

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

FORM 10-Q

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

For the quarterly period ended September 30, 2018

OR

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

For the transition period from _____ to _____

Commission File Number 001-38191

MUSTANG BIO, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

47-3828760

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

2 Gansevoort Street, 9th Floor

New York, New York 10014

(Address including zip code of principal executive offices)

(781) 652-4500

(Registrant's telephone number, including area code)

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

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

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

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input checked="" type="checkbox"/>

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

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

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date.

Class of Common Stock	Outstanding Shares as of November 12, 2018
Class A Common Stock, \$0.0001 par value	1,000,000
Common Stock, \$0.0001 par value	26,263,631

MUSTANG BIO, INC.
QUARTERLY REPORT ON FORM 10-Q
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PART I. FINANCIAL INFORMATION
Item 1. Unaudited Condensed Financial Statements

MUSTANG BIO, INC.
Condensed Balance Sheets
(\$ in thousands, except for share and per share amounts)

	September 30,	December 31,
	2018	2017
	(Unaudited)	
ASSETS		
Current Assets:		
Cash and cash equivalents	\$ 18,296	\$ 34,975
Short-term investments (certificates of deposit)	22,538	26,002
Interest receivable on short-term investments (certificates of deposit)	69	106
Other receivables - related party	50	-
Prepaid expenses	872	278
Total current assets	41,825	61,361
Property, plant and equipment, net	6,760	140
Fixed assets - construction in process	33	1,241
Restricted cash	500	500
Other assets	394	251
Total Assets	\$ 49,512	\$ 63,493
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities:		
Accounts payable and accrued expenses	\$ 3,777	\$ 3,474
Payables and accrued expenses - related party	275	137
Total current Liabilities	4,052	3,611
Deferred Rent Payable	470	50
Total Liabilities	4,522	3,661
Commitments and Contingencies		
Stockholders' Equity		
Preferred stock (\$0.0001 par value), 2,000,000 shares authorized, 250,000 shares of Class A preferred stock issued and outstanding as of September 30, 2018 and December 31, 2017	-	-
Common Stock (\$0.0001 par value), 50,000,000 shares authorized		
Class A common shares, 1,000,000 shares issued and outstanding as of September 30, 2018 and December 31, 2017	-	-
Common shares, 26,263,631 and 25,236,255 shares issued and outstanding as of September 30, 2018 and December 31, 2017, respectively	3	3
Common stock issuable, 0 and 834,756 shares as of September 30, 2018 and December 31, 2017, respectively	-	9,558
Additional paid-in capital	112,287	98,679
Accumulated deficit	(67,300)	(48,408)
Total Stockholders' Equity	44,990	59,832
Total Liabilities and Stockholders' Equity	\$ 49,512	\$ 63,493

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

MUSTANG BIO, INC.
Condensed Statements of Operations
(\$ in thousands, except for share and per share amounts)
(Unaudited)

	<u>For the three months ended September 30,</u>		<u>For the nine months ended September 30,</u>	
	<u>2018</u>	<u>2017</u>	<u>2018</u>	<u>2017</u>
Revenue - related party	\$ -	\$ -	\$ 50	\$ -
Operating expenses:				
Research and development	5,316	2,188	13,165	5,388
Research and development – licenses acquired	1,000	300	1,075	2,375
General and administrative	1,340	4,596	5,133	8,293
Total operating expenses	<u>7,656</u>	<u>7,084</u>	<u>19,373</u>	<u>16,056</u>
Loss from operations	<u>(7,656)</u>	<u>(7,084)</u>	<u>(19,323)</u>	<u>(16,056)</u>
Interest income	138	144	431	369
Net Loss	<u>\$ (7,518)</u>	<u>\$ (6,940)</u>	<u>\$ (18,892)</u>	<u>\$ (15,687)</u>
Net loss per common share outstanding, basic and diluted	<u>\$ (0.28)</u>	<u>\$ (0.27)</u>	<u>\$ (0.70)</u>	<u>\$ (0.63)</u>
Weighted average number of common shares outstanding, basic and diluted	<u>27,146,721</u>	<u>26,186,924</u>	<u>26,871,505</u>	<u>24,936,626</u>

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

MUSTANG BIO, INC.
Condensed Statement of Stockholders' Equity
(\$ in thousands)
(Unaudited)

	Class A Preferred Stock		Class A Common Shares		Common Shares		Common Stock Issuable	Additional Paid-in Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount	Shares	Amount				
Balances at December 31, 2017	250,000	\$ -	1,000,000	\$ -	25,236,255	\$ 3	\$ 9,558	\$ 98,679	\$ (48,408)	\$ 59,832
Issuance of common shares - Founders Agreement	-	-	-	-	834,756	-	(9,558)	9,558	-	-
Stock-based compensation expenses	-	-	-	-	150,000	-	-	3,869	-	3,869
Exercise of warrants	-	-	-	-	42,620	-	-	181	-	181
Net loss	-	-	-	-	-	-	-	-	(18,892)	(18,892)
Balances at September 30, 2018	<u>250,000</u>	<u>\$ -</u>	<u>1,000,000</u>	<u>\$ -</u>	<u>26,263,631</u>	<u>\$ 3</u>	<u>\$ -</u>	<u>\$ 112,287</u>	<u>\$ (67,300)</u>	<u>\$ 44,990</u>

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

MUSTANG BIO, INC.
Condensed Statements of Cash Flows
(\$ in thousands)
(Unaudited)

	For the nine months ended September 30,	
	2018	2017
Cash Flows from Operating Activities:		
Net loss	\$ (18,892)	\$ (15,687)
Research and development - licenses acquired, expensed	1,075	2,375
Issuance of common shares - Founders Agreement	-	1,234
Stock-based compensation expenses	3,869	1,230
Depreciation expense	320	-
Capital contribution from Fortress	-	2,062
Adjustments to reconcile net loss to net cash used in operating activities:		
Changes in operating assets and liabilities:		
Prepaid expenses and other assets	(737)	(414)
Interest receivables	(1)	(35)
Other receivables - related party	(50)	-
Accounts payable and accrued expenses	1,137	1,923
Payable and accrued expenses - related party	138	(56)
Accrued interest - related party	-	(413)
Deferred rent	420	-
Net cash used in operating activities	<u>(12,721)</u>	<u>(7,781)</u>
Cash Flows from Investing Activities:		
Purchase of short-term investment (certificates of deposit)	(47,500)	(34,088)
Maturity of certificate of deposit	51,002	-
Purchase of research and development licenses	(1,075)	(2,375)
Purchase of fixed assets	(6,566)	(22)
Net cash used in investing activities	<u>(4,139)</u>	<u>(36,485)</u>
Cash Flows from Financing Activities:		
Payment of Fortress Note	-	(320)
Proceeds from issuance of common stock and warrants, net of offering cost of \$5,674	-	50,296
Proceeds from exercise of warrants	181	-
Net cash provided by financing activities	<u>181</u>	<u>49,976</u>
Net change in cash, cash equivalents and restricted cash	(16,679)	5,710
Cash, cash equivalents and restricted cash, beginning of the period	35,475	27,499
Cash, cash equivalents and restricted cash, end of the period	<u>\$ 18,796</u>	<u>\$ 33,209</u>
Supplemental disclosure of cash flow information:		
Cash paid for interest	\$ -	\$ 413
Supplemental disclosure of noncash investing and financing activities:		
Fixed assets (acquired but not paid)	\$ 125	\$ 117
Issuance of common shares - Founders Agreement	\$ 9,558	\$ 4,396
Common shares issuable for license acquired	\$ -	\$ 1,682

