provision in any document relating to such Subordinated Debt which would increase the amount thereof, provide for earlier or greater principal, interest, or other payments thereon, or adversely affect the subordination thereof to Obligations owed to Agent and the Lenders.

6.10 Compliance. (a) Become an "investment company" or a company controlled by an "investment company", under the Investment Company Act of 1940, as amended, or undertake as one of its important activities extending credit to purchase or carry margin stock (as defined in Regulation U of the Board of Governors of the Federal Reserve System), or use the proceeds of any Credit Extension for that purpose; (b)(i) fail to meet the minimum funding requirements of ERISA, (ii) permit a Reportable Event or Prohibited Transaction, as defined in ERISA, to occur, (iii) fail to comply with the Federal Fair Labor Standards Act or (iv) violate any other law or regulation, if the foregoing subclauses (i) through (iv), individually or in the aggregate, could reasonably be expected to have a material adverse effect on Borrower's business or operations, or permit any of its Subsidiaries to do so; or (c) withdraw or permit any Subsidiary to withdraw from participation in, permit partial or complete termination of, or permit the occurrence of any other event with respect to, any present pension, profit sharing and deferred compensation plan which could reasonably be expected to result in any liability of Borrower, including any liability to the Pension Benefit Guaranty Corporation or its successors or any other Governmental Authority.

6.11 Subsidiary Assets.

(a) Until such time (if any) as the Irish Subsidiary becomes a co-Borrower or secured Guarantor hereunder, permit the aggregate value of all assets (cash and non-cash) held by the Irish Subsidiary to exceed One Hundred Thousand Dollars ($100,000).

(b) Until such time (if any) as the UK Subsidiary becomes a co-Borrower or secured Guarantor hereunder, permit the aggregate value of all assets (cash and non-cash) held by the UK Subsidiary to exceed One Hundred Thousand Dollars ($100,000).

6.12 Permitted Convertible Indebtedness . (a) Make or permit any payment on Permitted Convertible Indebtedness except (i) interest payments provided that the Permitted Convertible Indebtedness shall not bear an interest rate of more than ten percent (10%) per annum and such interest shall not be paid more frequently than semi-annually in arrears, and (ii) the Borrower's delivery of conversion consideration in connection with the conversion by holders of any Permitted Convertible Indebtedness in accordance with the terms of the indenture governing such Permitted Convertible Indebtedness or the delivery of common stock and cash in lieu of fractional shares of Borrower's common stock to induce the conversion of Permitted Convertible Notes; provided that the conversion consideration (or inducement consideration) paid to such holders is limited to (A) shares of common stock of the Borrower, (B) cash in lieu of fractional shares of common stock of the Borrower, and (C) in the limited case of exchange or inducement consideration only, cash in an aggregate amount that is approved by the Lenders in their sole discretion, in advance in writing, or (b) redeem or repurchase any Permitted Convertible Indebtedness (other than the repurchase of Permitted Convertible Indebtedness in exchange for common stock of the Borrower and cash in lieu of fractional shares of the Borrower's common stock; provided that the repurchase consideration paid to the holders of Permitted Convertible Indebtedness is limited to (A) shares of common stock of the Borrower, (B) cash in lieu of fractional shares of common stock of the Borrower, and (C) in the limited case of exchange or inducement consideration only, cash in an aggregate amount that is approved by the Lenders in their sole discretion, in advance in writing. In no event shall the foregoing permit the Borrower to pay holders of Permitted Convertible Indebtedness cash in connection with mandatory repurchase rights granted to such holders upon the occurrence of a "change of control" or "fundamental change" (as defined in the indenture governing any Permitted Convertible Indebtedness).

7 EVENTS OF DEFAULT

Any one of the following shall constitute an event of default (an "**Event of Default**") under this Agreement:

7.1 Payment Default. Borrower fails to (a) make any payment of principal or interest on any Credit Extension on its due date, or (b) pay any other Obligations within three (3) Business Days after such Obligations are due and payable (which three (3) Business Day cure period shall not apply to payments due on the Term Loan Maturity Date). During the cure period, the failure to make or pay any payment specified under clause (b) hereunder is not an Event of Default (but no Credit Extension will be made during the cure period);

7.2 Covenant Default.

(a) Borrower fails or neglects to perform any obligation in Section 5 (other than Sections 5.2 (Government Compliance), 5.10 (Litigation Cooperation), 5.12 (Inventory; Returns) and 5.13 (Further Assurances)) or violates any covenant in Section 6; or

(b) Borrower fails or neglects to perform, keep, or observe any other term, provision, condition, covenant or agreement contained in this Agreement or any Loan Documents, and as to any default (other than those specified in this Section 7) under such other term, provision, condition, covenant or agreement that can be cured, has failed to cure the default within ten (10) days after the occurrence thereof; provided, however, that if the default cannot by its nature be cured within the ten (10) day period or cannot after diligent attempts by Borrower be cured within such ten (10) day period, and such default is likely to be cured within a reasonable time, then Borrower shall have an additional period (which shall not in any case exceed 30 days) to attempt to cure such default, and within such reasonable time period the failure to cure the default shall not be deemed an Event of Default (but no Credit Extensions shall be made during such cure period). Cure periods provided under this section shall not apply, among other things, to financial covenants or any other covenants that are required to be satisfied, completed or tested by a date certain or any covenants set forth in clause (a) above;

7.3 Material Adverse Change. A Material Adverse Change occurs;

7.4 Attachment; Levy; Restraint on Business.

(a) (i) The service of process seeking to attach, by trustee or similar process, any funds of Borrower or any Subsidiary, or (ii) a notice of lien or levy is filed against any of Borrower's or any of its Subsidiaries' assets by any Governmental Authority, and the same under subclauses (i) and (ii) hereof are not, within ten (10) days after the occurrence thereof, discharged or stayed (whether through the posting of a bond or otherwise); provided, however, no Credit Extensions shall be made during any ten (10) day cure period; or

(b) (i) any material portion of Borrower's or any of its Subsidiaries' assets is attached, seized, levied on, or comes into possession of a trustee or receiver, or (ii) any court order enjoins, restrains, or prevents Borrower or any of its Subsidiaries from conducting all or any material part of its business;

7.5 Insolvency. (a) Borrower or any of its Subsidiaries is unable to pay its debts (including trade debts) as they become due or otherwise becomes insolvent; (b) Borrower or any of its Subsidiaries begins an Insolvency Proceeding; or (c) an Insolvency Proceeding is begun against Borrower or any of its Subsidiaries and is not dismissed or stayed within thirty (30) days (but no Credit Extensions shall be made while any of the conditions described in clause (a) exist or until any Insolvency Proceeding is dismissed);

7.6 Other Agreements. There is, under any agreement to which Borrower, any of Borrower's Subsidiaries, or any Guarantor is a party with a third party or parties, (a) any default, including, but not limited to any default in any indenture or any other agreement governing Permitted Convertible Indebtedness, resulting in a right by such third party or parties, whether or not exercised, to accelerate the maturity of any Indebtedness in an amount individually or in the aggregate in excess of Two Hundred Fifty Thousand Dollars ($250,000); or (b) any breach or default by Borrower, any of Borrower's Subsidiaries, or Guarantor, the result of which could have a material adverse effect on Borrower's, any of Borrower's Subsidiaries', or any Guarantor's business or operations;

7.7 Judgments; Penalties. One or more fines, penalties or final judgments, orders or decrees for the payment of money in an amount, individually or in the aggregate, of at least Two Hundred Fifty Thousand Dollars ($250,000); or (not covered by independent third-party insurance as to which liability has been accepted by such insurance carrier) shall be rendered against Borrower or any of its Subsidiaries by any Governmental Authority, and the same are not, within ten (10) days after the entry, assessment or issuance thereof, discharged, or after execution thereof, or stayed pending appeal, or such judgments are not discharged prior to the expiration of any such stay (provided that no Credit Extensions will be made prior to the discharge, or stay of such fine, penalty, judgment, order or decree);

7.8 Misrepresentations. Borrower or any of its Subsidiaries or any Person acting for Borrower or any of its Subsidiaries makes any representation, warranty, or other statement now or later in this Agreement, any Loan Document or in any writing delivered to Agent or any Lender or to induce Agent or any Lender to enter this Agreement or any Loan Document, and such representation, warranty, or other statement is incorrect in any material respect when made (it being agreed and acknowledged by Agent and each Lender that the projections and forecasts provided by Borrower or any of its Subsidiaries in good faith and based upon reasonable assumptions are not viewed as facts and that actual results during the period or periods covered by such projections and forecasts may differ from the projected or forecasted results);

7.9 Subordinated Debt. If: (a) any document, instrument, or agreement evidencing any Subordinated Debt shall for any reason be revoked or invalidated or otherwise cease to be in full force and effect, or any Person (other than SVB) shall be in breach thereof or contest in any manner the validity or enforceability thereof or deny that it has any further liability or obligation thereunder; (b) a default or event of default (however defined) has occurred under any document, instrument, or agreement evidencing any Subordinated Debt, which default shall not have been cured or waived within any applicable grace period; or (c) the Obligations shall for any reason be subordinated or shall not have the priority contemplated by this Agreement or any applicable subordination or intercreditor agreement;

7.10 Guaranty. (a) Any guaranty of any Obligations terminates or ceases for any reason to be in full force and effect; (b) any Guarantor does not perform any obligation or covenant under any guaranty of the Obligations; (c) any circumstance described in Sections 7.3, 7.4, 7.5, 7.6, 7.7, or 7.8 of this Agreement occurs with respect to any Guarantor, (d) the death, liquidation, winding up, or termination of existence of any Guarantor; or (e)(i) a material impairment in the perfection or priority of Agent's Lien in the collateral provided by Guarantor or in the value of such collateral or (ii) a material adverse change in the general affairs, management, results of operation, condition (financial or otherwise) or the prospect of repayment of the Obligations occurs with respect to any Guarantor; or

7.11 Lien Priority. There is a material impairment in the perfection or priority of Agent's security interest in the Collateral; or

7.12 Governmental Approvals. Any Governmental Approval shall have been (a) revoked, rescinded, suspended, modified in an adverse manner or not renewed in the ordinary course for a full term or (b) subject to any decision by a Governmental Authority that designates a hearing with respect to any applications for renewal of any of such Governmental Approval or that could result in the Governmental Authority taking any of the actions described in clause (a) above, and such decision or such revocation, rescission, suspension, modification or non-renewal (i) causes, or could reasonably be expected to cause, a Material Adverse Change, or (ii) adversely affects the legal qualifications of Borrower or any of its Subsidiaries to hold such Governmental Approval in any applicable jurisdiction and such revocation, rescission, suspension, modification or non-renewal could reasonably be expected to affect the status of or legal qualifications of Borrower or any of its Subsidiaries to hold any Governmental Approval in any other jurisdiction.

7.13 Delisting. Shares of Borrower's common stock are delisted from the NASDAQ because of Borrower's failure to comply with continued listing standards thereof or due to a voluntary delisting which results in such shares not being listed on such exchange or market.

8 RIGHTS AND REMEDIES

8.1 Rights and Remedies. Upon the occurrence and during the continuance of an Event of Default, Agent, as directed by Lenders in accordance with the Lender Intercreditor Agreement or, if such rights and remedies are not

addressed in the Lender Intercreditor Agreement, as directed by Lenders having a majority of the Obligations, may, without notice or demand, do any or all of the following:

(a) declare all Obligations immediately due and payable (but if an Event of Default described in Section 7.5 occurs all Obligations are immediately due and payable without any action by Agent or any Lender);

(b) stop advancing money or extending credit for Borrower's benefit under this Agreement or under any other agreement among Borrower, Agent and/or any Lenders;

(c) demand that Borrower (i) deposit cash with SVB in an amount equal to at least (A) one hundred and five percent (105.0%) of the aggregate face amount of any Letters of Credit denominated in Dollars remaining undrawn, and (B) one hundred and ten percent (110.0%) of the Dollar Equivalent of the aggregate face amount of any Letters of Credit denominated in a Foreign Currency remaining undrawn (plus, in each case, all interest, fees, and costs due or estimated by SVB to become due in connection therewith), to secure all of the Obligations relating to such Letters of Credit, as collateral security for the repayment of any future drawings under such Letters of Credit, and Borrower shall forthwith deposit and pay such amounts, and (ii) pay in advance all letter of credit fees scheduled to be paid or payable over the remaining term of any Letters of Credit;

(d) terminate any FX Contracts (it being understood and agreed that (i) SVB is not obligated to deliver the currency which Borrower has contracted to receive under any FX Contract, and SVB may cover its exposure for any FX Contracts by purchasing or selling currency in the interbank market as SVB deems appropriate; (ii) Borrower shall be liable for all losses, damages, costs, margin obligations and expenses incurred by SVB arising from Borrower's failure to satisfy its obligations under any FX Contract or the execution of any FX Contract; and (iii) SVB shall not be liable to Borrower for any gain in value of a FX Contract that SVB may obtain in covering Borrower's breach);

(e) verify the amount of, demand payment of and performance under, and collect any Accounts and General Intangibles, settle or adjust disputes and claims directly with Account Debtors for amounts on terms and in any order that Agent and/or the Lenders consider advisable, and notify any Person owing Borrower money of Agent's security interest in such funds;

(f) make any payments and do any acts Agent or any Lender considers necessary or reasonable to protect the Collateral and/or its security interest in the Collateral. Borrower shall assemble the Collateral if Agent requests and make it available as Agent designates. Agent may enter premises where the Collateral is located, take and maintain possession of any part of the Collateral, and pay, purchase, contest, or compromise any Lien which appears to be prior or superior to its security interest and pay all expenses incurred. Borrower grants Agent a license to enter and occupy any of its premises, without charge, to exercise any of Agent's rights or remedies;

(g) apply to the Obligations any (i) balances and deposits of Borrower it holds, or (ii) any amount held by Agent owing to or for the credit or the account of Borrower;

(h) ship, reclaim, recover, store, finish, maintain, repair, prepare for sale, advertise for sale, and sell the Collateral. For use solely upon the occurrence and during the continuation of an Event of Default, Agent, for the benefit of the Lenders, is hereby granted a non-exclusive, royalty-free license or other right to use, without charge, Borrower's labels, Patents, Copyrights, mask works, rights of use of any name, trade secrets, trade names, Trademarks, and advertising matter, or any similar property as it pertains to the Collateral, in completing production of, advertising for sale, and selling any Collateral and, in connection with Agent's exercise of its rights under this Section 8.1, Borrower's rights under all licenses and all franchise agreements inure to Agent, for the ratable benefit of the Lenders;

(i) place a "hold" on any account maintained with Agent or Lenders and/or deliver a notice of exclusive control, any entitlement order, or other directions or instructions pursuant to any Control Agreement or similar agreements providing control of any Collateral;

(j) demand and receive possession of Borrower's Books; and

(k) exercise all rights and remedies available to Agent and the Lenders under the Loan Documents or at law or equity, including all remedies provided under the Code or any Applicable Law (including disposal of the Collateral pursuant to the terms thereof).

8.2 Power of Attorney. Borrower hereby irrevocably appoints Agent, for the benefit of the Lenders, as its true and lawful attorney-in-fact, (a) exercisable upon the occurrence and during the continuance of an Event of Default, to: (i) endorse Borrower's name on any checks, payment instruments, or other forms of payment or security; (ii) sign Borrower's name on any invoice or bill of lading for any Account or drafts against Account Debtors; (iii) demand, collect, sue, and give releases to any Account Debtor for monies due, settle and adjust disputes and claims about the Accounts directly with Account Debtors, and compromise, prosecute, or defend any action, claim, case, or proceeding about any Collateral (including filing a claim or voting a claim in any bankruptcy case in Agent's or Borrower's name, as Agent chooses); (iv) make, settle, and adjust all claims under Borrower's insurance policies; (v) pay, contest or settle any Lien, charge, encumbrance, security interest, and adverse claim in or to the Collateral, or any judgment based thereon, or otherwise take any action to terminate or discharge the same; and (vi) transfer the Collateral into the name of Agent or a third party as the Code permits; and (b) regardless of whether an Event of Default has occurred, to sign Borrower's name on any documents necessary to perfect or continue the perfection of Agent's security interest in the Collateral. Agent's foregoing appointment as Borrower's attorney in fact, and all of Agent's rights and powers, coupled with an interest, are irrevocable until such time as all Obligations (other than inchoate indemnity obligations) have been satisfied in full, Agent is under no further obligation to make Credit Extensions and the Loan Documents have been terminated. Agent shall not incur any liability in connection with or arising from the exercise of such power of attorney and shall have no obligation to exercise any of the foregoing rights and remedies.

8.3 Protective Payments. If Borrower fails to obtain the insurance called for by Section 5.5 or fails to pay any premium thereon or fails to pay any other amount which Borrower is obligated to pay under this Agreement or any other Loan Document or which may be required to preserve the Collateral, Agent may obtain such insurance or make such payment, and all amounts so paid by Agent are Lenders' Expenses and immediately due and payable, bearing interest at the then highest rate applicable to the Obligations, and secured by the Collateral. Agent will make reasonable efforts to provide Borrower with notice of Agent obtaining such insurance at the time it is obtained or within a reasonable time thereafter. No payments by Agent are deemed an agreement to make similar payments in the future or Agent's or any Lender's waiver of any Event of Default.

8.4 Application of Payments and Proceeds. Agent may apply any funds in its possession, whether from Borrower account balances, payments, proceeds realized as the result of any collection of Accounts or other disposition of the Collateral, or otherwise, to the Obligations in such order as Agent shall determine in its sole discretion. Any surplus shall be paid to Borrower or other Persons legally entitled thereto; Borrower shall remain liable to Agent and the Lenders for any deficiency. If Agent, in its commercially reasonable discretion, directly or indirectly, enters into a deferred payment or other credit transaction with any purchaser at any sale of Collateral, Agent shall have the option, exercisable at any time, of either reducing the Obligations by the principal amount of the purchase price or deferring the reduction of the Obligations until the actual receipt by Agent of cash therefor.

8.5 Liability for Collateral. Agent's and Lenders' sole duty with respect to the custody, safekeeping and physical preservation of the Collateral in their possession or under the control of Agent and/or Lenders, under Section 9-207 of the Code or otherwise, shall be to deal with it in the same manner as Agent and/or Lenders deal with their own property consisting of similar instruments or interests. Borrower bears all risk of loss, damage or destruction of the Collateral.

8.6 No Waiver; Remedies Cumulative. Agent's and any Lender's failure, at any time or times, to require strict performance by Borrower of any provision of this Agreement or any other Loan Document shall not waive, affect, or diminish any right of Agent or any Lender thereafter to demand strict performance and compliance herewith or therewith. No waiver hereunder shall be effective unless signed by the party granting the waiver and then is only effective for the specific instance and purpose for which it is given. Agent's and each Lender's rights and remedies under this Agreement and the other Loan Documents are cumulative. Agent and each Lender have all rights and remedies provided under the Code, by law, or in equity. Agent's or any Lender's exercise of one right or remedy is not an election and shall not preclude Agent or any Lender from exercising any other remedy under this Agreement

or other remedy available at law or in equity, and Agent's or any Lender's waiver of any Event of Default is not a continuing waiver. Agent's or any Lender's delay in exercising any remedy is not a waiver, election, or acquiescence.

8.7 Demand Waiver. Borrower waives demand, notice of default or dishonor, notice of payment and nonpayment, notice of any default, nonpayment at maturity, release, compromise, settlement, extension, or renewal of accounts, documents, instruments, chattel paper, and guarantees held by Agent on which Borrower is liable.

9 AGENT

9.1 Appointment and Authority.

(a) Each Lender hereby irrevocably appoints SVB to act on its behalf as Agent hereunder and under the other Loan Documents and authorizes Agent to take such actions on its behalf and to exercise such powers as are delegated to Agent by the terms hereof or thereof, together with such actions and powers as are reasonably incidental thereto.

(b) The provisions of this Section 9 are solely for the benefit of Agent and Lenders, and Borrower shall not have rights as a third-party beneficiary of any of such provisions. Notwithstanding any provision to the contrary elsewhere in this Agreement, Agent shall not have any duties or responsibilities to any Lender or any other Person, except those expressly set forth herein, or any fiduciary relationship with any Lender, and no implied covenants, functions, responsibilities, duties, obligations or liabilities shall be read into this Agreement or any other Loan Document or otherwise exist against Agent.

9.2 Delegation of Duties. Agent may perform any and all of its duties and exercise its rights and powers hereunder or under any other Loan Document by or through any one or more sub-agents appointed by Agent. Agent and any such sub-agent may perform any and all of its duties and exercise its rights and powers by or through their respective Indemnified Persons. The exculpatory provisions of this Section 9.2 shall apply to any such sub-agent and to the Indemnified Persons of Agent and any such sub-agent, and shall apply to their respective activities in connection with the syndication of the credit facilities provided for herein as well as activities as Agent.

9.3 Exculpatory Provisions. Agent shall have no duties or obligations except those expressly set forth herein and in the other Loan Documents. Without limiting the generality of the foregoing, Agent shall not:

(a) be subject to any fiduciary, trust, agency or other similar duties, regardless of whether any Event of Default has occurred and is continuing;

(b) have any duty to take any discretionary action or exercise any discretionary powers, except discretionary rights and powers expressly contemplated hereby or by the other Loan Documents that Agent is required to exercise as directed in writing by the Lenders, as applicable; provided that Agent shall not be required to take any action that, in its opinion or the opinion of its counsel, may expose Agent to liability or that is contrary to any Loan Document or applicable law; and

(c) except as expressly set forth herein and in the other Loan Documents, have any duty to disclose, and Agent shall not be liable for the failure to disclose, any information relating to Borrower or any of its Affiliates that is communicated to or obtained by any Person serving as Agent or any of its Affiliates in any capacity.

Agent shall not be liable for any action taken or not taken by it (i) with the consent or at the request of the Lenders (or as Agent shall believe in good faith shall be necessary, under the circumstances as provided in Section 12.7) or (ii) in the absence of its own gross negligence or willful misconduct.

Agent shall not be responsible for or have any duty to ascertain or inquire into (A) any statement, warranty or representation made in or in connection with this Agreement or any other Loan Document, (B) the contents of any certificate, report or other document delivered hereunder or thereunder or in connection herewith or therewith, (C) the performance or observance of any of the covenants, agreements or other terms or conditions set forth herein or therein or the occurrence of any Event of Default, (D) the validity, enforceability, effectiveness or genuineness of this

Agreement, any other Loan Document or any other agreement, instrument or document or (E) the satisfaction of any condition set forth in Section 2 or elsewhere herein, other than to confirm receipt of items expressly required to be delivered to Agent.

9.4 Reliance by Agent. Agent shall be entitled to rely upon, and shall not incur any liability for relying upon, any notice, request, certificate, consent, statement, instrument, document or other writing (including any electronic message, internet or intranet website posting or other distribution) believed by it to be genuine and to have been signed, sent or otherwise authenticated by the proper Person. Agent also may rely upon any statement made to it orally or by telephone and believed by it to have been made by the proper Person, and shall not incur any liability for relying thereon. Agent may consult with legal counsel (who may be counsel for Borrower), independent accountants and other experts selected by it, and shall not be liable for any action taken or not taken by it in accordance with the advice of any such counsel, accountants or experts. In determining compliance with any condition hereunder to the making of a Credit Extension that, by its terms, must be fulfilled to the satisfaction of a Lender, Agent may presume that such condition is satisfactory to such Lender unless Agent shall have received notice to the contrary from such Lender prior to the making of such Credit Extension. Agent shall in all cases be fully protected in acting, or in refraining from acting, under this Agreement and the other Loan Documents in accordance with a request of the Lenders, and such request and any action taken or failure to act pursuant thereto shall be binding upon Lenders and all future holders of the Credit Extensions.

9.5 Notice of Default. Agent shall not be deemed to have knowledge or notice of the occurrence of any Event of Default (except with respect to defaults in the payment of principal, interest or fees required to be paid to Agent for the account of Lenders), unless Agent has received notice from a Lender or Borrower referring to this Agreement, describing such Event of Default and stating that such notice is a "notice of default". In the event that Agent receives such a notice, Agent shall give notice thereof to Lenders. Agent shall take such action with respect to such Event of Default as shall be reasonably directed by the Lenders.

9.6 Non-Reliance on Agent and Other Lenders. Each Lender expressly acknowledges that neither Agent nor any of its officers, directors, employees, agents, attorneys in fact or affiliates has made any representations or warranties to it and that no act by Agent hereafter taken, including any review of the affairs of a Group Member or any Affiliate of a Group Member, shall be deemed to constitute any representation or warranty by Agent to any Lender. Each Lender represents to Agent that it has, independently and without reliance upon Agent or any other Lender, and based on such documents and information as it has deemed appropriate, made its own appraisal of, and investigation into, the business, operations, property, financial and other condition and creditworthiness of the Group Members and their Affiliates and made its own decision to make its Credit Extensions hereunder and enter into this Agreement. Each Lender also represents that it will, independently and without reliance upon Agent or any other Lender, and based on such documents and information as it shall deem appropriate at the time, continue to make its own credit analysis, appraisals and decisions in taking or not taking action under this Agreement and the other Loan Documents, and to make such investigation as it deems necessary to inform itself as to the business, operations, property, financial and other condition and creditworthiness of the Group Members and their Affiliates. Except for notices, reports and other documents expressly required to be furnished to Lenders by Agent hereunder, Agent shall have no duty or responsibility to provide any Lender with any credit or other information concerning the business, operations, property, condition (financial or otherwise), prospects or creditworthiness of any Group Member or any Affiliate of a Group Member that may come into the possession of Agent or any of its officers, directors, employees, agents, attorneys in fact or Affiliates.

9.7 Indemnification. Each Lender agrees to indemnify Agent in its capacity as such (to the extent not reimbursed by Borrower and without limiting the obligation of Borrower to do so in accordance with the terms hereof, according to its Term Loan Commitment Percentage in effect on the date on which indemnification is sought under this Section 9.7 (or, if indemnification is sought after the date upon which the Commitments shall have terminated and the Obligations shall have been paid in full, in accordance with its Term Loan Commitment Percentage immediately prior to such date), from and against any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements of any kind whatsoever that may at any time (whether before or after the payment of the Credit Extensions) be imposed on, incurred by or asserted against Agent in any way relating to or arising out of, the Commitments, this Agreement, any of the other Loan Documents or any documents contemplated by or referred to herein or therein or the transactions contemplated hereby or thereby or any action taken

or omitted by Agent under or in connection with any of the foregoing; provided that no Lender shall be liable for the payment of any portion of such liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements that are found by a final and nonappealable decision of a court of competent jurisdiction to have resulted primarily from Agent's gross negligence or willful misconduct. The agreements in this Section shall survive the payment of the Credit Extensions and all other amounts payable hereunder.

9.8 Agent in Its Individual Capacity. The Person serving as Agent hereunder shall have the same rights and powers in its capacity as a Lender as any other Lender and may exercise the same as though it were not Agent and the term "Lender" or "Lenders" shall, unless otherwise expressly indicated or unless the context otherwise requires, include each such Person serving as Agent hereunder in its individual capacity. Such Person and its Affiliates may accept deposits from, lend money to, act as the financial advisor or in any other advisory capacity for and generally engage in any kind of business with Borrower, any Guarantor or any Subsidiary or other Affiliate thereof as if such Person were not Agent hereunder and without any duty to account therefor to Lenders.

9.9 Successor Agent. Agent may at any time give notice of its resignation to Lenders and Borrower, which resignation shall not be effective until the time at which the majority of the Lenders have delivered to Agent their written consent to such resignation. Upon receipt of any such notice of resignation, the Lenders shall have the right, in consultation with Borrower, to appoint a successor, which shall be a financial institution with an office in the State of California, or an Affiliate of any such bank with an office in the State of California. If no such successor shall have been so appointed by the Lenders and shall have accepted such appointment within thirty (30) days after the retiring Agent has received the written consent of the majority of the Lenders to such resignation, then the retiring Agent may on behalf of Lenders, appoint a successor Agent meeting the qualifications set forth above; provided that in no event shall any such successor Agent be a Defaulting Lender and provided further that if the retiring Agent shall notify Borrower and Lenders that no qualifying Person has accepted such appointment, then such resignation shall nonetheless become effective in accordance with such notice and (1) the retiring Agent shall be discharged from its duties and obligations hereunder and under the other Loan Documents (except that in the case of any collateral security held by Agent on behalf of the Lenders under any of the Loan Documents, the retiring Agent shall continue to hold such collateral security until such time as a successor Agent is appointed and such collateral security is assigned to such successor Agent) and (2) all payments, communications and determinations provided to be made by, to or through Agent shall instead be made by or to each Lender directly, until such time as the Lenders appoint a successor Agent as provided for above in this Section 9.9. Upon the acceptance of a successor's appointment as Agent hereunder, such successor shall succeed to and become vested with all of the rights, powers, privileges and duties of the retiring (or retired) Agent, and the retiring Agent shall be discharged from all of its duties and obligations hereunder or under the other Loan Documents (if not already discharged therefrom as provided above in this Section 9.9). The fees payable by Borrower to a successor Agent shall be the same as those payable to its predecessor unless otherwise agreed between Borrower and such successor. After the retiring Agent's resignation hereunder and under the other Loan Documents, the provisions of this Section 9 shall continue in effect for the benefit of such retiring Agent, its sub-agents and their respective Indemnified Persons in respect of any actions taken or omitted to be taken by any of them while the retiring Agent was acting as Agent.