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

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

Note 1 - Organization, Description of Business and Liquidity and Capital Resources

Mustang Bio, Inc. (the “Company” or “Mustang”) was incorporated in Delaware on March 13, 2015. Mustang is as a clinical-stage biopharmaceutical company focused on translating today’s medical breakthroughs in cell and gene therapy into potential cures for hematologic cancers, solid tumors and rare genetic diseases. The Company may acquire rights to these technologies by licensing the rights or otherwise acquiring an ownership interest in the technologies, funding their research and development and eventually either out-licensing or bringing the technologies to market.

The Company is a majority-controlled subsidiary of Fortress Biotech, Inc. (“Fortress” or “Parent”).

Liquidity and Capital Resources

The Company has incurred substantial operating losses and expects to continue to incur significant operating losses for the foreseeable future and may never become profitable. As of September 30, 2018, the Company had an accumulated deficit of \$67.3 million.

The Company has funded its operations to date primarily through the sale of equity and debt securities. The Company expects to continue to use the proceeds from previous financing transactions primarily for general corporate purposes, including financing the Company’s growth, developing new or existing product candidates, and funding capital expenditures, acquisitions and investments. Currently, there exists substantial doubt that the Company can execute management’s plan over the next twelve months without additional financing. If such financing is not available or not available on terms acceptable to the Company, the Company’s current development plan and plans for expansion of its general and administrative infrastructure will be curtailed.

The Company will require additional financing to fully develop, prepare regulatory filings, obtain regulatory approvals and commercialize its existing and any new product candidates.

Note 2 - Significant Accounting Policies

Basis of Presentation

The accompanying unaudited interim condensed financial statements have been prepared in accordance with generally accepted accounting principles in the United States of America (“GAAP”) for interim financial information and the instructions to Form 10-Q and Article 10 of Regulation S-X of the Exchange Act. Accordingly, they do not include all of the information and footnotes required by GAAP for complete financial statements. In the opinion of management, the unaudited interim condensed financial statements reflect all adjustments, which include only normal recurring adjustments necessary for the fair statement of the balances and results for the periods presented. They may not include all of the information and footnotes required by GAAP for complete financial statements. Therefore, these financial statements should be read in conjunction with the Company’s audited financial statements and notes thereto for the year ended December 31, 2017, which were included in the Company’s Form 10-K and filed with the SEC on March 29, 2018. The results of operations for any interim periods are not necessarily indicative of the results that may be expected for the entire fiscal year or any other interim period.

Use of Estimates

The Company’s unaudited condensed financial statements include certain amounts that are based on management’s best estimates and judgments. The Company’s significant estimates include, but are not limited to, assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of expenses during the reporting period. Due to the uncertainty inherent in such estimates actual results could differ from those estimates.

Significant Accounting Policies

There have been no material changes to the Company’s significant accounting policies previously disclosed in the Company’s Form 10-K filed with the SEC on March 29, 2018, with the exception of revenue recognition.

Revenue from Contracts with Customers

The Company recognizes revenue under ASC 606, Revenue from Contracts with Customers. The core principle of the new revenue standard is that a company should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. The following five steps are applied to achieve that core principle:

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

Step 1: Identify the contract with the customer

Step 2: Identify the performance obligations in the contract

Step 3: Determine the transaction price

Step 4: Allocate the transaction price to the performance obligations in the contract

Step 5: Recognize revenue when the company satisfies a performance obligation

In order to identify the performance obligations in a contract with a customer, a company must assess the promised goods or services in the contract and identify each promised good or service that is distinct. A performance obligation meets ASC 606's definition of a "distinct" good or service (or bundle of goods or services) if both of the following criteria are met:

- The customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer (i.e., the good or service is capable of being distinct).
- The entity's promise to transfer the good or service to the customer is separately identifiable from other promises in the contract (i.e., the promise to transfer the good or service is distinct within the context of the contract).

If a good or service is not distinct, the good or service is combined with other promised goods or services until a bundle of goods or services is identified that is distinct.

The transaction price is the amount of consideration to which an entity expects to be entitled in exchange for transferring promised goods or services to a customer, excluding amounts collected on behalf of third parties (for example, some sales taxes). The consideration promised in a contract with a customer may include fixed amounts, variable amounts, or both. When determining the transaction price, an entity must consider the effects of all of the following:

- Variable consideration
- Constraining estimates of variable consideration
- The existence of a significant financing component in the contract
- Noncash consideration
- Consideration payable to a customer

Variable consideration is included in the transaction price only to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved.

The transaction price is allocated to each performance obligation on a relative standalone selling price basis. The transaction price allocated to each performance obligation is recognized when that performance obligation is satisfied, at a point in time or over time as appropriate.

Revenue for a sales-based or usage-based royalty promised in exchange for a license of intellectual property is recognized only when (or as) the later of the following events occurs:

- a. The subsequent sale or usage occurs.
- b. The performance obligation to which some or all of the sales-based or usage-based royalty has been allocated has been satisfied (or partially satisfied).

Incremental contract costs are expensed when incurred when the amortization period of the asset that would have been recognized is one year or less; otherwise, incremental contract costs are recognized as an asset and amortized over time as services are provided to a customer.

On February 2, 2018, the Company entered into an Option Agreement (the "TG Agreement") with TG Therapeutics, Inc. ("TG"), a related party. The TG Agreement is an option to enter into a global collaboration for such intellectual property rights with respect to certain licensed products. TG is required to pay the Company an upfront \$50,000 fee for the option, which expired on August 1, 2018 without action. The Company determined that the contract contains one performance obligation, the option to enter into a collaboration agreement that was satisfied upon execution of the TG Agreement. As such, the \$50,000 transaction price was allocated to the one performance obligation and recognized as revenue at the point in time the TG Agreement was executed.