9.10 Defaulting Lender.

(a) Defaulting Lender Adjustments. Notwithstanding anything to the contrary contained in this Agreement, if any Lender becomes a Defaulting Lender, then, until such time as such Lender is no longer a Defaulting Lender, to the extent permitted by applicable law:

(i) Waivers and Amendments. Such Defaulting Lender's right to approve or disapprove any amendment, waiver or consent with respect to this Agreement shall be restricted as long as said Lender is a Defaulting Lender.

(ii) Defaulting Lender Waterfall. Any payment of principal, interest, fees or other amounts received by the Agent for the account of such Defaulting Lender (whether voluntary or mandatory, at maturity, pursuant to Section 7 or otherwise, and including any amounts made available to the Agent by such Defaulting Lender pursuant to Section 12.10), shall be applied at such time or times as may be determined by the Agent as follows: first, to the

payment of any amounts owing by such Defaulting Lender to the Agent hereunder; second, as Borrower may request (so long as no Event of Default exists), to the funding of any Term Loan Advance in respect of which such Defaulting Lender has failed to fund its portion thereof as required by this Agreement, as determined by the Agent; third, if so determined by the Agent and Borrower, to be held in a Deposit Account and released pro rata to satisfy such Defaulting Lender's potential future funding obligations with respect to Term Loan Advances under this Agreement; fourth, so long as no Event of Default has occurred and is continuing, to the payment of any amounts owing to Borrower as a result of any judgment of a court of competent jurisdiction obtained by Borrower against such Defaulting Lender as a result of such Defaulting Lender's breach of its obligations under this Agreement; and fifth, to such Defaulting Lender or as otherwise directed by a court of competent jurisdiction; provided that if (A) such payment is a payment of the principal amount of any Term Loan Advances in respect of which such Defaulting Lender has not fully funded its appropriate share and (B) such Term Loan Advances were made at a time when the conditions set forth in Section 2.1 were satisfied or waived, such payment shall be applied solely to pay the Term Loan Advance of all non-Defaulting Lenders on a *pro rata* basis prior to being applied to the payment of any Term Loan Advances of such Defaulting Lender until such time as all Term Loan Advances are held by the Lenders pro rata in accordance with the Term Loan Commitments under this Agreement. Any payments, prepayments or other amounts paid or payable to a Defaulting Lender that are applied (or held) to pay amounts owed by a Defaulting Lender pursuant to this Section 9.10(a)(ii) shall be deemed paid to and redirected by such Defaulting Lender, and each Lender irrevocably consents hereto.

(iii) Certain Fees. No Defaulting Lender shall be entitled to receive any fee pursuant to Section 1.3(b) for any period during which such Lender is a Defaulting Lender (and Borrower shall not be required to pay any such fee that otherwise would have been required to have been paid to such Defaulting Lender).

(b) Defaulting Lender Cure. If Borrower and Agent agree in writing that a Lender is no longer a Defaulting Lender, Agent will so notify the parties hereto, whereupon as of the effective date specified in such notice and subject to any conditions set forth therein, such Lender will, to the extent applicable, purchase at par that portion of outstanding Term Loan Advances of the other Lenders or take such other actions as Agent may determine to be necessary to cause the Term Loan Advances to be held on a *pro rata* basis by the Lenders in accordance with their respective Term Loan Commitment Percentages, whereupon such Lender will cease to be a Defaulting Lender; provided that no adjustments will be made retroactively with respect to fees accrued or payments made by or on behalf of Borrower while such Lender was a Defaulting Lender; and provided further that, except to the extent otherwise expressly agreed by the affected parties, no change hereunder from Defaulting Lender to Lender will constitute a waiver or release of any claim of any party hereunder arising from such Lender having been a Defaulting Lender.

(c) Termination of Defaulting Lender. Borrower may terminate the unused amount of the Term Loan Commitment of any Lender that is a Defaulting Lender upon not less than ten (10) Business Days' prior notice to Agent (which shall promptly notify the Lenders thereof), and in such event the provisions of Section 9.10(a)(ii) will apply to all amounts thereafter paid by Borrower for the account of such Defaulting Lender under this Agreement (whether on account of principal, interest, fees, indemnity or other amounts); provided that (i) no Event of Default shall have occurred and be continuing, and (ii) such termination shall not be deemed to be a waiver or release of any claim Borrower, Agent or any Lender may have against such Defaulting Lender.

(d) If the Person serving as Agent is a Defaulting Lender pursuant to clause (d) of the definition thereof, the non-Defaulting Lenders may, to the extent permitted by applicable law, by notice in writing to Borrower and such Person, remove such Person as Agent and, in consultation with Borrower, appoint a successor. If no such successor shall have been so appointed by the non-Defaulting Lenders and shall have accepted such appointment within thirty (30) days (or such earlier day as shall be agreed by the non-Defaulting Lenders) (the "**Removal Effective Date**"), then such removal shall nonetheless become effective in accordance with such notice on the Removal Effective Date.

9.11 Erroneous Payments.

(a) If the Agent notifies a Lender or any Person who has received funds on behalf of a Lender (any such Lender or other recipient, a "**Payment Recipient**") that the Agent has determined in its sole discretion (whether or not after receipt of any notice under immediately succeeding clause (b)) that any funds received by such Payment Recipient from the Agent or any of its Affiliates were erroneously transmitted to, or otherwise erroneously or mistakenly received by, such Payment Recipient (whether or not known to such Lender or other Payment Recipient on its behalf) (any such funds, whether received as a payment, prepayment or repayment of principal, interest, fees, distribution or otherwise, individually and collectively, an "**Erroneous Payment**") and demands the return of such Erroneous Payment (or a portion thereof), such Erroneous Payment shall at all times remain the property of the Agent and shall be segregated by the Payment Recipient and held in trust for the benefit of the Agent, and such Lender (or, with respect to any Payment Recipient who received such funds on its behalf, shall cause such Payment Recipient to) promptly, but in no event later than two Business Days thereafter, return to the Agent the amount of any such Erroneous Payment (or portion thereof) as to which such a demand was made, in same day funds (in the currency so received), together with interest thereon in respect of each day from and including the date such Erroneous Payment (or portion thereof) was received by such Payment Recipient to the date such amount is repaid to the Agent in same day funds at the greater of the Federal Funds Effective Rate and a rate determined by the Agent in accordance with banking industry rules on interbank compensation from time to time in effect. A notice of the Agent to any Payment Recipient under this clause (a) shall be conclusive, absent manifest error.

(b) Without limiting immediately preceding clause (a), each Lender or any Person who has received funds on behalf of a Lender, hereby further agrees that if it receives a payment, prepayment or repayment (whether received as a payment, prepayment or repayment of principal, interest, fees, distribution or otherwise) from the Agent (or any of its Affiliates) (x) that is in a different amount than, or on a different date from, that specified in a notice of payment, prepayment or repayment sent by the Agent (or any of its Affiliates) with respect to such payment, prepayment or repayment, (y) that was not preceded or accompanied by a notice of payment, prepayment or repayment sent by the Agent (or any of its Affiliates), or (z) that such Lender or other such recipient, otherwise becomes aware was transmitted, or received, in error or by mistake (in whole or in part) in each case:

(A) (i) (1) in the case of immediately preceding clauses (x) or (y), an error shall be presumed to have been made (absent written confirmation from the Agent to the contrary) or (2) an error has been made (in the case of immediately preceding clause (z)), in each case, with respect to such payment, prepayment or repayment; and

(B) (ii) such Lender shall (and shall cause any other recipient that receives funds on its respective behalf to) promptly (and, in all events, within one Business Day of its knowledge of such error) notify the Agent of its receipt of such payment, prepayment or repayment, the details thereof (in reasonable detail) and that it is so notifying the Agent pursuant to this Section 9.10.2(b).

(c) Each Lender hereby authorizes the Agent to set off, net and apply any and all amounts at any time owing to such Lender under any Loan Document, or otherwise payable or distributable by the Agent to such Lender from any source, against any amount due to the Agent under clause (a) hereof or under the indemnification provisions of this Agreement.

(d) In the event that an Erroneous Payment (or portion thereof) is not recovered by the Agent for any reason, after demand therefor by the Agent in accordance with clause (a) hereof, from any Lender that has received such Erroneous Payment (or portion thereof) (and/or from any Payment Recipient who received such Erroneous Payment (or portion thereof) on its respective behalf) (such unrecovered amount, an "**Erroneous Payment Return Deficiency**"), upon the Agent's notice to such Lender at any time, (i) such Lender shall be deemed to have assigned all Obligations owing from Borrower to such Lender hereunder (but not its Term Loan Commitments) with respect to which such Erroneous Payment was made in an amount equal to the Erroneous Payment Return Deficiency (or such lesser amount as the Agent may specify) (such assignment of the Loans (but not Commitments), the "**Erroneous Payment Deficiency Assignment**") at par plus any accrued and unpaid interest (with the assignment fee to be waived by the Agent in such instance), and is hereby (together with the Borrower) deemed to execute and deliver an Assignment and Assumption with respect to such Erroneous Payment Deficiency Assignment, and such Lender shall

deliver any promissory notes (if any) evidencing such Obligations to the Borrower or the Agent, (ii) the Agent as the assignee Lender shall be deemed to acquire the Erroneous Payment Deficiency Assignment, (iii) upon such deemed acquisition, the Agent as the assignee Lender shall become a Lender, hereunder with respect to such Erroneous Payment Deficiency Assignment and the assigning Lender shall cease to be a Lender hereunder with respect to such Erroneous Payment Deficiency Assignment, excluding, for the avoidance of doubt, its obligations under the indemnification provisions of this Agreement and its applicable Term Loan Commitments which shall survive as to such assigning Lender, and (iv) the Agent may reflect in the register (if any) its ownership interest in the Obligations subject to the Erroneous Payment Deficiency Assignment. The Agent may, in its discretion, sell any Obligations acquired pursuant to an Erroneous Payment Deficiency Assignment and upon receipt of the proceeds of such sale, the Erroneous Payment Return Deficiency owing by the applicable Lender shall be reduced by the net proceeds of the sale of such portion of the Obligations, and the Agent shall retain all other rights, remedies and claims against such Lender (and/or against any recipient that receives funds on its respective behalf). For the avoidance of doubt, no Erroneous Payment Deficiency Assignment will reduce the Term Loan Commitments of any Lender and such Term Loan Commitments shall remain available in accordance with the terms of this Agreement. In addition, each party hereto agrees that, except to the extent that the Agent has sold any portion of the Obligations acquired pursuant to an Erroneous Payment Deficiency Assignment, and irrespective of whether the Agent may be equitably subrogated, the Agent shall be contractually subrogated to all the rights and interests of the applicable Lender under the Loan Documents with respect to each Erroneous Payment Return Deficiency (the "**Erroneous Payment Subrogation Rights**").

(e) (e) The parties hereto agree that an Erroneous Payment shall not pay, prepay, repay, discharge or otherwise satisfy any Obligations owed by the Borrower or any Guarantor, except, in each case, to the extent such Erroneous Payment is, and solely with respect to the amount of such Erroneous Payment that is, comprised of funds received by the Agent from the Borrower or any Guarantor for the purpose of making such Erroneous Payment.

(f) (f) To the extent permitted by applicable law, no Payment Recipient shall assert any right or claim to an Erroneous Payment, and hereby waives, and is deemed to waive, any claim, counterclaim, defense or right of set-off or recoupment with respect to any demand, claim or counterclaim by the Agent for the return of any Erroneous Payment received, including without limitation any defense based on "discharge for value" or any similar doctrine

(g) (a) Each party's obligations, agreements and waivers under this Section 9.10.2 shall survive the resignation or replacement of the Agent, any transfer of rights or obligations by, or the replacement of, a Lender, the termination of the Term Loan Commitments and/or the repayment, satisfaction or discharge of all Obligations (or any portion thereof) under any Loan Document.

10 NOTICES

All notices, consents, requests, approvals, demands, or other communication by any party to this Agreement or any other Loan Document must be in writing and shall be deemed to have been validly served, given, or delivered: (a) upon the earlier of actual receipt and three (3) Business Days after deposit in the U.S. mail, first class, registered or certified mail return receipt requested, with proper postage prepaid; (b) upon transmission, when sent by electronic mail; (c) one (1) Business Day after deposit with a reputable overnight courier with all charges prepaid; or (d) when delivered, if hand-delivered by messenger, all of which shall be addressed to the party to be notified and sent to the address or email address indicated below; provided that, for clause (b), if such notice, consent, request, approval, demand or other communication is not sent during the normal business hours of the recipient, it shall be deemed to have been sent at the opening of business on the next Business Day of the recipient. Agent or Borrower may change its mailing or electronic mail address by giving the other party written notice thereof in accordance with the terms of this Section 10.

If to Borrower: ZIOPHARM ONCOLOGY, Inc.
One First Ave., Bldg. #34
Boston, MA 02129
Attn: Heidi Hagan, Interim CEO
Email: hhagen@ziopharm.com

If to Agent or SVB: Silicon Valley Bank
275 Grove Street, Suite 2-200
Newton, MA 02466
Attn: Lauren Cole
Email: lcole@svb.com

with a copy to (which shall not constitute notice):
DLA Piper LLP (US)
401 B Street, Suite 1700
San Diego, CA 92101
Attn: Laurie E. Hutchins, Esq.
Email: Laurie.Hutchins@us.dlapiper.com

If to SVB Capital: SVB Innovation Credit Fund VIII, L.P.
c/o SVB Capital
2770 Sand Hill Road
Menlo Park, CA 94025
Attn: SVB Capital Finance and Operations
Email: svbcapitalcredit@svbank.com;
SVBCapCreditFinance@svb.com

11 CHOICE OF LAW, VENUE AND JURY TRIAL WAIVER; JUDICIAL REFERENCE

Except as otherwise expressly provided in any of the Loan Documents, California law governs the Loan Documents without regard to principles of conflicts of law that would require the application of the laws of another jurisdiction. Borrower, Agent, and Lenders each irrevocably and unconditionally submit to the exclusive jurisdiction of the State and Federal courts in Santa Clara County, California; provided, however, that nothing in this Agreement shall be deemed to operate to preclude Agent or Lenders from bringing suit or taking other legal action in any other jurisdiction with respect to the Loan Documents or to realize on the Collateral or any other security for the Obligations, or to enforce a judgment or other court order in favor of Agent or any Lender. Borrower expressly, irrevocably and unconditionally submits and consents in advance to such jurisdiction in any action or suit commenced in any such court, and Borrower hereby irrevocably and unconditionally waives, to the fullest extent permitted by Applicable Law, any objection that it may have based upon lack of personal jurisdiction, improper venue, or forum non conveniens and hereby irrevocably and unconditionally consents to the granting of such legal or equitable relief as is deemed appropriate by such court. Borrower hereby waives personal service of the summons, complaints, and other process issued in such action or suit and agrees that service of such summons, complaints, and other process may be made by registered or certified mail addressed to Borrower at the address set forth in, or subsequently provided by Borrower in accordance with, Section 10 of this Agreement and that service so made shall be deemed completed upon the earlier to occur of Borrower's actual receipt thereof or three (3) days after deposit in the U.S. mails, proper postage prepaid.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, BORROWER, AGENT AND EACH LENDER EACH WAIVES THEIR RIGHT TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION ARISING OUT OF OR BASED UPON THIS AGREEMENT, THE LOAN DOCUMENTS OR ANY CONTEMPLATED TRANSACTION, INCLUDING CONTRACT, TORT, BREACH OF DUTY AND ALL OTHER CLAIMS. THIS WAIVER IS A MATERIAL INDUCEMENT FOR THE PARTIES HERETO TO

ENTER INTO THIS AGREEMENT. EACH PARTY HERETO HAS REVIEWED THIS WAIVER WITH ITS COUNSEL.

WITHOUT INTENDING IN ANY WAY TO LIMIT THE PARTIES' AGREEMENT TO WAIVE THEIR RESPECTIVE RIGHT TO A TRIAL BY JURY, if the above waiver of the right to a trial by jury is not enforceable, the parties hereto agree that any and all disputes or controversies of any nature between them arising at any time shall be decided by a reference to a private judge, mutually selected by the parties (or, if they cannot agree, by the Presiding Judge of the Santa Clara County, California Superior Court) appointed in accordance with California Code of Civil Procedure Section 638 (or pursuant to comparable provisions of federal law if the dispute falls within the exclusive jurisdiction of the federal courts), sitting without a jury, in Santa Clara County, California; and the parties hereby submit to the jurisdiction of such court. The reference proceedings shall be conducted pursuant to and in accordance with the provisions of California Code of Civil Procedure Sections 638 through 645.1, inclusive. The private judge shall have the power, among others, to grant provisional relief, including without limitation, entering temporary restraining orders, issuing preliminary and permanent injunctions and appointing receivers. All such proceedings shall be closed to the public and confidential and all records relating thereto shall be permanently sealed. If during the course of any dispute, a party desires to seek provisional relief, but a judge has not been appointed at that point pursuant to the judicial reference procedures, then such party may apply to the Santa Clara County, California Superior Court for such relief. The proceeding before the private judge shall be conducted in the same manner as it would be before a court under the rules of evidence applicable to judicial proceedings. The parties shall be entitled to discovery which shall be conducted in the same manner as it would be before a court under the rules of discovery applicable to judicial proceedings. The private judge shall oversee discovery and may enforce all discovery rules and orders applicable to judicial proceedings in the same manner as a trial court judge. The parties agree that the selected or appointed private judge shall have the power to decide all issues in the action or proceeding, whether of fact or of law, and shall report a statement of decision thereon pursuant to California Code of Civil Procedure Section 644(a). Nothing in this paragraph shall limit the right of any party at any time to exercise self-help remedies, foreclose against collateral, or obtain provisional remedies. The private judge shall also determine all issues relating to the applicability, interpretation, and enforceability of this paragraph.

This Section 11 shall survive the termination of this Agreement and the repayment of all Obligations.

12 GENERAL PROVISIONS

12.1 Termination Prior to the Term Loan Maturity Date; Survival. All covenants, representations and warranties made in this Agreement shall continue in full force until this Agreement has terminated pursuant to its terms and all Obligations (other than inchoate indemnity obligations) have been satisfied. So long as Borrower has satisfied the Obligations (other than inchoate indemnity obligations, any other obligations which, by their terms, are to survive the termination of this Agreement and the repayment of all Obligations, and any Obligations under Bank Services Agreements that are cash collateralized in accordance with Section 3.1 of this Agreement), this Agreement may be terminated prior to the Term Loan Maturity Date by Borrower pursuant to Section 1.1(c) of this Agreement. Those obligations that are expressly specified in this Agreement as surviving this Agreement's termination and the repayment of all Obligations shall continue to survive notwithstanding this Agreement's termination and the repayment of all Obligations.

12.2 Successors and Assigns. This Agreement binds and is for the benefit of the successors and permitted assigns of each party. Borrower may not assign or transfer this Agreement or any rights or obligations under it without Agent and Lenders' prior written consent (which may be granted or withheld in Agent's and Lenders' sole discretion) and any other attempted assignment or transfer by Borrower shall be null and void. Agent and each Lender has the right, without the consent of or notice to Borrower, to sell, transfer, assign, negotiate, or grant participation in all or any part of, or any interest in, such Lender's obligations, rights, and benefits under this Agreement and the other Loan Documents (other than the Warrant, as to which assignment, transfer and other such actions are governed by the terms thereof). Notwithstanding the foregoing, prior to the occurrence of an Event of Default, neither Agent nor any Lender shall assign any interests in the Loan Documents to an operating company which is a direct competitor of Borrower (as determined by Agent and the Lenders after attempted consultation with Borrower).

12.3 Indemnification.

(a) General Indemnification. Borrower shall indemnify, defend and hold Agent, each Lender and their respective partners, directors, officers, employees, agents, trustees, administrators, managers, advisors and representatives of Agent and its Affiliates or any Lender and its Affiliates (each, an "**Indemnified Person**") harmless against: (i) all losses, claims, damages, liabilities and related expenses (including Lenders' Expenses and the reasonable and documented fees, charges and disbursements of any counsel for any Indemnified Person) (collectively, "**Claims**") arising out of, in connection with, or as a result of (i) the execution or delivery of this Agreement, any other Loan Document or any agreement or instrument contemplated hereby or thereby, the performance by the parties hereto of their respective obligations hereunder or thereunder or the consummation of the transactions contemplated hereby or thereby, (ii) any Credit Extension or the use or proposed use of the proceeds therefrom, (iii) any actual or alleged presence or release of hazardous materials on or from any property owned or operated by Borrower or any of its Subsidiaries, or any environmental liability related in any way to Borrower or any of its Subsidiaries, or (iv) any actual or prospective claim, litigation, investigation or proceeding relating to any of the foregoing, whether based on contract, tort or any other theory, whether brought by a third party or by Borrower, and regardless of whether any Indemnified Person is a party thereto; provided that such indemnity shall not, as to any Indemnified Person, be available to the extent that such losses, claims, damages, liabilities or related expenses are determined by a court of competent jurisdiction by final and nonappealable judgment to have resulted from the gross negligence or willful misconduct of such Indemnified Person. All amounts due under this Section 12.3 shall be payable promptly after demand therefor.

(b) Waiver of Consequential Damages, Etc. To the fullest extent permitted by Applicable Law, none of Borrower, Agent or the Lenders shall assert, and each hereby waives, any claim, on any theory of liability, for special, indirect, consequential or punitive damages (as opposed to direct or actual damages) or any loss of profits arising out of, in connection with, or as a result of, this Agreement, any other Loan Document or any agreement or instrument contemplated hereby, the transactions contemplated hereby or thereby, any Credit Extension, or the use of the proceeds thereof. No Indemnified Person shall be liable for any damages arising from the use by unintended recipients of any information or other materials distributed by it through telecommunications, electronic or other information transmission systems in connection with this Agreement or the other Loan Documents or the transactions contemplated hereby or thereby.

This Section 12.3 shall survive the termination of this Agreement and the repayment of all Obligations until all statutes of limitation with respect to the Claims, losses, and expenses for which indemnity is given shall have run.

12.4 Time of Essence. Time is of the essence for the performance of all Obligations in this Agreement.

12.5 Severability of Provisions. Each provision of this Agreement is severable from every other provision in determining the enforceability of any provision.

12.6 Amendments in Writing; Waiver; Integration. No purported amendment or modification of any Loan Document, or waiver, discharge or termination of any obligation under any Loan Document, shall be effective unless, and only to the extent, expressly set forth in a writing signed by Agent, with the consent of the Lenders in accordance with the Lender Intercreditor Agreement or, if such item is not addressed in the Lender Intercreditor Agreement, as consented to by a majority of the Lenders, and Borrower. Without limiting the generality of the foregoing, no oral promise or statement, nor any action, inaction, delay, failure to require performance or course of conduct shall operate as, or evidence, an amendment, supplement or waiver or have any other effect on any Loan Document. Any waiver granted shall be limited to the specific circumstance expressly described in it, and shall not apply to any subsequent or other circumstance, whether similar or dissimilar, or give rise to, or evidence, any obligation or commitment to grant any further waiver. The Loan Documents represent the entire agreement about this subject matter and supersede prior negotiations or agreements. All prior agreements, understandings, representations, warranties, and negotiations between the parties about the subject matter of the Loan Documents merge into the Loan Documents.

12.7 Counterparts. This Agreement may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, is an original, and all taken together, constitute one Agreement. Delivery of an executed signature page of this Agreement by electronic mail transmission shall be effective as delivery of a manually executed counterpart hereof.

12.8 Confidentiality. Agent and each Lender agrees to maintain the confidentiality of Information (as defined below), except that Information may be disclosed (a) to Agent and/or any Lender's Subsidiaries and Affiliates, and their respective employees, directors, agents, attorneys, accountants, investors, potential investors, and other professional advisors (collectively, "**Representatives**" and, together with Agent and the Lenders, collectively, "**Lender Entities**"); provided that such Lender Entities are bound by confidentiality obligations substantially similar to those set forth in this Section; (b) to prospective transferees, assignees, credit providers or purchasers of Agent's or Lenders' interests under or in connection with this Agreement and their Representatives (in each case, subject to any such prospective transferee's, assignee's, credit provider's, purchaser's or their Representatives' agreement to the terms of this provision); (c) as required by law, regulation, subpoena, or other order; (d) to Agent's or any Lender's regulators or as otherwise required or requested in connection with Agent's or any Lender's examination or audit; (e) in connection with the exercise of remedies under the Loan Documents or any action or proceeding relating to this Agreement or any other Loan Document or the enforcement of rights hereunder or thereunder; and (f) to third-party service providers of Agent and/or any Lender so long as such service providers have executed a confidentiality agreement with Agent or the Lenders, as applicable, with terms no less restrictive than those contained herein. "**Information**" means all information received from Borrower regarding Borrower or its business, in each case other than information that is either: (i) in the public domain or in Agent's or any Lender's possession when disclosed to Agent or such Lender, or becomes part of the public domain (other than as a result of its disclosure by Agent or a Lender in violation of this Agreement) after disclosure to Agent and/or the Lenders; or (ii) disclosed to Agent and/or a Lender by a third party, if Agent or such Lender, as applicable, does not know that the third party is prohibited from disclosing the information.

12.9 Electronic Execution of Documents. The words "execution," "signed," "signature" and words of like import in any Loan Document shall be deemed to include electronic signatures or the keeping of records in electronic form, each of which shall be of the same legal effect, validity and enforceability as a manually executed signature or the use of a paper-based recordkeeping systems, as the case may be, to the extent and as provided for in any Applicable Law, including, without limitation, any state law.

12.10 Right of Setoff. Borrower hereby grants to Agent, for the ratable benefit of the Lenders, a Lien, security interest, and a right of setoff as security for all Obligations to Agent and the Lenders, whether now existing or hereafter arising upon and against all deposits, credits, collateral and property, now or hereafter in the possession, custody, safekeeping or control of Agent or any entity under the control of Agent (including a subsidiary of Agent) or in transit to any of them, and other obligations owing to Agent or any such entity. At any time after the occurrence and during the continuance of an Event of Default, without demand or notice, Agent or any Lender may setoff the same or any part thereof and apply the same to any Obligation of Borrower then due regardless of the adequacy of any other collateral securing the Obligations. ANY AND ALL RIGHTS TO REQUIRE AGENT OR ANY LENDER TO EXERCISE ITS RIGHTS OR REMEDIES WITH RESPECT TO ANY OTHER COLLATERAL WHICH SECURES THE OBLIGATIONS, PRIOR TO EXERCISING ITS RIGHT OF SETOFF WITH RESPECT TO SUCH DEPOSITS, CREDITS OR OTHER PROPERTY OF BORROWER, ARE HEREBY KNOWINGLY, VOLUNTARILY AND IRREVOCABLY WAIVED.

12.11 Captions and Section References. The headings used in this Agreement are for convenience only and shall not affect the interpretation of this Agreement. Unless indicated otherwise, section references herein are to sections of this Agreement.

12.12 Construction of Agreement. The parties hereto mutually acknowledge that they and their attorneys have participated in the preparation and negotiation of this Agreement. In cases of uncertainty this Agreement shall be construed without regard to which of the parties caused the uncertainty to exist.

12.13 Relationship. The relationship of the parties to this Agreement is determined solely by the provisions of this Agreement. The parties do not intend to create any agency, partnership, joint venture, trust, fiduciary or other relationship with duties or incidents different from those of parties to an arm's-length contract.

12.14 Third Parties. Nothing in this Agreement, whether express or implied, is intended to: (a) confer any benefits, rights or remedies under or by reason of this Agreement on any Persons other than the express parties to it and their respective permitted successors and assigns; (b) relieve or discharge the obligation or liability of any Person

not an express party to this Agreement; or (c) give any Person not an express party to this Agreement any right of subrogation or action against any party to this Agreement.

12.15 Anti-Terrorism Law. Each Lender hereby notifies Borrower that, pursuant to the requirements of Anti-Terrorism Law, it may be required to obtain, verify and record information that identifies Borrower, which information may include the name and address of Borrower and other information that will allow Lender to identify Borrower in accordance with Anti-Terrorism Law. Borrower hereby agrees to take any action necessary to enable each Lender to comply with the requirements of Anti-Terrorism Law.

13 ACCOUNTING TERMS AND OTHER DEFINITIONS

13.1 Accounting and Other Terms.

(a) Accounting terms not defined in this Agreement shall be construed following GAAP. Calculations and determinations must be made following GAAP (except for with respect to unaudited financial statements for the absence of footnotes and subject to year-end audit adjustments), provided that if at any time any change in GAAP would affect the computation of any financial ratio or requirement set forth in any Loan Document, and either Borrower, Agent, and/or any Lender shall so request, Borrower and Agent shall negotiate in good faith to amend such ratio or requirement to preserve the original intent thereof in light of such change in GAAP; provided, further, that, until so amended, (i) such ratio or requirement shall continue to be computed in accordance with GAAP prior to such change therein and (ii) Borrower shall provide Agent financial statements and other documents required under this Agreement or as reasonably requested hereunder setting forth a reconciliation between calculations of such ratio or requirement made before and after giving effect to such change in GAAP.

(b) As used in the Loan Documents: (i) the words “shall” or “will” are mandatory, the word “may” is permissive, the word “or” is not exclusive, the words “includes” and “including” are not limiting, the singular includes the plural, and numbers denoting amounts that are set off in brackets are negative; (ii) the term “continuing” in the context of an Event of Default means that the Event of Default has not been remedied (if capable of being remedied) or waived; and (iii) whenever a representation or warranty is made to Borrower’s knowledge or awareness, to the “best of” Borrower’s knowledge, or with a similar qualification, knowledge or awareness means the actual knowledge, after reasonable investigation, of any Responsible Officer.