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

Recently Adopted Accounting Pronouncements

In May 2017, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) 2017-09, *Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting*. ASU 2017-09 provides clarity and reduces both (1) diversity in practice and (2) cost and complexity when applying the guidance in Topic 718, to a change to the terms or conditions of a share-based payment award. The amendments in ASU 2017-09 should be applied prospectively to an award modified on or after the adoption date. This ASU is effective for fiscal years, and interim periods within those years, beginning after December 15, 2017. The Company adopted ASU No. 2017-09 as of January 1, 2018. The adoption of this update did not impact the Company’s financial statements and related disclosures.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows - Classification of Certain Cash Receipts and Cash Payments*, which addresses eight specific cash flow issues with the objective of reducing the existing diversity in practice in how certain cash receipts and cash payments are presented and classified in the statement of cash flows. The standard is effective for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. The Company adopted ASU 2016-15 as of January 1, 2018. The adoption of this update did not impact the Company’s financial statements and related disclosures.

In January 2016, the FASB issued ASU 2016-01, *Recognition and Measurement of Financial Assets and Financial Liabilities*. ASU 2016-01 requires equity investments to be measured at fair value with changes in fair value recognized in net income; simplifies the impairment assessment of equity investments without readily determinable fair values by requiring a qualitative assessment to identify impairment; eliminates the requirement for public business entities to disclose the method(s) and significant assumptions used to estimate the fair value that is required to be disclosed for financial instruments measured at amortized cost on the balance sheet; requires public business entities to use the exit price notion when measuring the fair value of financial instruments for disclosure purposes; requires an entity to present separately in other comprehensive income the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk when the entity has elected to measure the liability at fair value in accordance with the fair value option for financial instruments; requires separate presentation of financial assets and financial liabilities by measurement category and form of financial assets on the balance sheet or the accompanying notes to the financial statements and clarifies that an entity should evaluate the need for a valuation allowance on a deferred tax asset related to available-for-sale securities in combination with the entity’s other deferred tax assets. The new standard will be effective on January 1, 2018; however, early adoption is permitted. The Company adopted ASU 2016-01 as of January 1, 2018. The adoption of this update did not impact the Company’s financial statements and related disclosures.

In March 2016, the FASB issued ASU 2016-08, *Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations*. The purpose of ASU 2016-08 is to clarify the implementation of guidance on principal versus agent considerations. The amendments in ASU 2016-08 are effective for interim and annual reporting periods beginning after December 15, 2017. The Company adopted ASU 2016-08 on January 1, 2018. The adoption of this update did not have a material impact on the Company’s financial statements.

Recent Accounting Pronouncements

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* and subsequent amendments to the initial guidance: ASU 2017-13, ASU 2018-10 and ASU 2018-11 (collectively, Topic 842). Topic 842 requires companies to generally recognize on the balance sheet operating and financing lease liabilities and corresponding right-of-use assets. Topic 842 is effective for the Company in our first quarter of fiscal 2019, and earlier adoption is permitted. The Company is currently evaluating the impact of the pending adoption of Topic 842 on its consolidated financial statements. The Company currently expects that most of its operating lease commitments will be subject to the new standard and recognized as operating lease liabilities and right-of-use assets upon our adoption of Topic 842, which will increase the total assets and the total liabilities that the Company will report relative to such amounts prior to adoption.

In June 2018, the FASB issued ASU 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*, which simplifies the accounting for share-based payments granted to nonemployees for goods and services. Under the ASU, most of the guidance on such payments to nonemployees would be aligned with the requirements for share-based payments granted to employees. The changes take effect for public companies for fiscal years starting after Dec. 15, 2018, including interim periods within that fiscal year. For all other entities, the amendments are effective for fiscal years beginning after December 15, 2019, and interim periods within fiscal years beginning after December 15, 2020. Early adoption is permitted, but no earlier than an entity’s adoption date of Topic 606. The Company is currently evaluating the impact of adopting this standard on its financial statements and related disclosures.

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

In August 2018, the FASB issued ASU 2018-13, “Fair Value Measurement (Topic 820), – Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement,” which makes a number of changes meant to add, modify or remove certain disclosure requirements associated with the movement amongst or hierarchy associated with Level 1, Level 2 and Level 3 fair value measurements. This guidance is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. Early adoption is permitted upon issuance of the update. The Company does not expect the adoption of this guidance to have a material impact on its financial statements.

In August 2018, the SEC adopted the final rule under SEC Release No. 33-10532, Disclosure Update and Simplification, amending certain disclosure requirements that were redundant, duplicative, overlapping, outdated or superseded. In addition, the amendments expanded the disclosure requirements on the analysis of stockholders' equity for interim financial statements. Under the amendments, an analysis of changes in each caption of stockholders' equity presented in the balance sheet must be provided in a note or separate statement. The analysis should present a reconciliation of the beginning balance to the ending balance of each period for which a statement of comprehensive income is required to be filed. This final rule is effective on November 5, 2018. The Company is evaluating the impact of this guidance on its financial statements.

Note 3 - License, Clinical Trial and Sponsored Research Agreements

Research and Development Expenses - All Licenses

For the three and nine months ended September 30, 2018 and 2017, the Company recorded the following expense in research and development for licenses acquired:

(\$ in thousands)	For the three months ended September 30,		For the nine months ended September 30,	
	2018	2017	2018	2017
City of Hope				
Manufacturing	\$ -	\$ -	\$ 75	\$ -
IL13Ra2	-	-	-	250
IV/ICV	-	-	-	125
PSCA	-	-	-	300
HER2	-	-	-	600
CS1	-	-	-	600
UCLA	-	-	-	200
Fred Hutch – CD20	-	300	-	300
St. Jude – X-SCID	1,000	-	1,000	-
Total	\$ 1,000	\$ 300	\$ 1,075	\$ 2,375

License Agreements

City of Hope

Manufacturing License

On January 3, 2018, the Company entered into a non-exclusive license agreement with City of Hope National Medical Center (“COH”) to acquire patent and licensed know-how rights related to developing, manufacturing, and commercializing licensed products. The Company paid \$75,000 in consideration for the licenses to the patent rights and the licensed know-how in addition to an annual maintenance fee. Royalty payments in the low-single digits are due on net sales of licensed products.

St. Jude Children’s Research Hospital

On August 2, 2018, the Company entered into an exclusive worldwide license agreement with St. Jude Children’s Research Hospital (“St. Jude”) for the development of a first-in-class ex vivo lentiviral gene therapy for the treatment of X-linked severe combined immunodeficiency (“X-SCID”). The Company paid \$1.0 million in consideration for the exclusive license in addition to an annual maintenance fee of \$0.1 million (beginning in 2019). St. Jude is eligible to receive payments totaling \$13.5 million upon the achievement of five development and commercialization milestones. Royalty payments in the mid-single digits are due on net sales of licensed products.