13.2 Definitions. Capitalized terms not otherwise defined in this Agreement shall have the meanings set forth in this Section 13.2 of this Agreement. All other terms contained in this Agreement, unless otherwise indicated, shall have the meaning provided by the Code to the extent such terms are defined therein. As used in this Agreement, the following capitalized terms have the following meanings:

“**Account**” is, as to any Person, any “account” of such Person as “account” is defined in the Code with such additions to such term as may hereafter be made, and includes, without limitation, all accounts receivable and other sums owing to such Person.

“**Account Debtor**” is any “account debtor” as defined in the Code with such additions to such term as may hereafter be made.

“**Affiliate**” is, with respect to any Person, each other Person that owns or controls directly or indirectly the Person, any Person that controls or is controlled by or is under common control with the Person, and each of that Person’s senior executive officers, directors, partners and, for any Person that is a limited liability company, that Person’s managers and members.

“**Agent**” is defined in the preamble hereof.

“**Agreement**” is defined in the preamble hereof.

“**Anti-Terrorism Law**” means any law relating to terrorism or money-laundering, including Executive Order No. 13224 and the USA Patriot Act.

"**Applicable Law**" means all applicable provisions of constitutions, laws, statutes, ordinances, rules, treaties, regulations, permits, licenses, approvals, interpretations and orders of courts or Governmental Authorities and all orders and decrees of all courts and arbitrators.

"**Authorized Signer**" means any individual listed in Borrower's Borrowing Resolution who is authorized to execute the Loan Documents, including making (and executing if applicable) any Credit Extension request, on behalf of Borrower.

"**Bank Services**" are any products, credit services, and/or financial accommodations previously, now, or hereafter provided to Borrower or any of its Subsidiaries by SVB or any SVB Affiliate, including, without limitation, any letters of credit, cash management services (including, without limitation, merchant services, direct deposit of payroll, business credit cards, and check cashing services), interest rate swap arrangements, and foreign exchange services as any such products or services may be identified in SVB's various agreements related thereto (each, a "**Bank Services Agreement**").

"**Bank Services Agreement**" is defined in the definition of Bank Services.

"**Board**" means Borrower's board of directors or equivalent governing body.

"**Borrower**" is set forth on Schedule I hereto.

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

"**Borrowing Resolutions**" are, with respect to any Person, those resolutions adopted by such Person's board of directors (and, if required under the terms of such Person's Operating Documents, stockholders) and delivered by such Person to Agent approving the Loan Documents to which such Person is a party and the transactions contemplated thereby, together with a certificate executed by its secretary on behalf of such Person certifying (a) such Person has the authority to execute, deliver, and perform its obligations under each of the Loan Documents to which it is a party, (b) that set forth as a part of or attached as an exhibit to such certificate is a true, correct, and complete copy of the resolutions then in full force and effect authorizing and ratifying the execution, delivery, and performance by such Person of the Loan Documents to which it is a party, (c) the name(s) of the Person(s) authorized to execute the Loan Documents, including making (and executing if applicable) any Credit Extension request, on behalf of such Person, together with a sample of the true signature(s) of such Person(s), and (d) that Agent and Lenders may conclusively rely on such certificate unless and until such Person shall have delivered to Agent and Lenders a further certificate canceling or amending such prior certificate.

"**Business Day**" is a day other than a Saturday, Sunday or other day on which Agent is closed.

"**Cash Collateralization**" is defined in Section 5.15 hereof.

"**Cash Equivalents**" are (a) marketable direct obligations issued or unconditionally guaranteed by the United States or any agency or any State thereof having maturities of not more than one (1) year from the date of acquisition; (b) commercial paper maturing no more than one (1) year after its creation and having the highest rating from either Standard & Poor's Ratings Group or Moody's Investors Service, Inc.; (c) SVB's certificates of deposit issued maturing no more than one (1) year after issue; and (d) money market funds at least ninety-five percent (95.0%) of the assets of which constitute Cash Equivalents of the kinds described in clauses (a) through (c) of this definition.

"**Change in Control**" means (a) at any time, any "person" or "group" (as such terms are used in Sections 13(d) and 14(d) of the Exchange Act), shall become, or obtain rights (whether by means of warrants, options or otherwise) to become, the "beneficial owner" (as defined in Rules 13(d)-3 and 13(d)-5 under the Exchange Act), directly or indirectly, of forty-nine percent (49%) or more of the ordinary voting power for the election of directors, partners, managers and members, as applicable, of Borrower (determined on a fully diluted basis) other than by the sale of Borrower's equity securities in a public offering or to venture capital, private equity or strategic investors so

long as Borrower identifies to the Agent and the Lenders such investors at least seven (7) Business Days prior to the closing of the transaction and provides to Agent and the Lenders a description of the material terms of the transaction (b) during any period of twelve (12) consecutive months, a majority of the members of the Board of Borrower cease to be composed of individuals (i) who were members of that board or equivalent governing body on the first day of such period, (ii) whose election or nomination to that board or equivalent governing body was approved by individuals referred to in clause (i) above constituting at the time of such election or nomination at least a majority of that board or equivalent governing body or (iii) whose election or nomination to that board or other equivalent governing body was approved by individuals referred to in clauses (i) and (ii) above constituting at the time of such election or nomination at least a majority of that board or equivalent governing body; or (c) except as specifically permitted in accordance with the terms of this Agreement, at any time, Borrower shall cease to own and control, of record and beneficially, directly or indirectly, one hundred percent (100.0%) (the calculation of which shall exclude nominal amounts of the voting power of stock, partnership, membership, or other ownership interest or other equity securities in the relevant Subsidiary not held by Borrower to the extent required to satisfy local minority interest requirements outside of the United States) of each class of outstanding stock, partnership, membership, or other ownership interest or other equity securities of each Subsidiary of Borrower free and clear of all Liens (except Permitted Liens). For purposes of this definition, the term "Subsidiary" shall not include Eden BioCell, Ltd.

"**Change in Law**" means the occurrence, after the Effective Date, of: (a) the adoption or taking effect of any law, rule, regulation or treaty; (b) any change in Applicable Law or in the administration, interpretation, implementation or application thereof by any Governmental Authority; or (c) the making or issuance of any request, rule, guideline or directive (whether or not having the force of law) by any Governmental Authority; provided that notwithstanding anything herein to the contrary, (i) the Dodd-Frank Wall Street Reform and Consumer Protection Act and all requests, rules, guidelines or directives thereunder or issued in connection therewith and (ii) all requests, rules, guidelines or directives promulgated by the Bank for International Settlements, the Basel Committee on Banking Supervision (or any successor or similar authority) or the United States or foreign regulatory authorities, in each case pursuant to Basel III, shall in each case be deemed to be a "Change in Law", regardless of the date enacted, adopted or issued.

"**Claims**" is defined in Section 12.3.

"**Code**" is the Uniform Commercial Code, as the same may, from time to time, be enacted and in effect in the State of California; provided, that, to the extent that the Code is used to define any term herein or in any Loan Document and such term is defined differently in different Articles or Divisions of the Code, the definition of such term contained in Article or Division 9 shall govern; provided further, that in the event that, by reason of mandatory provisions of law, any or all of the attachment, perfection, or priority of, or remedies with respect to, Agent's Lien on any Collateral is governed by the Uniform Commercial Code in effect in a jurisdiction other than the State of California, the term "Code" shall mean the Uniform Commercial Code as enacted and in effect in such other jurisdiction solely for purposes of the provisions thereof relating to such attachment, perfection, priority, or remedies and for purposes of definitions relating to such provisions.

"**Collateral**" consists of all of Borrower's right, title and interest in and to the following personal property:

(a) All goods, Accounts (including health-care receivables), Equipment, Inventory, contract rights or rights to payment of money, leases, license agreements, franchise agreements, General Intangibles (except as provided below), commercial tort claims, documents, instruments (including any promissory notes), chattel paper (whether tangible or electronic), cash, deposit accounts, certificates of deposit, fixtures, letters of credit rights (whether or not the letter of credit is evidenced by a writing), securities, securities accounts, securities entitlements, and all other investment property, supporting obligations, and financial assets, whether now owned or hereafter acquired, wherever located; and

(b) All Borrower's Books relating to the foregoing, and any and all claims, rights and interests in any of the above and all substitutions for, additions, attachments, accessories, accessions and improvements to and replacements, products, proceeds and insurance proceeds of any or all of the foregoing.

(c) Notwithstanding the foregoing, the Collateral does not include (i) Intellectual Property; provided, however, the Collateral shall include all Accounts and all proceeds of Intellectual Property; provided, further, if a judicial authority (including a U.S. Bankruptcy Court) would hold that a security interest in the underlying Intellectual Property is necessary to have a security interest in such Accounts and such property that are proceeds of Intellectual Property, then the Collateral shall automatically, and effective as of the Effective Date, include the Intellectual Property to the extent necessary to permit perfection of Agent's, for the ratable benefit of the Lenders, security interest in such Accounts and such other property of Borrower that are proceeds of the Intellectual Property, (ii) with respect to stock in Foreign Subsidiaries, more than sixty-five percent (65.0%) of the presently existing and hereafter arising issued and outstanding shares of capital stock owned by Borrower in any Foreign Subsidiary which shares entitle the holder thereof to vote for directors or any other matter; (iii) any interest of Borrower as a lessee under an equipment lease if Borrower is prohibited by the terms of such lease from granting a security interest in such lease or under which such an assignment or Lien would cause a default to occur under such lease; provided, however, that upon termination of such prohibition, such interest shall immediately become Collateral without any action by Borrower, the Agent or any Lender, or (iv) rights held under a license that are not assignable by their terms without the consent of the licensor thereof (but only to the extent such restriction on assignment is enforceable under applicable law).

(d) Pursuant to the terms of a certain negative pledge arrangement with Agent and the Lenders, Borrower has agreed not to encumber any of its Intellectual Property without Agent and the Lenders' prior written consent.

"**Collateral Account**" is any Deposit Account, Securities Account, or Commodity Account.

"**Commitment**" and "**Commitments**" means the Term Loan Commitments.

"**Commodity Account**" is any "commodity account" as defined in the Code with such additions to such term as may hereafter be made.

"**Compliance Statement**" is that certain statement in the form attached hereto as Exhibit A.

"**Connection Income Taxes**" means Other Connection Taxes that are imposed on or measured by net income (however denominated) or that are franchise Taxes or branch profits Taxes.

"**Contingent Obligation**" is, for any Person, any direct or indirect liability of that Person for (a) any direct or indirect guaranty by such Person of any indebtedness, lease, dividend, letter of credit, credit card or other obligation of another, (b) any other obligation endorsed, co-made, discounted or sold with recourse by that Person, or for which that Person is directly or indirectly liable; (c) any obligations for undrawn letters of credit for the account of that Person; and (d) all obligations from any interest rate, currency or commodity swap agreement, interest rate cap or collar agreement, or other agreement or arrangement designated to protect a Person against fluctuation in interest rates, currency exchange rates or commodity prices; but "Contingent Obligation" does not include endorsements in the ordinary course of business. The amount of a Contingent Obligation is the stated or determined amount of the primary obligation for which the Contingent Obligation is made or, if not determinable, the maximum reasonably anticipated liability for it determined by the Person in good faith; but the amount may not exceed the maximum of the obligations under any guarantee or other support arrangement.

"**Control Agreement**" is any control agreement entered into among the depository institution at which Borrower maintains a Deposit Account or the securities intermediary or commodity intermediary at which Borrower maintains a Securities Account or a Commodity Account, Borrower, and Agent pursuant to which Agent obtains control (within the meaning of the Code) for the benefit of the Lenders over such Deposit Account, Securities Account, or Commodity Account.

"**Copyrights**" are any and all copyright rights, copyright applications, copyright registrations and like protections in each work of authorship and derivative work thereof, whether published or unpublished and whether or not the same also constitutes a trade secret.

"**Credit Extension**" is any Term Loan Advance, or any other extension of credit by any Lender for Borrower's benefit.

"**Default**" means any event which with notice or passage of time or both, would constitute an Event of Default.

"**Default Rate**" is defined in Section 1.2(c).

"**Defaulting Lender**" is, subject to Section 9.10(b), any Lender that (a) has failed to (i) fund all or any portion of its Term Loan Advances within two (2) Business Days of the date such Term Loan Advances were required to be funded hereunder unless such Lender notifies Agent and Borrower in writing that such failure is the result of such Lender's reasonable determination that one or more conditions precedent to funding (each of which conditions precedent, together with any applicable default, shall be specifically identified in such writing) has not been satisfied, or (ii) pay to Agent or any other Lender any other amount required to be paid by it hereunder within two (2) Business Days of the date when due, (b) has notified Borrower or Agent in writing that it does not intend to comply with its funding obligations hereunder, or has made a public statement to that effect (unless such writing or public statement relates to such Lender's obligation to fund a Term Loan Advance hereunder and states that such position is based on such Lender's reasonable determination that a condition precedent to funding (which condition precedent, together with any applicable default, shall be specifically identified in such writing or public statement) cannot be satisfied), (c) has failed, within three (3) Business Days after written request by Agent or Borrower, to confirm in writing to Agent and Borrower that it will comply with its prospective funding obligations hereunder (provided that such Lender shall cease to be a Defaulting Lender pursuant to this clause (c) upon receipt of such written confirmation by Agent and Borrower), or (d) has, or has a direct or indirect parent company that has, (i) become the subject of an Insolvency Proceeding, or (ii) had appointed for it a receiver, custodian, conservator, trustee, administrator, assignee for the benefit of creditors or similar Person charged with reorganization or liquidation of its business or assets, including the Federal Deposit Insurance Corporation or any other state or federal regulatory authority acting in such a capacity; provided that a Lender shall not be a Defaulting Lender solely by virtue of the ownership or acquisition of any equity interest in that Lender or any direct or indirect parent company thereof by a Governmental Authority so long as such ownership interest does not result in or provide such Lender with immunity from the jurisdiction of courts within the United States or from the enforcement of judgments or writs of attachment on its assets or permit such Lender (or such Governmental Authority) to reject, repudiate, disavow or disaffirm any contracts or agreements made with such Lender. Any determination by Agent that a Lender is a Defaulting Lender under any one or more of clauses (a) through (d) above shall be conclusive and binding absent manifest error, and such Lender shall be deemed to be a Defaulting Lender (subject to Section 9.10(b)) upon delivery of written notice of such determination to Borrower and each Lender.

"**Deposit Account**" is any "**deposit account**" as defined in the Code with such additions to such term as may hereafter be made.

"**Designated Deposit Account**" is the deposit account established by Borrower with SVB xxxxxx1580 for purposes of receiving Credit Extensions.

"**Disbursement Letter**" is that certain form attached hereto as Exhibit C.

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

"**Dollars**," "**dollars**" or use of the sign "$" means only lawful money of the United States and not any other currency, regardless of whether that currency uses the "$" sign to denote its currency or may be readily converted into lawful money of the United States.