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

Research and Development Expenses - Sponsored Research and Clinical Trial Agreements

For the three and nine months ended September 30, 2018 and 2017, the Company recorded the following expense in research and development for sponsored research and clinical trial agreements:

	<u>For the three months ended September 30,</u>		<u>For the nine months ended September 30,</u>	
	<u>2018</u>	<u>2017</u>	<u>2018</u>	<u>2017</u>
<i>(\$ in thousands)</i>				
City of Hope	\$ 500	\$ 500	\$ 1,500	\$ 1,500
City of Hope - CD123	123	642	387	1,237
City of Hope - IL13Rα2	346	194	849	1,204
City of Hope - Manufacturing	114	-	344	-
Fred Hutch - CD20	255	88	938	88
BIDMC - CRISPR	69	-	69	-
Total	\$ 1,407	\$ 1,424	\$ 4,087	\$ 4,029

City of Hope Sponsored Research Agreement

On January 3, 2018, the Company entered into a Sponsored Research Agreement (“SRA”) with COH to optimize and develop CAR T cell processing procedures. Pursuant to the SRA, the Company will fund continued research in the amount of \$0.9 million for the program, which has an initial term of two (2) years.

Fred Hutchinson Cancer Research Center Sponsored Research Agreement

On March 17, 2018, the Company entered into a SRA with the Fred Hutchinson Cancer Research Center (“Fred Hutch”) related to developing and optimizing processes and systems associated with CD20 cell processing. Pursuant to the SRA, the Company will fund continued research in the amount of \$0.6 million during the term of the SRA which expires one year from the effective date.

Note 4 - Property and Equipment

Mustang’s property and equipment consisted of the following (\$ in thousands):

	<u>Estimated Useful Life (in years)</u>	<u>September 30, 2018</u>	<u>December 31, 2017</u>
Computer equipment	3	\$ 53	\$ -
Furniture and fixtures	5	111	-
Machinery & equipment	5	3,128	142
Leasehold improvements	9	3,790	-
Construction in process	N/A	33	1,241
Total property and equipment		7,115	1,383
Less: accumulated depreciation		(322)	(2)
Property and equipment, net		<u>\$ 6,793</u>	<u>\$ 1,381</u>

Mustang’s depreciation expense for the three months ended September 30, 2018 and 2017, was approximately \$0.2 million and \$0, respectively, and was recorded in research and development expense in the Condensed Statements of Operations. Mustang’s depreciation expense for the nine months ended September 30, 2018 and 2017, was approximately \$0.3 million and \$0, respectively, and was recorded in research and development expense in the Condensed Statements of Operations.

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

Note 5 - Related Party Agreements

Annual Stock Dividend and Management Services Agreement with Fortress

In July 2016, in connection with the Amended and Restated Articles of Incorporation, the Company issued 250,000 Class A preferred shares to Fortress. The Class A preferred shares entitle the holder to a stock dividend equal to 2.5% of the fully diluted outstanding equity of the Company (the "Annual Stock Dividend").

The Company recorded the Annual Stock Dividend due to Fortress as contingent consideration. Contingent consideration is recorded when probable and reasonably estimable. The Company's future share prices cannot be estimated due to the nature of its assets and the Company's stage of development. Due to these uncertainties, the Company concluded that it could not reasonably estimate the contingent consideration until shares were actually issued on March 13, 2018 and 2017. Because the issuance of shares on March 13, 2018 and 2017 occurred prior to the issuance of the December 31, 2017 and 2016 financial statements, respectively, the Company recorded approximately \$9.6 million and \$4.4 million in research and development - licenses acquired for the years ended December 31, 2017 and 2016, respectively.

In June 2018, in connection with the Amended and Restated Articles of Incorporation, the Company amended the annual stock dividend due date from March 13th to January 1st.

In March 2015, the Company entered into a Management Services Agreement (the "MSA") with Fortress. Pursuant to the terms of the MSA, for a period of five years (with automatic five-year renewals), Fortress will render advisory and consulting services to the Company. In consideration for these services, the Company will pay Fortress an annual consulting fee of \$0.5 million (the "Annual Consulting Fee"), payable in advance in equal quarterly installments on the first business day of each calendar quarter in each year, provided, however, that such Annual Consulting Fee shall be increased to \$1.0 million for each calendar year in which the Company has net assets in excess of \$100 million at the beginning of the calendar year. For the three months ended September 30, 2018 and 2017, the Company recorded expenses related to the MSA of approximately \$0.1 million, respectively. For the nine months ended September 30, 2018 and 2017, the Company recorded expenses related to the MSA of approximately \$0.4 million, respectively. For the three and nine months ended September 30, 2018 and 2017, respectively, expenses related to the MSA are recorded 50% in research and development expenses and 50% in general and administrative expenses on the condensed statement of operations.

City of Hope

COH owns 1,000,000 shares of the Company's Class A common stock and 293,588 shares of the Company's common stock, representing approximately 4.7% of the Company's outstanding capital stock, and has the right to appoint a director to the Company's Board of Directors (the "Board"). As such, the Company considers COH to be a related party, due to the foregoing rights and ownership, as well as the high proportion of the Company's assets that are licensed from COH.

Payable and Accrued Expenses Related Party

In the normal course of business Fortress pays for certain expenses on behalf of the Company. Such expenses are recorded as Payable and accrued expenses - related party and are reimbursed to Fortress in the normal course of business.

National Securities Inc.

Fortress owns a majority interest in National Holdings Corporation ("NHLD"). National Securities Inc. ("NSC") a subsidiary of NHLD acted as placement agent for the Company's third-party financings (see Note 6). No fees were incurred for the nine months ended September 30, 2018 for any such financings. For the nine months ended September 30, 2017, the Company paid NSC placement agent fees of \$5.6 million in cash and 861,077 warrants to purchase the Company's common stock.

Option on Collaboration Agreement with TG Therapeutics, Inc.

On February 2, 2018, the Company entered into an Option Agreement with TG Therapeutics, Inc. ("TGTX Option"), a related party, whereby TGTX was granted the option to enter into a global collaboration on the joint development and commercialization of product candidates pertaining to the Company's CD20 license agreement with Fred Hutch. In consideration of the TGTX Option, TGTX is required to pay an option fee of \$50,000, which was recorded by the Company as Revenue-related party in Condensed Statements of Operations. The TGTX Option expired on August 1, 2018, without action. Michael Weiss, who is Chairman of the Board of Mustang, serves as the Executive Chairman, President and Chief Executive Officer of TGTX.

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

Note 6 - Stockholders' Equity

Common Stock

In July 2018, the Company filed a shelf registration statement on Form S-3 (the "S-3"), which was declared effective in July 2018. Under the S-3, the Company may sell up to a total of \$75 million of its securities. In connection with the S-3, the Company entered into an At-the-Market Issuance Sales Agreement (the "ATM") with B. Riley FBR, Inc., Cantor Fitzgerald & Co., National Securities Corporation, and Oppenheimer & Co. Inc. (each an "Agent" and collectively, the "Agents"), relating to the sale of shares of common stock. Under the ATM, the Company pays the Agents a commission rate of up to 3.0% of the gross proceeds from the sale of any shares of common stock.