"**Dollar Equivalent**" is, at any time, (a) with respect to any amount denominated in Dollars, such amount, and (b) with respect to any amount denominated in a Foreign Currency, the equivalent amount therefor in Dollars as determined by Agent at such time on the basis of the then-prevailing rate of exchange in San Francisco, California, for sales of the Foreign Currency for transfer to the country issuing such Foreign Currency.

"**Domestic Subsidiary**" means a Subsidiary organized under the laws of the United States or any state or territory thereof or the District of Columbia.

"**Draw Period**" is set forth on Schedule I hereto.

"**Effective Date**" is set forth on Schedule I hereto.

"**Environmental Laws**" means any Applicable Law (including any permits, concessions, grants, franchises, licenses, agreements or governmental restrictions) relating to pollution or the protection of health, safety or the environment or the release of any materials into the environment (including those related to hazardous materials, air emissions, discharges to waste or public systems and health and safety matters).

"**Equipment**" is all "equipment" as defined in the Code with such additions to such term as may hereafter be made, and includes without limitation all machinery, fixtures, goods, vehicles (including motor vehicles and trailers), and any interest in any of the foregoing.

"**Equity Milestone**" means Agent and the Lenders have received, evidence, satisfactory to Agent and the Lenders, confirming that Borrower has received at least Fifty Million Dollars ($50,000,000) in net cash proceeds after the Effective Date from the sale of Borrower's equity securities, the issuance of unsecured convertible debt, the incurrence of Subordinated Debt, or receipt of up-front payments from Borrower's customers/partners pursuant to the terms of binding, executed agreements (including licenses entered into pursuant to Section 6.1) entered into between Borrower and its customers/partners after the Effective Date, in each case, on terms and conditions, acceptable to Agent and the Lenders; provided that any unsecured convertible debt and any Subordinated Debt must mature at least ninety-one (91) days after the Term Loan Maturity Date.

"**ERISA**" is the Employee Retirement Income Security Act of 1974, as amended, and its regulations.

"**Erroneous Payment**" has the meaning assigned to it in Section 9.11(a).

"**Erroneous Payment Deficiency Assignment**" has the meaning assigned to it in Section 9.11(d).

"**Erroneous Payment Return Deficiency**" has the meaning assigned to it in Section 9.11(d).

"**Erroneous Payment Subrogation Rights**" has the meaning assigned to it in Section 9.11(d).

"**Event of Default**" is defined in Section 7.

"**Exchange Act**" is the Securities Exchange Act of 1934, as amended.

"**Excluded Taxes**" means any of the following Taxes imposed on or with respect to SVB or required to be withheld or deducted from a payment to SVB, (a) Taxes imposed on or measured by net income (however denominated), franchise Taxes, and branch profits Taxes, in each case, (i) imposed as a result of SVB being organized under the laws of, or having its principal office or its applicable lending office located in, the jurisdiction imposing such Tax (or any political subdivision thereof) or (ii) that are Other Connection Taxes, (b) U.S. federal withholding Taxes imposed on amounts payable to or for the account of SVB with respect to an applicable interest in a Credit Extension pursuant to a law in effect on the date on which (i) SVB acquires such interest in the Credit Extensions or (ii) SVB changes its lending office, except in each case to the extent that, pursuant to Section 1.8, amounts with respect to such Taxes were payable either to SVB's assignor immediately before SVB became a party hereto or to SVB immediately before it changed its lending office, (c) Taxes attributable to SVB's failure to comply with Section 1.8(e), and (d) any withholding Taxes imposed under FATCA.

"**FATCA**" means Sections 1471 through 1474 of the Internal Revenue Code, as of the date of this Agreement (or any amended or successor version that is substantively comparable and not materially more onerous to comply with), any current or future regulations or official interpretations thereof, any agreements entered into pursuant to Section 1471(b)(1) of the Internal Revenue Code and any fiscal or regulatory legislation, rules or practices adopted pursuant to any intergovernmental agreement, treaty or convention among Governmental Authorities and implementing such Sections of the Internal Revenue Code.

"**Federal Funds Effective Rate**" means, for any day, the weighted average of the rates on overnight federal funds transactions with members of the Federal Reserve System arranged by federal funds brokers, as published on the next succeeding Business Day by the Federal Reserve Bank of New York, or, if such rate is not so published for any day that is a Business Day, the average of the quotations for the day of such transactions received by SVB from three federal funds brokers of recognized standing selected by it.

"**Final Payment**" is a payment (in addition to and not in substitution for the regular monthly payments of principal plus accrued interest) equal to the original principal amount of each Term Loan Advance extended by the Lenders to Borrower hereunder multiplied by five and three-quarters of one percent (5.75%), due on the earliest to occur of (a) the Term Loan Maturity Date, (b) as required pursuant to Sections 1.1(c) or 1.1(d), or (c) the termination of this Agreement.

"**Financial Statement Repository**" is NECreditSolutions@svb.com or such other means of collecting information approved and designated by Agent or a Lender after providing notice thereof to Borrower from time to time.

"**Foreign Accounts**" is defined in Section 5.7(a) hereof.

"**Foreign Currency**" is the lawful money of a country other than the United States.

"**Foreign Subsidiary**" means any Subsidiary which is not a Domestic Subsidiary.

"**Funding Date**" is any date on which a Credit Extension is made to or for the account of Borrower which shall be a Business Day.

"**FX Contract**" is any foreign exchange contract by and between Borrower and SVB under which Borrower commits to purchase from or sell to SVB a specific amount of Foreign Currency at a set price or on a specified date.

"**GAAP**" is generally accepted accounting principles set forth in the opinions and pronouncements of the Accounting Principles Board of the American Institute of Certified Public Accountants and statements and pronouncements of the Financial Accounting Standards Board or in such other statements by such other Person as may be approved by a significant segment of the accounting profession, which are applicable to the circumstances as of the date of determination. Notwithstanding the foregoing, any obligations of any Person that are or would have been treated as operating leases for purposes of GAAP prior to the issuance by the Financial Accounting Standards Board on February 25, 2016 of an Accounting Standards Update (the "**ASU**") shall continue to be accounted for as operating leases for purposes of all financial definitions, calculations and covenants for purpose of this Agreement (whether or not such operating lease obligations were in effect on such date) notwithstanding the fact that such obligations are required in accordance with the ASU (on a prospective or retroactive basis or otherwise) to be treated as capitalized lease obligations in accordance with GAAP.

"**General Intangibles**" is all "general intangibles" as defined in the Code in effect on the date hereof with such additions to such term as may hereafter be made, and includes without limitation, all Intellectual Property, claims, income and other tax refunds, security and other deposits, payment intangibles, contract rights, options to purchase or sell real or personal property, rights in all litigation presently or hereafter pending (whether in contract, tort or otherwise), insurance policies (including without limitation key man, property damage, and business interruption insurance), payments of insurance and rights to payment of any kind.

"**Good Faith Deposit**" is defined in Section 1.3(c).

"**Governmental Approval**" is any consent, authorization, approval, order, license, franchise, permit, certificate, accreditation, registration, filing or notice, of, issued by, from or to, or other act by or in respect of, any Governmental Authority, including, without limitation, Healthcare Permits.

"**Governmental Authority**" is any nation or government, any state or other political subdivision thereof, any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative functions of or pertaining to government, any securities exchange and any self-regulatory organization.

"**Group Member**" means Borrower and its Subsidiaries.

"**Guarantor**" is any Person providing a Guaranty in favor of Lenders.

"**Guaranty**" is any guarantee of all or any part of the Obligations, as the same may from time to time be amended, restated, modified or otherwise supplemented.

"**Houston Facility**" means the leased property located at 8030 El Rio Street, Bldg. B, Houston, TX on the campus of MD Anderson Cancer Center.

"**Healthcare Laws**" means all Applicable Laws relating to the operation or management of hospitalist practices, the provision of hospitalist services, proper billing and collection practices relating to the payment for healthcare services, insurance law (including law related to payment for "no-fault" claims) and workers compensation law as they relate to the provision of, and billing and payment for, healthcare services, patient healthcare, patient healthcare information, patient abuse, the quality and adequacy of rehabilitative care, rate setting, equipment, personnel, operating policies, fee splitting, including, without limitation, (a) all federal and state fraud and abuse laws, including, without limitation, the federal Anti-Kickback Statute (42 U.S.C. §1320a-7b(b)), the Stark Law (42 U.S.C. §1395nn), the civil False Claims Act (31 U.S.C. §3729 et seq.), the administrative False Claims Law (42 U.S.C. § 1320a-7b(a)), the Anti-Inducement Law (42 U.S.C. § 1320a-7a(a)(5)), the exclusion laws (42 U.S.C. § 1320a-7); (b) the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009; (c) the Medicare Regulations and the Medicaid Program (Title XIX of the Social Security Act); (d) quality, safety and accreditation standards and requirements of all applicable state laws or regulatory bodies; (e) all laws, policies, procedures, requirements and regulations pursuant to which Healthcare Permits are issued; (f) any laws, regulations or administrative guidance with respect to fee splitting by healthcare professionals and the corporate practice of medicine in any jurisdiction in which any Borrower or any Guarantor operates; and (g) any and all comparable state or local laws and other applicable health care laws, regulations, manual provisions, policies and administrative guidance, each of (a) through (g) as may be amended from time to time and the regulations promulgated pursuant to each such law.

"**Healthcare Permit**" means, with respect to any Person, a permit issued or required under Healthcare Laws applicable to the business of Borrower or any Guarantor, or necessary in the possession, ownership, warehousing, marketing, promoting, sale, labeling, furnishing, distribution or delivery of goods or services under Healthcare Laws applicable to the business of Borrower or any Guarantor.

"**HIPAA**" means, collectively, the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic Clinical Health (HITECKH) Act and the implementing regulations thereto.

"**Indebtedness**" is (a) indebtedness for borrowed money or the deferred price of property or services, such as reimbursement and other obligations for surety bonds and letters of credit, (b) obligations evidenced by notes, bonds, debentures or similar instruments, (c) capital lease obligations, (d) Contingent Obligations and (e) other short- and long-term obligations under debt agreements, lines of credit and extensions of credit.

"**Indemnified Person**" is defined in Section 12.3.

"**Indemnified Taxes**" means (a) Taxes, other than Excluded Taxes, imposed on or with respect to any payment made by or on account of any obligation of Borrower under any Loan Document and (b) to the extent not otherwise described in clause (a), Other Taxes.

"**Information**" is defined in Section 12.8.

"**Insolvency Proceeding**" is any proceeding by or against any Person under the United States Bankruptcy Code, or any other bankruptcy or insolvency law, including assignments for the benefit of creditors, compositions, extensions generally with its creditors, or proceedings seeking reorganization, arrangement, receivership or other relief.

"**Intellectual Property**" means, with respect to any Person, all of such Person's right, title, and interest in and to the following:

(a) its Copyrights, Trademarks and Patents;

(b) any and all trade secrets and trade secret rights, including, without limitation, any rights to unpatented inventions, know-how and operating manuals;

(c) any and all source code;

(d) any and all design rights which may be available to such Person;

(e) any and all claims for damages by way of past, present and future infringement of any of the foregoing, with the right, but not the obligation, to sue for and collect such damages for said use or infringement of the Intellectual Property rights identified above; and

(f) all amendments, renewals and extensions of any of the Copyrights, Trademarks or Patents.

"**Internal Revenue Code**" means the U.S. Internal Revenue Code of 1986, and the rules and regulations promulgated thereunder, each as amended or modified from time to time.

"**Inventory**" is all "**inventory**" as defined in the Code in effect on the date hereof with such additions to such term as may hereafter be made, and includes without limitation all merchandise, raw materials, parts, supplies, packing and shipping materials, work in process and finished products, including without limitation such inventory as is temporarily out of Borrower's custody or possession or in transit and including any returned goods and any documents of title representing any of the above.

"**Investment**" is any beneficial ownership interest in any Person (including stock, partnership, membership, or other ownership interest or other equity securities), and any loan, advance or capital contribution to any Person.

"**Irish Subsidiary**" means Borrower's wholly-owned Subsidiary ZIOPHARM ONCOLOGY, LTD (IRELAND) a corporation organized under the laws of Republic of Ireland with registration no. 646960.

"**Key Person**" is Borrower's Chief Executive Officer, who is Heidi Hagan as of the Effective Date.

"**Lender**" and "**Lenders**" is defined in the preamble.

"**Lender Entities**" is defined in Section 12.8.

"**Lender Intercreditor Agreement**" is, collectively, any and all intercreditor agreement, participation agreements, master arrangement agreement or similar agreement by and between SVB Capital and SVB, as each may be amended from time to time in accordance with the provisions thereof.

"**Lenders' Expenses**" are all of Agent's and the Lenders' audit fees and expenses, costs, and expenses (including reasonable attorneys' fees and expenses) for preparing, amending, negotiating, administering, defending and enforcing the Loan Documents (including, without limitation, those incurred in connection with appeals or Insolvency Proceedings) or otherwise incurred with respect to Borrower.

"**Letter of Credit**" is a standby or commercial letter of credit issued by SVB upon request of Borrower based upon an application, guarantee, indemnity, or similar agreement.

"**Lien**" is a claim, mortgage, deed of trust, levy, attachment charge, pledge, hypothecation, security interest or other encumbrance of any kind, whether voluntarily incurred or arising by operation of law or otherwise against any property.

"**Loan Documents**" are, collectively, this Agreement and any schedules, exhibits, certificates, notices, and any other documents related to this Agreement, the Perfection Certificate, the Warrant, each Disbursement Letter, the Lender Intercreditor Agreement, any Control Agreement, any Bank Services Agreement, any subordination agreement, any note, or notes or guaranties executed by Borrower, landlord waivers and consents, bailee waivers and consents, and any other present or future agreement by Borrower with or for the benefit of Agent and the Lenders in connection with this Agreement or Bank Services, all as amended, restated, or otherwise modified in accordance with the terms thereof.

"**Material Adverse Change**" is (a) a material impairment in the perfection or priority of Agent's, for the ratable benefit of the Lenders, Lien in the Collateral or in the value of such Collateral; (b) a material adverse change in the business, operations, or condition (financial or otherwise) of Borrower and its Subsidiaries, taken as a whole; or (c) a material impairment of the prospect of repayment of any portion of the Obligations.

"**Obligations**" are Borrower's obligations to pay when due any debts, principal, interest, fees, Lenders' Expenses, the Final Payment, the Prepayment Premium, and other amounts Borrower owes Agent or any Lender now or later, whether under this Agreement, the other Loan Documents (other than the Warrant), or otherwise, including, without limitation, all obligations relating Bank Services, if any, and including interest accruing after Insolvency Proceedings begin and debts, liabilities, or obligations of Borrower assigned to Agent and/or the Lenders, and to perform Borrower's duties under the Loan Documents (other than the Warrant).