Pursuant to the Founders Agreement, the Company issued 834,756 shares of common stock to Fortress for the Annual Stock Dividend, representing 2.5% of the fully diluted outstanding equity of the Company on March 12, 2018.

Stock Awards

Stock Options

The Company has in effect the 2016 Incentive Plan (the "Incentive Plan"). The Incentive Plan was adopted in 2016 by our stockholders and the compensation committee of the Company's board of directors and is authorized to grant stock-based awards to directors, officers, employees and consultants. The plan initially authorized grants to issue up to 2,000,000 shares of authorized but unissued common stock and expires 10 years from adoption and limits the term of each option to no more than 10 years from the date of grant. In June 2018, the Company's stockholders approved an amendment to the Incentive Plan to increase the number of authorized shares issuable by 3,000,000 shares, for a total of 5,000,000 shares. Total shares available for the issuance of stock-based awards under the Incentive Plan was 2,685,325 shares at September 30, 2018.

The following table summarizes stock option activities for the nine months ended September 30, 2018:

	<u>Stock Options</u>	<u>Weighted Average Exercise Price</u>	<u>Weighted Average Remaining Contractual Life (in years)</u>
Options outstanding at December 31, 2017	1,241,675	\$ 5.73	9.31
Options granted	-	-	-
Options outstanding	1,241,675	5.73	8.56
Options vested and exercisable at September 30, 2018	194,011	\$ 5.73	8.56

As of September 30, 2018, the Company had unrecognized stock-based compensation expense related to options of \$1.3 million with a weighted average vesting period of approximately 1.3 years.

Restricted Stock

The following table summarizes restricted stock award activities for the nine months ended September 30, 2018:

	<u>Number of Shares</u>	<u>Weighted Average Grant Date Fair Value</u>
Nonvested at December 31, 2017	180,000	\$ 5.73
Granted	50,000	7.89
Nonvested at September 30, 2018	230,000	\$ 6.20

As of September 30, 2018, the Company had unrecognized stock-based compensation expense related to restricted stock of \$1.0 million with a weighted average vesting period of approximately 2.6 years.

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

Restricted Stock Units

Certain employees and consultants have been awarded restricted stock units with time-based vesting. The following table summarizes restricted stock units activities for the nine months ended September 30, 2018:

	Number of Units	Weighted Average Grant Date Fair Value
Nonvested at December 31, 2017	134,000	\$ 6.53
Granted	709,000	10.10
Vested	(127,500)	9.31
Nonvested at September 30, 2018	715,500	\$ 9.58

As of September 30, 2018, the Company had unrecognized stock-based compensation expense related to restricted stock units of approximately \$3.4 million with a weighted average vesting period of approximately 1.9 years. This amount does not include, as of September 30, 2018, 230,000 shares of restricted stock units outstanding issued to non-employees, the expense for which is determined each reporting period at the measurement date. The expense is recognized over the vesting period of the award.

The following table summarizes stock-based compensation expense for the three and nine months ended September 30, 2018 and 2017 (in thousands).

	For the three months ended September 30,		For the nine months ended September 30,	
	2018	2017	2018	2017
Employee	\$ 734	\$ 576	\$ 2,457	\$ 909
Non-employee	169	258	1,412	321
Total stock-based compensation expense	\$ 903	\$ 834	\$ 3,869	\$ 1,230

Warrants

A summary of warrant activities for nine months ended September 30, 2018 is presented below:

	Warrants	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)
Outstanding as of December 31, 2017	5,253,318	\$ 8.28	3.89
Granted	-	-	-
Exercised	(42,620)	4.25	-
Outstanding as of September 30, 2018	5,210,698	\$ 8.32	3.35

Upon the exercise of warrants, the Company will issue new shares of common stock.

Note 7 - Net Loss per Share

Net loss per share is computed by dividing net loss by the weighted average number of common shares outstanding during the period less unvested restricted stock. Since dividends are declared, paid and set aside among the holders of shares of common stock and Class A common shares pro-rata on an as-if-converted basis, the two-class method of computing net loss per share is not required. Diluted net loss per share does not reflect the effect of shares of common stock to be issued upon the exercise of warrants or outstanding Class A preferred shares, as their inclusion would be anti-dilutive.

Mustang Bio, Inc.
Notes to the Condensed Financial Statements
(Unaudited)

The table below summarizes potentially dilutive securities that were not considered in the computation of diluted net loss per share because they would be anti-dilutive.

	For the nine months ended September 30,	
	2018	2017
Warrants	5,210,698	5,257,434
Options	1,241,675	1,241,675
Class A Preferred Shares	250,000	250,000
Unvested restricted stock awards	230,000	180,000
Unvested restricted stock units	715,500	110,000
Total	<u>7,647,873</u>	<u>7,039,109</u>

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

Forward-Looking Statements

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with our consolidated financial statements and the related notes included elsewhere in this Form 10-Q. Our consolidated financial statements have been prepared in accordance with U.S. GAAP. The following discussion and analysis contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 (the "Exchange Act"), including, without limitation, statements regarding our expectations, beliefs, intentions or future strategies that are signified by the words "expect," "anticipate," "intend," "believe," "may," "plan", "seek" or similar language. All forward-looking statements included in this document are based on information available to us on the date hereof, and we assume no obligation to update any such forward-looking statements. Our business and financial performance are subject to substantial risks and uncertainties. Actual results could differ materially from those projected in the forward-looking statements. In evaluating our business, you should carefully consider the information set forth under the heading "Risk Factors" herein.

Overview

Mustang Bio, Inc. ("Mustang", "We", "Us" or the "Company") is a clinical-stage biopharmaceutical company focused on translating today's medical breakthroughs in cell and gene therapy into potential cures for hematologic cancers, solid tumors and rare genetic diseases. We aim to acquire rights to these technologies by licensing or otherwise acquiring an ownership interest in the technologies, funding their research and development and eventually either out-licensing or bringing the technologies to market. We have partnered with the City of Hope National Medical Center ("COH") and Fred Hutchinson Cancer Research Center ("Fred Hutch") in the development of proprietary chimeric antigen receptor ("CAR") engineered T cell ("CAR T") therapies and with St. Jude Children's Research Hospital ("St. Jude") in the development of a first-in-class ex vivo lentiviral gene therapy for the treatment of X-linked severe combined immunodeficiency ("X-SCID").

We believe that harnessing the body's own immune system to treat cancer is the next generation of cancer care that may prove curative across tumor types that have proved resistant to standard pharmacological and biological treatments. CAR T uses the patient's own T-cells to engage and destroy specific tumors. The process involves selecting specific T-cell subtypes, genetically engineering them to express chimeric antigen T-cell receptors and placing them back in the patient where they recognize and destroy cancer cells.

In addition, we sponsor COH research for the development of other CAR T cell constructions targeting a number of tumor-associated antigens specific for a variety of solid and hematological malignancies. The effectiveness of certain of these additional CAR T cell constructs has already been demonstrated in preclinical studies with mouse xenograft models of specific human tumors. Under the sponsored research arrangement, we have the option to license newly developed CAR T constructs. We intend to further pursue preclinical development to validate and seek to establish the proprietary nature of the most promising CAR T approaches coming out of the sponsored research program and, if successful, license and take them forward into clinical studies.

We also hold complementary patent licenses relating to the use, delivery and possible enhancement of our proprietary CAR technologies. In particular, we licensed intellectual property from Harvard University pertaining to CRISPR/Cas9-enhanced CAR T therapies and hope to use technologies related to off-the-shelf (allogeneic) CAR T development, as well as CRISPR/Cas9 gene editing platforms, in conjunction with our CAR T cell therapies to develop treatments for hematologic malignancies and solid tumors. We have partnered with Beth Israel Deaconess Medical Center to perform preclinical Cas9 gene editing research under a sponsored research arrangement.

In January 2018, we entered into a non-exclusive license agreement with COH to acquire patent and licensed know-how rights related to developing, manufacturing, and commercializing licensed products. We are required to pay \$75,000 in consideration for the licenses to the patent rights and the licensed know-how, which we paid in March of 2018, in addition to an annual maintenance fee. Royalty payments in the low-single digits are due on net sales of licensed products. Simultaneous with the execution of this agreement, the Company entered into a sponsored research agreement with COH to optimize and develop CAR T cell processing procedures. Pursuant to the SRA, we will fund continued research in the amount of \$0.9 million which we paid in March of 2018.

In March 2018, we entered into a sponsored research agreement ("SRA") with Fred Hutch related to developing and optimizing processes and systems associated with CD20 cell processing ("Fred Hutch SRA"). Pursuant to the Fred Hutch SRA, we will fund continued research in the amount of \$0.6 million for a term of one year from the effective date.

On August 2, 2018, we entered into an exclusive worldwide license agreement with St. Jude for the development of a first-in-class ex vivo lentiviral gene therapy for the treatment of X-SCID. We paid an upfront fee of \$1.0 million, in August 2018 in consideration for the exclusive license. Additional payments are due to St. Jude upon the achievement of five development and commercialization milestones. X-SCID is the most common form of severe immune deficiency, affecting approximately one in 50,000 to 100,000 newborns worldwide. The acquisition of this license expands our pipeline into gene-therapy, allowing us to leverage existing synergies for our Worcester, Massachusetts cell-processing facility.

On October 15, 2018, Mustang announced the appointment of Martina A. Sersch, M.D., Ph.D., as Chief Medical Officer ("CMO"). Dr. Sersch will oversee the clinical development of Mustang's pipeline in CAR T technology and gene therapies.

To date, we have not received approval for the sale of our product candidates in any market and, therefore, have not generated any product sales from our product candidates. In addition, we have incurred substantial operating losses since our inception, and expect to continue to incur significant operating losses for the foreseeable future and may never become profitable. As of September 30, 2018, we have an accumulated deficit of \$67.3 million.

We are a majority-controlled subsidiary of Fortress Biotech, Inc. ("Fortress"). As a "Controlled Company" we rely on the exemption provided by Nasdaq Listing Rule 5615(c)(2), which permits us to maintain less than a majority of independent directors on our board.

Results of Operations

Comparison of the Three Months Ended September 30, 2018 and 2017

(\$ in thousands)	For the three months ended September 30,		Change	
	2018	2017	\$	%
Operating expenses:				
Research and development	\$ 5,316	\$ 2,188	\$ 3,128	143%
Research and development – licenses acquired	1,000	300	700	233%
General and administrative	1,340	4,596	(3,256)	-71%
Total operating expenses	7,656	7,084	572	8%
Loss from operations	(7,656)	(7,084)	(572)	8%
Interest income	138	144	(6)	-4%
Net Loss	\$ (7,518)	\$ (6,940)	\$ (578)	8%

Research and Development Expenses

Research and development expenses primarily consist of personnel related expenses, including salaries, benefits, travel, and other related expenses, stock-based compensation, payments made to third parties for license and milestone costs related to in-licensed products and technology, payments made to third-party contract research organizations for preclinical and clinical studies, investigative sites for clinical trials, consultants, the cost of acquiring and manufacturing clinical trial materials, costs associated with regulatory filings, laboratory costs and other supplies.

For the three months ended September 30, 2018 and 2017, research and development expenses were \$5.3 million and \$2.2 million, respectively. The increase of \$3.1 million is primarily attributable to \$1.3 million for personnel related costs due to the hiring of research and development employees, of which \$0.4 million is for stock-based compensation expense for equity awards, \$0.9 million for laboratory supplies, \$0.2 million related to facility costs and \$0.2 million related to consulting and outside services.

For the three months ended September 30, 2018 and 2017, research and development expenses for licenses acquired were approximately \$1.0 million and \$0.3 million, respectively. For the three months ended September 30, 2018, \$1.0 million related to the acquisition of our license from St. Jude for the treatment of X-SCID. For the three months ended September 30, 2017, \$0.3 million related to the acquisition of our license from Fred Hutch for CD20.

We expect our research and development activities to increase as we develop our existing product candidates and potentially acquire new product candidates, reflecting increasing costs associated with the following:

- employee-related expenses, which include salaries and benefits;
- license fees and milestone payments related to in-licensed products and technology;
- expenses incurred under agreements with contract research organizations, investigative sites and consultants that conduct our clinical trials and our preclinical activities;
- the cost of acquiring and manufacturing clinical trial materials; and
- costs associated with non-clinical activities, and regulatory approvals.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and related expenses, including stock-based compensation, for executives and other administrative personnel, recruitment expenses, professional fees and other corporate expenses, including investor relations; legal activities including patent fees; and facilities-related expenses.

For the three months ended September 30, 2018 and 2017, general and administrative expenses were \$1.3 million and \$4.6 million, respectively. The decrease of \$3.3 million is primarily attributable to \$3.2 million in litigation related costs. For the three months ended September 30, 2017, general and administrative expenses included \$2.2 million related to a legal settlement and \$1.0 million in related legal fees.

We anticipate general and administrative expenses will increase in future periods, reflecting continued and increasing costs associated with:

- support of our expanded research and development activities, including additional product candidates entering the clinic;
- stock compensation granted to key employees and non-employees;
- support of business development activities; and
- increased professional fees and other costs associated with the regulatory requirements and increased compliance associated with being a publicly traded company.