"**OFAC**" is the Office of Foreign Assets Control of the United States Department of the Treasury and any successor thereto.

"**Operating Documents**" are, for any Person, such Person's formation documents, as certified by the Secretary of State (or equivalent agency) of such Person's jurisdiction of organization on a date that is no earlier than thirty (30) days prior to the Effective Date, and, (a) if such Person is a corporation, its bylaws in current form, (b) if such Person is a limited liability company, its limited liability company agreement (or similar agreement), and (c) if such Person is a partnership or limited partnership, its partnership agreement or limited partnership agreement (or similar agreement), each of the foregoing with all current amendments or modifications thereto.

"**Other Connection Taxes**" means, with respect to SVB, Taxes imposed as a result of a present or former connection between SVB and the jurisdiction imposing such Tax (other than connections arising from SVB having executed, delivered, become a party to, performed its obligations under, received payments under, received or perfected a security interest under, engaged in any other transaction pursuant to or enforced any Loan Document, or sold or assigned an interest in any Credit Extension or Loan Document).

"**Other Taxes**" means all present or future stamp, court, documentary, intangible, recording, filing or similar Taxes that arise from any payment made under, from the execution, delivery, performance, enforcement or registration of, from the receipt or perfection of a security interest under, or otherwise with respect to, any Loan Document, except any such Taxes that are Other Connection Taxes imposed with respect to an assignment.

"**Patents**" means all patents, patent applications and like protections including without limitation improvements, divisions, continuations, renewals, reissues, extensions and continuations-in-part of the same.

"**Payment/Advance Form**" is that certain form attached hereto as Exhibit B.

"**Payment Date**" is set forth on Schedule I hereto.

"**Payment Recipient**" has the meaning assigned to it in Section 9.11(a).

"**Perfection Certificate**" is Perfection Certificate delivered by Borrower in connection with this Agreement.

"**Permitted Indebtedness**" is:

(a) Borrower's Indebtedness to Agent and the Lenders under this Agreement, the other Loan Documents;

(b) Indebtedness existing on the Effective Date and shown on the Perfection Certificate;

(c) Subordinated Debt;

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

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

(f) Indebtedness secured by Liens permitted under clauses (a) and (c) of the definition of "Permitted Liens" hereunder;

(g) Indebtedness of Borrower to any Subsidiary and Contingent Obligations of any Subsidiary with respect to obligations of Borrower (provided that the primary obligations are not prohibited hereby), and Indebtedness of any Subsidiary to Borrower in an aggregate principal amount not to exceed One Hundred Thousand Dollars ($100,000) or any other Subsidiary and Contingent Obligations of any Subsidiary with respect to obligations of any other Subsidiary (provided that the primary obligations are not prohibited hereby);

(h) to the extent constituting Indebtedness, Investments permitted pursuant to clause (f) of the definition of Permitted Investments;

(i) Indebtedness of Borrower in the form of unsecured convertible notes in an aggregate principal amount not to exceed One Hundred Million Dollars ($100,000,000) that (i) mature no earlier than 91 days after the Term Loan Maturity Date and (ii) are convertible or exchangeable into shares of Borrower's common stock, cash or a combination thereof (such amount of cash determined by reference to the price of Borrower's common stock) ("**Permitted Convertible Indebtedness**");

(j) Indebtedness in the form of letters of credit issued for Borrower's or a Subsidiary's account in the ordinary course of business in a jurisdiction in which neither the Agent nor any of its Affiliates, on its own account, is able to issue letters of credit in the form and in the amount requested by Borrower;

(k) Indebtedness consisting of the financing of insurance premiums;

(l) unsecured Indebtedness consisting of credit card payables owing to financial institutions other than Bank to the extent permitted pursuant to Section 5.7(b);

(m) Indebtedness in an aggregate amount not to exceed One Hundred Thousand Dollars ($100,000) in respect of surety or performance bonds and similar instruments issued for Borrower's account in the ordinary course of business;

(n) extensions, refinancings, modifications, amendments and restatements of any items of Permitted Indebtedness (a) through (i) above; provided that the principal amount thereof is not increased or the terms thereof are not modified to impose more burdensome terms upon Borrower or its Subsidiary, as the case may be; and

(o) other unsecured Indebtedness not otherwise permitted by Section 7.4 not exceeding Two Hundred Fifty Thousand Dollars ($250,000) in the aggregate outstanding at any time.

"**Permitted Investments**" are:

(a) Investments (including, without limitation, Subsidiaries) existing on the Effective Date and shown on the Perfection Certificate;

(b) Investments consisting of Cash Equivalents;

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

(d) Investments consisting of deposit accounts or security accounts in which Agent has a perfected security interest, to the extent required pursuant to Section 5.7;

(e) Investments accepted in connection with Transfers permitted by Section 7.1;

(f) Investments (i) by any Borrower or secured Guarantor hereunder in any other Borrower or secured Guarantor hereunder, (ii) by Borrower in the UK Subsidiary, the Irish Subsidiary and any other Subsidiary that is not a co-Borrower or secured Guarantor hereunder not to exceed One Hundred Thousand Dollars ($100,000) in the aggregate in any fiscal year, and (ii) by Subsidiaries that are not co-Borrowers or secured Guarantors hereunder in other Subsidiaries that are not co-Borrowers or secured Guarantors hereunder or in Borrower;

(g) Investments consisting of (i) travel advances and employee relocation loans and other employee loans and advances in the ordinary course of business, and (ii) loans to employees, officers or directors relating to the purchase of equity securities of Borrower or its Subsidiaries pursuant to employee stock purchase plans or agreements approved by Borrower's Board of Directors;

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

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

(j) Investments consisting of the creation of a Subsidiary for the purpose of consummating a merger transaction permitted by Section 6.3 of this Agreement, which is otherwise a Permitted Investment.

"**Permitted Liens**" are:

(a) Liens existing on the Effective Date which are shown on the Perfection Certificate or arising under this Agreement and the other Loan Documents;

(b) Liens for taxes, fees, assessments or other government charges or levies, either (i) not due and payable or (ii) being contested in good faith and for which Borrower maintains adequate reserves on its Books, provided that no notice of any such Lien has been filed or recorded under the Internal Revenue Code;

(c) purchase money Liens (i) on Equipment acquired or held by Borrower incurred for financing the acquisition of the Equipment securing no more than Two Million Two Hundred Thousand Dollars ($2,200,000)

in the aggregate amount outstanding, or (ii) existing on Equipment when acquired, if the Lien is confined to the property and improvements and the proceeds of the Equipment;

(d) Liens of carriers, warehousemen, suppliers, or other Persons that are possessory in nature arising in the ordinary course of business so long as such Liens attach only to Inventory, securing liabilities in the aggregate amount not to exceed Five Hundred Thousand Dollars ($500,000) and which are not delinquent or remain payable without penalty or which are being contested in good faith and by appropriate proceedings which proceedings have the effect of preventing the forfeiture or sale of the property subject thereto;

(e) Liens to secure payment of workers' compensation, employment insurance, old-age pensions, social security and other like obligations incurred in the ordinary course of business (other than Liens imposed by ERISA);

(f) Liens incurred in the extension, renewal or refinancing of the Indebtedness secured by Liens described in (a) through (c), but any extension, renewal or replacement Lien must be limited to the property encumbered by the existing Lien and the principal amount of the indebtedness may not increase;

(g) leases or subleases of real property granted in the ordinary course of Borrower's business (or, if referring to another Person, in the ordinary course of such Person's business), and leases, subleases, non-exclusive licenses or sublicenses of personal property (other than Intellectual Property) granted in the ordinary course of Borrower's business (or, if referring to another Person, in the ordinary course of such Person's business), if the leases, subleases, licenses and sublicenses do not prohibit granting Agent a security interest therein;

(h) (1) non-exclusive licenses of Intellectual Property granted to third parties in the ordinary course of business, and (2) licenses of Intellectual Property that could not result in a legal transfer of title of the licensed property that may be exclusive in respects other than territory and that may be exclusive as to territory only as to discreet geographical areas outside of the United States;

(i) Liens arising from attachments or judgments, orders, or decrees in circumstances not constituting an Event of Default under Sections 7.4 and 7.7;

(j) Liens in favor of other financial institutions arising in connection with Borrower's deposit and/or securities accounts held at such institutions, provided that Agent has a perfected security interest in the amounts held in such deposit and/or securities accounts, to the extent required by Section 5.7; and

(k) security deposits to secure the performance of real property leases (including in the form of letters of credit) in an aggregate amount outstanding at any time not to exceed Two Hundred Fifty Thousand Dollars ($250,000) or such higher amount approved in advance, in writing by the Lenders.

"**Person**" is any individual, sole proprietorship, partnership, limited liability company, joint venture, company, trust, unincorporated organization, association, corporation, institution, public benefit corporation, firm, joint stock company, estate, entity or government agency.

"**Pledge Agreement**" means a Cash Pledge Agreement in form and substance acceptable to the Lenders.

"**Pledged Account**" means a restricted account established and maintained by Borrower at SVB.

"**Prepayment Premium**" shall be an additional fee, payable to Agent, for the ratable benefit of the Lenders based on their Pro Rata Share, with respect to the Term Loan Advances, in an amount equal to:

(a) for a prepayment of the Term Loan Advances made on or prior to the first (1st) anniversary of the Effective Date, three percent (3.0%) of the then outstanding principal amount of the Term Loan Advances being prepaid immediately prior to the date of such prepayment;

(b) for a prepayment of the Term Loan Advances made after the first (1st) anniversary of the Effective Date, but on or prior to the second (2nd) anniversary of the Effective Date, two percent (2.0%) of the then outstanding principal amount of the Term Loan Advances being prepaid immediately prior to the date of such prepayment; and

(c) for a prepayment of the Term Loan Advances made after the second (2nd) anniversary of the Effective Date, but prior to the Term Loan Maturity Date, one percent (1.0%) of the then outstanding principal amount of the Term Loan Advances being prepaid immediately prior to the date of such prepayment.

"**Prime Rate**" is set forth on Schedule I hereto.

"**Prime Rate Margin**" is set forth on Schedule I hereto.

"**Pro Rata Share**" is, as of any date of determination,, with respect to each Lender, a percentage (expressed as a decimal, rounded to the ninth decimal place) determined by *dividing* the outstanding principal amount of Term Loan Advances held by such Lender *by* the aggregate outstanding principal amount of all Term Loan Advances.

"**Registered Organization**" is any "registered organization" as defined in the Code with such additions to such term as may hereafter be made.

"**Removal Effective Date**" is defined in Section 9.10(d).

"**Representatives**" is defined in Section 12.8.

"**Responsible Officer**" is any of the Chief Executive Officer, President and Chief Financial Officer of Borrower.

"**Restricted License**" is any material license or other material agreement with respect to which Borrower is the licensee (a) that prohibits or otherwise restricts Borrower from granting a security interest in, or a fixed or floating charge over, Borrower's interest in such license or agreement or any other property, or (b) for which a default under or termination of could interfere with the Agent's right to sell any Collateral.

"**Sale and Leaseback Transaction**" is any arrangement with any Person or Persons, whereby in contemporaneous or substantially contemporaneous transactions the Borrower or any Guarantor sells substantially all of its right, title and interest in any property and, in connection therewith, acquires, leases or licenses back the right to use all or a material portion of such property.

"**Sanctioned Person**" means a Person that: (a) is listed on any Sanctions list maintained by OFAC or any similar Sanctions list maintained by any other Governmental Authority having jurisdiction over Borrower; (b) is located, organized, or resident in any country, territory, or region that is the subject or target of Sanctions; or (c) is fifty percent (50.0%) or more owned or controlled by one (1) or more Persons described in clauses (a) and (b) hereof.

"**Sanctions**" means the economic sanctions laws, regulations, embargoes or restrictive measures administered, enacted or enforced by the United States government and any of its agencies, including, without limitation, OFAC and the U.S. State Department, or any other Governmental Authority having jurisdiction over Borrower.

"**SEC**" is the Securities and Exchange Commission, any successor thereto, and any analogous Governmental Authority.

"**Securities Account**" is any "securities account" as defined in the Code with such additions to such term as may hereafter be made.

"**Subordinated Debt**" is indebtedness incurred by Borrower or any of its Subsidiaries subordinated to all of Borrower's or any of its Subsidiaries' now or hereafter indebtedness to Agent and the Lenders (pursuant to a subordination, intercreditor, or other similar agreement in form and substance satisfactory to Agent and the Lenders entered into between Agent, the Lenders, and the other creditor), on terms acceptable to Agent and the Lenders.

"**Subsidiary**" is, as to any Person, a corporation, partnership, limited liability company or other entity of which shares of stock, partnership, membership, or other ownership interest or other equity securities having ordinary voting power (other than stock, partnership, membership, or other ownership interest or other equity securities having such power only by reason of the happening of a contingency) to elect a majority of the board of directors or other managers of such corporation, partnership or other entity are at the time owned, or the management of which is otherwise controlled, directly or indirectly through one or more intermediaries, or both, by such Person. Unless the context otherwise requires, each reference to a Subsidiary herein shall be a reference to a Subsidiary of Borrower.

"**SVB**" is defined in the preamble hereof.

"**SVB Capital**" is defined in the preamble hereof.

"**Taxes**" means all present or future taxes, levies, imposts, duties, deductions, withholdings (including backup withholding), assessments, fees or other charges imposed by any Governmental Authority, including any interest, additions to tax or penalties applicable thereto.

"**Term A Loan Advance**" is defined in Section 1.1(a).

"**Term B Loan Advance**" is defined in Section 1.1(a).

"**Term B Milestone**" means Borrower has (a) achieved persistence of T cells at day thirty (30) post-infusion by vector copy number (VCN) in at least two (2) patients treated at dose level 2 in the Phase 1 Library TCR-T trial; provided that either dose level 1 or dose level 2 must be endorsed by an independent safety monitoring committee as a safe dose to proceed with, (b) achieved submission by Borrower of an IND (investigational new drug) amendment to add at least 4 TCRs to Borrower's current TCR-T library IND, and (c) received at least One Hundred Million Dollars ($100,000,000) in net cash proceeds after the Effective Date but on or prior to August 31, 2022, from the sale of Borrower's equity securities, the issuance of unsecured convertible debt, the incurrence of Subordinated Debt, receipt of up-front payments from Borrower's customers/partners pursuant to the terms of binding, executed agreements (including licenses entered into pursuant to Section 6.1) entered into between Borrower and its customers/partners after the Effective Date, in each case, on terms and conditions, acceptable to Agent and the Lenders.

"**Term Loan Advance**" and "**Term Loan Advances**" are each defined in Section 1.1 of this Agreement.

"**Term Loan Amortization Date**" is set forth on Schedule I hereto.

"**Term Loan Availability Amount**" is set forth on Schedule I hereto.

"**Term Loan Commitment**" means, for any Lender, the obligation of such Lender to make a Term Loan Advance as and when available, up to the principal amount shown on Schedule II. "**Term Loan Commitments**" means the aggregate amount of such commitments of all Lenders.