Comparison of the Nine Months Ended September 30, 2018 and 2017

(\$ in thousands)	For the nine months ended September 30,		Change	
	2018	2017	\$	%
Revenue - related party	\$ 50	\$ -	\$ 50	100%
Operating expenses:				
Research and development	13,165	5,388	7,777	144%
Research and development – licenses acquired	1,075	2,375	(1,300)	-55%
General and administrative	5,133	8,293	(3,160)	-38%
Total operating expenses	19,373	16,056	3,317	21%
Loss from operations	(19,323)	(16,056)	(3,267)	20%
Interest income	431	369	62	17%
Net Loss	\$ (18,892)	\$ (15,687)	\$ (3,205)	20%

Research and Development Expenses

For the nine months ended September 30, 2018 and 2017, research and development expenses were \$13.2 million and \$5.4 million, respectively. The increase of \$7.8 million is primarily attributable to: \$4.3 million for personnel related costs due to the hiring of research and development employees, of which \$2.3 million is for stock-based compensation expense for equity awards, \$0.9 million related to our SRA with Fred Hutch, \$0.9 million for laboratory supplies, \$0.8 million related to consulting and outside services, \$0.3 million in assay development expenses, \$0.7 million related to facility costs, \$0.3 million related to our COH manufacturing Sponsored Research Agreement (“COH SRA”) and \$0.3 million related to license maintenance fees, offset by a decrease of \$1.2 million in connection with our clinical research arrangements with COH.

For the nine months ended September 30, 2018 and 2017, research and development expenses - licenses acquired were approximately \$1.1 million and \$2.4 million, respectively. For the nine months ended September 30, 2018, \$0.1 million related to an upfront fee for our Manufacturing license with COH and \$1.0 million related to an upfront fee for our license with St. Jude for the treatment of X-SCID. For the nine months ended September 30, 2017, we incurred \$1.9 million of expenses in connection with our licenses with COH. These expenses consisted of: \$0.3 million related to an upfront fee for our PSCA license, \$0.6 million related to an upfront fee for our HER2 license, \$0.6 million related to an upfront fee for our CS1 license, \$0.1 million upfront payment related to the acquisition of our IV/ICV license and \$0.3 million in connection with the achievement of a milestone pursuant to our IL13Rα2 license. Additionally, we incurred expenses of \$0.2 million related to the acquisition of our license from UCLA and \$0.3 million related to the acquisition of our license from Fred Hutch for CD20.

We expect our research and development activities to increase as we develop our existing product candidates and potentially acquire new product candidates, reflecting increasing costs associated with the following:

- employee-related expenses, which include salaries and benefits, and rent expense;
- license fees and milestone payments related to in-licensed products and technology;
- expenses incurred under agreements with contract research organizations, investigative sites and consultants that conduct our clinical trials and our preclinical activities;
- the cost of acquiring and manufacturing clinical trial materials; and
- costs associated with non-clinical activities, and regulatory approvals.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and related expenses, including stock-based compensation, for executives and other administrative personnel; recruitment expenses, professional fees and other corporate expenses, including investor relations; legal activities including patent fees; and facilities-related expenses.

For the nine months ended September 30, 2018 and 2017, general and administrative expenses were \$5.1 million and \$8.3 million, respectively. The decrease of \$3.2 million is primarily attributable to \$3.6 million in litigation related costs, \$0.9 million related to stock-based compensation expense offset by a \$0.8 million increase in personnel related expenses and \$0.3 million in consulting fees.

Liquidity and Capital Resources

Our major sources of cash have been proceeds from the private placement of equity securities. We expect to use these proceeds primarily for general corporate purposes, which may include financing our growth, developing new or existing product candidates, and funding capital expenditures, acquisitions and investments. Currently, there exists substantial doubt that the Company can execute management's plan over the next twelve months without additional financing. If such financing is not available or not available on terms acceptable to the Company, the Company's current development plan and plans for expansion of its general and administrative infrastructure will be curtailed.

We have incurred substantial operating losses since our inception and expect to continue to incur significant operating losses for the foreseeable future and may never become profitable. As of September 30, 2018, we had an accumulated deficit of \$67.3 million.

Cash Flows for the Nine Months Ended September 30, 2018 and 2017

(\$ in thousands)	For the nine months ended September 30,	
	2018	2017
Statement of cash flows data:		
Total cash (used in) provided by:		
Operating activities	\$ (12,721)	\$ (7,781)
Investing activities	(4,139)	(36,485)
Financing activities	181	49,976
Net change in cash, cash equivalents and restricted cash	\$ (16,679)	\$ 5,710

Operating Activities

Net cash used in operating activities was \$12.7 million for the nine months ended September 30, 2018, compared to \$7.8 million for the nine months ended September 30, 2017.

Net cash used in operating activities for the nine months ended September 30, 2018 was primarily due to approximately \$18.9 million in net loss, partially offset by \$0.9 million in change in operating assets and liabilities, \$3.9 million of non-cash stock compensation expenses, \$0.3 million of depreciation and \$1.1 million of research and development-licenses acquired, expensed.

Net cash used in operating activities for the nine months ended September 30, 2017 was primarily due to approximately \$15.7 million in net loss, partially offset by \$1.0 million in change in operating liabilities, approximately \$1.2 million related to the issuance of common shares under the Founders Agreement, \$2.4 million of research and development-licenses acquired, \$1.2 million of non-cash stock compensation expenses and approximately \$2.1 million of capital contribution from Fortress.

Investing Activities

Net cash used in investing activities was \$4.1 million for the nine months ended September 30, 2018, representing our purchase of \$47.5 million investment in certificates of deposits held to maturity, \$6.6 million in purchases of fixed assets and construction in process, \$1.1 million in acquisition costs of acquired licenses, offset by \$51.0 million in maturities of certificates of deposits.

Net cash used in investing activities was \$36.5 million for the nine months ended September 30, 2017, representing our \$34.1 million investment in certificates of deposits held to maturity and \$2.4 million related to upfront payments relating to our licenses.

Financing Activities

Net cash provided by financing activities was \$0.2 million during the nine months ended September 30, 2018, due to net proceeds from the exercise of warrants.

Net cash provided by financing activities was \$50.0 million during the nine months ended September 30, 2017, due to \$50.3 million of net proceeds from issuance of common stock, offset by approximately \$0.3 million of proceeds used to repay the Fortress Note.

Off-Balance Sheet Arrangements

We are not party to any off-balance sheet transactions. We have no guarantees or obligations other than those which arise out of normal business operations.

Contractual Obligations and Commitments

There have been no material changes to our contractual obligations and commitments outside the ordinary course of business from those disclosed under the heading “Management’s Discussion and Analysis of Financial Condition and Results of Operations-Contractual Obligations and Commitments” in our Annual Report on Form 10-K for the year ended December 31, 2017.

Item 3. Quantitative and Qualitative Disclosures About Market Risks

During the nine months ended September 30, 2018, there were no material changes to our interest rate risk disclosures, market risk disclosures and foreign currency exchange rate risk disclosures reported in our Annual Report on Form 10-K for the year ended December 31, 2017.