"**Term Loan Commitment Percentage**" means, as to any Lender at any time, the percentage (carried out to the fourth decimal place) of the Term Loan Commitments represented by such Lender's Term Loan Commitment at such time. The initial Term Loan Commitment Percentage of each Lender is set forth opposite the name of such Lender on Schedule II.

"**Term Loan Maturity Date**" is set forth on Schedule I hereto.

"**Trademarks**" means, with respect to any Person, any trademark and servicemark rights, whether registered or not, applications to register and registrations of the same and like protections, and the entire goodwill of the business of such Person connected with and symbolized by such trademarks.

"**Transfer**" is defined in Section 6.1.

"**UK Subsidiary**" means Borrower's wholly-owned Subsidiary ZIOPHARM ONCOLOGY, LTD (UNITED KINGDOM) a corporation organized under the laws of England and Wales with registration no. 05705443.

"**USA Patriot Act**" means the "Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001" (Public Law 107-56, signed into law on October 26, 2001), as amended from time to time.

"**Warrant**" means, collectively, (a) that certain Warrant to Purchase Stock dated as of the Effective Date issued by Borrower to SVB, (b) that certain Warrant to Purchase Stock dated as of the Effective Date issued by Borrower to SVB Capital, (c) that certain Warrant to Purchase Stock dated as of the Effective Date issued by Borrower to Innovation Credit Fund VIII-A, L.P. and (d) any other warrant to purchase stock issued by Borrower in favor of SVB, SVB Capital or any of their Affiliates heretofore or hereafter, in each case as may be amended, modified, supplemented and/or restated from time to time.

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the Effective Date.

BORROWER:

ZIOPHARM ONCOLOGY, INC.

By: /s/ Heidi Hagen

Name: Heidi Hagen

Title: Interim Chief Executive Officer

AGENT:

SILICON VALLEY BANK, as Agent

By: /s/ Lauren Cole

Name: Lauren Cole

Title: Director

AGENT:

SILICON VALLEY BANK, as Lender

By: /s/ Lauren Cole

Name: Lauren Cole

Title: Director

SVB INNOVATION CREDIT FUND VIII, L.P., as Lender
By: SVB Innovation Credit Partners VIII, LLC, a
Delaware limited liability company, its General Partner

By: /s/ Ryan Grammer

Name: Ryan Grammer

Title: Senior Managing Director

SCHEDULE I
LSA PROVISIONS

LSA Section	LSA Provision
1.1(a) – Term Loan Advances – Availability	Each Term Loan Advance must be in an amount equal to Twenty-Five Million Dollars ($25,000,000). After repayment, no Term Loan Advance (or any portion thereof) may be reborrowed.
1.1(b) – Term Loan Advances – Repayment	Commencing on the Term Loan Amortization Date and continuing on each Payment Date thereafter, Borrower shall repay the aggregate outstanding Term Loan Advances to Agent, for the account of the Lenders, in (i) equal monthly installments of principal, plus (ii) monthly payments of accrued interest at the rate set forth in Section 1.2(b).
1.2(a) – Interest Payments – Term Loan Advances	Interest on the principal amount of each Term Loan Advance is payable in arrears monthly (i) on each Payment Date commencing on the first (1st) Payment Date of the month following the month in which the Funding Date of the applicable Term Loan Advance occurs, (ii) on the date of any prepayment and (iii) on the Term Loan Maturity Date.
1.2(b) – Interest Rate – Term Loan Advances	The outstanding principal amount of any Term Loan Advance shall accrue interest at a floating rate per annum equal to the greater of (i) seven and three-quarters of one percent (7.75%) and (ii) the Prime Rate plus the Prime Rate Margin, which interest shall be payable in accordance with Section 1.2(a).
1.2(e) – Interest Computation	Interest shall be computed on the basis of the actual number of days elapsed and a 360-day year for any Credit Extension outstanding.
13.2 – "Borrower"	"**Borrower**" means **ZIOPHARM ONCOLOGY, INC.**, a Delaware corporation.
13.2 – "Draw Period"	"**Draw Period**" is the period of time commencing on the date Borrower delivers to Agent and the Lenders evidence, satisfactory to Agent and the Lenders in their sole discretion, confirming that Borrower has achieved the Term B Milestone and ending on the earlier to occur of (a) August 31, 2022 and (b) an Event of Default.
13.2 – "Effective Date"	"**Effective Date**" is August 6, 2021.
13.2 – "Payment Date"	"**Payment Date**" is the first (1st) calendar day of each month.
13.2 – "Prime Rate"	"**Prime Rate**" is the rate of interest per annum from time to time published in the money rates section of The Wall Street Journal or any successor publication thereto as the "prime rate" then in effect; provided that if such rate of interest, as set forth from time to time in the money rates section of The Wall Street Journal, becomes unavailable for any reason as determined by Agent, the "Prime Rate" shall mean the rate of interest per annum announced by SVB as its prime rate in effect at its principal office in the State of California (such SVB announced Prime Rate not being intended to be the lowest rate of interest charged by SVB in connection with extensions of credit to debtors); provided that, in the event such rate of interest is less than zero percent (0.0%) per annum, such rate shall be deemed to be zero percent (0.0%) per annum for purposes of this Agreement.
13.2 – "Prime Rate Margin"	"**Prime Rate Margin**" is four and one half of one percent (4.50%).

13.2 – "Term Loan Amortization Date"	"**Term Loan Amortization Date**" is April 1, 2022; provided, however, if Borrower achieves the Equity Milestone on or prior to March 31, 2022, the Term Loan Amortization Date shall automatically, with no further action required by the parties hereto, be extended to September 1, 2022; and provided, further, that if (a) Borrower achieves both the Equity Milestone (on or prior to March 31, 2022) and the Term B Milestone, and (b) Borrower requests and the Lenders make the Term B Loan Advance to Borrower on or prior to August 31, 2022, the Term Loan Amortization Date shall automatically and with no further action required by the parties hereto be extended to September 1, 2023.
13.2 – "Term Loan Availability Amount"	"**Term Loan Availability Amount**" is an aggregate principal amount equal to Fifty Million Dollars ($50,000,000).
13.2 – "Term Loan Maturity Date"	"**Term Loan Maturity Date**" is March 1, 2023; provided, however, if Borrower achieves the Equity Milestone on or prior to March 31, 2022, the Term Loan Maturity Date shall automatically, with no further actions required by the parties hereto be extended to August 1, 2025.

SCHEDULE II

LENDERS AND COMMITMENTS

TERM LOAN COMMITMENTS

Lender	**Term A Loan Advance Commitment**	**Term A Loan Advance Commitment Percentage**	**Term B Loan Advance Commitment**	**Term B Loan Advance Commitment Percentage**
Silicon Valley Bank	$17,500,000	70.0000%	$17,500,000	70.0000%
SVB Innovation Credit Fund VIII, L.P.	$7,500,000	30.0000%	$7,500,000	30.0000%
TOTAL	**$25,000,000**	**100.0000%**	**$25,000,000**	**100.0000%**

EXHIBIT A
COMPLIANCE STATEMENT

Date: _____

TO: SILICON VALLEY BANK ("**SVB**"), as Agent, SVB, and
SVB INNOVATION CREDIT FUND VIII, L.P., as Lender

FROM: ZIOPHARM ONCOLOGY, INC.

Under the terms and conditions of the Loan and Security Agreement among Borrower, Agent, and the Lenders (the "Agreement") Borrower is in compliance, in all material respects, for the period ending _____ with all required covenants except as noted below. Attached are the required documents evidencing such compliance, setting forth calculations prepared in accordance with GAAP consistently applied from one period to the next except as explained in an accompanying letter or footnotes. Capitalized terms used but not otherwise defined herein shall have the meanings given them in the Agreement.

Please indicate compliance status by circling Yes/No under "Complies" column.

Reporting Covenants	**Required**	**Complies**
Quarterly bank account statements	Quarterly within 45 days	Yes No
Quarterly financial statements with Compliance Statement	Quarterly within 45 days (90 days for Q4)	Yes No
Annual financial statements (CPA Audited)	FYE within 180 days	Yes No
10-Q, 10-K and 8-K	Within 5 Business Days after filing with SEC	Yes No
Board approved budget and projections	FYE within 30 days and within 10 Business Days as amended/updated	Yes No
Assets at Subsidiaries	Aggregate value of assets held by UK Subsidiary ($100,000) Aggregate value of assets at Irish Subsidiary ($100,000)	Yes No

Other Matters

Have there been any material amendments of or other changes to the Operating Documents of Borrower or any of its Subsidiaries? If yes, provide copies of any such amendments or changes with this Compliance Statement. Yes No

The following are the exceptions with respect to the statements above: (If no exceptions exist, state "No exceptions to note.")

EXHIBIT B
LOAN PAYMENT/ADVANCE REQUEST FORM

Date: _____

LOAN PAYMENT:

ZIOPHARM ONCOLOGY, INC.

From Account #_____ To Account #_____
(Deposit Account #) (Loan Account #)
Principal $_____ and/or Interest $_____

Authorized Signature:___ Phone Number: ___
Print Name/Title: _

LOAN ADVANCE:

Complete *Outgoing Wire Request* section below if all or a portion of the funds from this loan advance are for an outgoing wire.

From Account #_____ To Account #_____
(Loan Account #) (Deposit Account #)

Amount of Term Loan Advance $_____

All Borrower's representations and warranties in the Loan and Security Agreement are true, correct and complete on the date of the request for an advance:

Authorized Signature:___ Phone Number: ___
Print Name/Title: _

OUTGOING WIRE REQUEST:
Complete only if all or a portion of funds from the loan advance above is to be wired.
Deadline for same day processing is noon, Pacific Time

Beneficiary Name: _____ Amount of Wire: $_
Beneficiary Bank: _____ Account Number: _
City and State: ____

Beneficiary Bank Transit (ABA) #: ____ Beneficiary Bank Code (Swift, Sort, Chip, etc.): _
(For International Wire Only)

Intermediary Bank: ____ Transit (ABA) #: __
For Further Credit to: ___

Special Instruction: ____

By signing below, I (we) acknowledge and agree that my (our) funds transfer request shall be processed in accordance with and subject to the terms and conditions set forth in the agreements(s) covering funds transfer service(s), which agreements(s) were previously received and executed by me (us).

Authorized Signature: _____	2nd Signature (if required): _____
Print Name/Title: _____	Print Name/Title: _____
Telephone #: _____	Telephone #: _____

EXHIBIT C

Form of Disbursement Letter

[***see attached***]

DISBURSEMENT LETTER

_____ __, 20__

The undersigned, being the Authorized Signer of **ZIOPHARM ONCOLOGY, INC.**, a Delaware corporation ("**Borrower**"), does hereby certify to (a) **SILICON VALLEY BANK**, a California corporation ("**SVB**"), in its capacity as administrative agent and collateral agent ("**Agent**"), (b) **SVB**, as a lender, (c) **SVB INNOVATION CREDIT FUND VIII, L.P.**, a Delaware limited partnership ("**SVB Capital**"), as a lender (SVB and SVB Capital and each of the other "Lenders" from time to time a party hereto are referred to herein collectively as the "**Lenders**" and each individually as a "**Lender**") in connection with that certain Loan and Security Agreement dated as of August 6, 2021, by and among Borrower, Agent and the Lenders from time to time party thereto (the "**Loan Agreement**"; with other capitalized terms used below having the meanings ascribed thereto in the Loan Agreement) that:

(i) The representations and warranties made by Borrower in Section 4 of the Loan Agreement and in the other Loan Documents are true and correct in all material respects as of the date hereof.

(ii) No Event of Default has occurred or is continuing under the Loan Agreement or any other Loan Document or shall result from the Credit Extension requested hereby.

(iii) Borrower is in compliance with the covenants and requirements contained in Sections 3, 5 and 6 of the Loan Agreement.

(iv) All conditions referred to in Section 2.1 and/or 2.2, as applicable, of the Loan Agreement to the making of a Credit Extension to be made on or about the date hereof have been satisfied or waived by Agent.

(v) No Material Adverse Change has occurred and is continuing.

(vi) The undersigned is an Authorized Signer.

The proceeds of the Term Loan Advance shall be disbursed as follows:

Disbursement from SVB:

Loan Amount	$_____
Plus:	
--Deposit Received	$_____
--Lenders' Legal Fees	($_____)
Net Proceeds due from SVB:	**$_____**

Disbursement from SVB Capital:

Loan Amount	$_____
Net Proceeds due from SVB Capital:	**$_____**

TOTAL TERM LOAN ADVANCE	
NET PROCEEDS FROM LENDERS	**$_____**

The aggregate net proceeds of the Term Loan Advance shall be transferred to the Borrower's Designated Deposit Account as follows:

Account Name:	ZIOPHARM ONCOLOGY, INC.
Bank Name:	Silicon Valley Bank
Bank Address:	3003 Tasman Drive Santa Clara, California 95054
Account Number:	[_____]
ABA Number:	[_____]

[Balance of Page Intentionally Left Blank]

BORROWER:

ZIOPHARM ONCOLOGY, INC.

By: _____

Name: _____

Title: _____

AGENT:

SILICON VALLEY BANK, as Agent

By: _____

Name: _____

Title: _____

AGENT:

SILICON VALLEY BANK, as Lender

By: _____

Name: _____

Title: _____

SVB INNOVATION CREDIT FUND VIII, L.P., as Lender
By: SVB Innovation Credit Partners VIII, LLC, a
Delaware limited liability company, its General Partner

By: _____

Name: _____

Title: _____

Exhibit 31.1

CERTIFICATION

I, Kevin S. Boyle Sr., certify that:

1. I have reviewed this quarterly report on Form 10-Q of ZIOPHARM Oncology, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: November 8, 2021

/s/ Kevin S. Boyle, Sr.

Kevin S. Boyle, Sr.
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION

I, Kevin G. Lafond, certify that:

1. I have reviewed this quarterly report on Form 10-Q of ZIOPHARM Oncology, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: November 8, 2021

/s/ Kevin G. Lafond

Kevin G. Lafond
Sr. Vice President Finance, Chief Accounting Officer, and Treasurer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION

In connection with the Quarterly Report on Form 10-Q of ZIOPHARM Oncology, Inc. (the "Company") for the quarter ended September 30, 2021, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), we Kevin S. Boyle, Sr., the Principal Executive Officer of the Company and Kevin G. Lafond, the Principal Financial Officer of the Company, each hereby each certifies, pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of his or her knowledge:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended, and

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

Dated: November 8, 2021

/s/ Kevin S. Boyle, Sr.

Kevin S. Boyle, Sr.
Chief Executive Officer
(Principal Executive Officer)

/s/ Kevin G. Lafond

Kevin G. Lafond
Sr. Vice President Finance, Chief Accounting Officer, and Treasurer
(Principal Financial Officer)