Item 4. Controls and Procedures

Disclosure Controls and Procedures

We maintain “disclosure controls and procedures,” as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), that are designed to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in Securities and Exchange Commission rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and our Principal Financial Officer, to allow timely decisions regarding required disclosure.

The design of any disclosure controls and procedures also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

With respect to the quarter ended September 30, 2018, under the supervision and with the participation of our management, we conducted an evaluation of the effectiveness of the design and operations of our disclosure controls and procedures. Based upon this evaluation, the Company’s Chief Executive Officer and Principal Financial Officer have concluded that the Company’s disclosure controls and procedures are effective.

Management does not expect that our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control systems are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in a cost-effective control system, no evaluation of internal control over financial reporting can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been or will be detected.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the fiscal quarter ended September 30, 2018 which have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

None

Item 1A. Risk Factors

The following information sets forth risk factors that could cause our actual results to differ materially from those contained in forward-looking statements we have made in this report and those we may make from time to time. You should carefully consider the risks described below. Our business, financial condition or results of operations could be harmed by any of these risks. The risks and uncertainties described below are not the only ones we face. Additional risks not presently known to us or other factors not perceived by us to present significant risks to our business at this time also may impair our business operations.

Risks Related to Our Business and Industry

We currently have no products for sale. We are heavily dependent on the success of our product candidates, and we cannot give any assurances that any of our product candidates will receive regulatory approval or be successfully commercialized.

To date, we have invested a significant portion of our efforts and financial resources in the acquisition and development of our product candidates. We have not demonstrated our ability to perform the functions necessary for the successful acquisition, development or commercialization of the technologies we are seeking to develop. As an early stage company, we have limited experience and have not yet demonstrated an ability to successfully overcome many of the risks and uncertainties frequently encountered by companies in new and rapidly evolving fields, particularly in the biopharmaceutical area. Our future success is substantially dependent on our ability to successfully develop, obtain regulatory approval for, and then successfully commercialize such product candidates. Our product candidates are currently in preclinical development or in early stage clinical trials. Our business depends entirely on the successful development and commercialization of our product candidates, which may never occur. We currently generate no revenues from sales of any products, and we may never be able to develop or commercialize a marketable product.

The successful development, and any commercialization, of our technologies and any product candidates would require us to successfully perform a variety of functions, including:

- developing our technology platform;
- identifying, developing, manufacturing and commercializing product candidates;
- entering into successful licensing and other arrangements with product development partners;
- participating in regulatory approval processes;
- formulating and manufacturing products;
- either manufacturing ourselves or obtaining sufficient quantities of our product candidates from our third-party manufacturers as may be required to meet clinical trial needs and commercial demand at launch and thereafter;
- establishing and maintaining agreements with wholesalers, distributors and group purchasing organizations on commercially reasonable terms;
- conducting sales and marketing activities including hiring, training, deploying and supporting our sales force and creating market demand for our product candidates through our own marketing and sales activities, and any other arrangements to promote our product candidates that we may later establish; and
- maintaining patent protection and regulatory exclusivity for our product candidates.

Our operations have been limited to organizing our company, acquiring, developing and securing our proprietary technology and identifying and obtaining preclinical data or clinical data for various product candidates. These operations provide a limited basis for you to assess our ability to continue to develop our technology, identify product candidates, develop and commercialize any product candidates we are able to identify and enter into successful collaborative arrangements with other companies, as well as for you to assess the advisability of investing in our securities. Each of these requirements will require substantial time, effort and financial resources.

Each of our product candidates will require additional preclinical and clinical development, management of preclinical, clinical and manufacturing activities, regulatory approval in multiple jurisdictions, obtaining or generating manufacturing supply, building of a commercial organization, and significant marketing efforts before we generate any revenues from product sales. We are not permitted to market or promote any of our product candidates before we receive regulatory approval from the FDA or comparable foreign regulatory authorities, and we may never receive such regulatory approval for any of our product candidates.

Preclinical development is highly speculative and has a high risk of failure.

We currently have both preclinical and clinical-stage product candidates. Our preclinical product candidates have never been used in humans. Preclinical development is highly speculative and carries a high risk of failure. We can provide no assurances that preclinical toxicology and/or preclinical activity of our product candidates will support moving any of these product candidates into clinical development. If we are unsuccessful in our preclinical development efforts for any of these product candidates and they fail to reach clinical development, it would have a material adverse effect on our business and financial condition.

Delays in clinical testing could result in increased costs to us and delay our ability to generate revenue.

Although we are planning for certain clinical trials relating to our product candidates, there can be no assurance that the FDA will accept our proposed trial designs. We may experience delays in our clinical trials and we do not know whether planned clinical trials will begin on time, need to be redesigned, enroll patients on time or be completed on schedule, if at all. Clinical trials can be delayed for a variety of reasons, including delays related to:

- obtaining regulatory approval to commence a trial;
- reaching agreement on acceptable terms with prospective contract research organizations, or CROs, and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- obtaining institutional review board, or IRB, approval at each site;
- recruiting suitable patients to participate in a trial;
- clinical sites deviating from trial protocol or dropping out of a trial;
- having patients complete a trial or return for post-treatment follow-up;
- developing and validating companion diagnostics on a timely basis, if required;
- adding new clinical trial sites; or
- manufacturing sufficient quantities of product candidate for use in clinical trials.

Patient enrollment, a significant factor in the timing of clinical trials, is affected by many factors including the size and nature of the patient population, the proximity of patients to clinical sites, the eligibility criteria for the trial, the design of the clinical trial, competing clinical trials and clinicians' and patients' perceptions as to the potential advantages of the drug being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating. Furthermore, we intend to rely on CROs and clinical trial sites to ensure the proper and timely conduct of our clinical trials and we intend to have agreements governing their committed activities; however, we will have limited influence over their actual performance.

We could encounter delays if a clinical trial is suspended or terminated by us, by the IRBs of the institutions in which such trials are being conducted, by the Data Safety Monitoring Board, or DSMB, for such trial or by the FDA or other regulatory authorities. Such authorities may impose such a suspension or termination due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a drug, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial.

If we experience delays in the completion of, or termination of, any clinical trial of our product candidates, the commercial prospects of our product candidates will be harmed, and our ability to generate product revenues from any of these product candidates will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow down our product candidate development and approval process and jeopardize our ability to commence product sales and generate revenues. Any of these occurrences may harm our business, financial condition and prospects significantly. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates.

We may not receive regulatory approval for our product candidates, or their approval may be further delayed, which would have a material adverse effect on our business and financial condition.

Our product candidates and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale and distribution, are subject to comprehensive regulation by the FDA and other regulatory agencies in the US and by the European Medicines Agency and similar regulatory authorities outside the US. Failure to obtain marketing approval for one or more of our product candidates or any future product candidate will prevent us from commercializing the product candidate. We have not received approval to market any of our product candidates from regulatory authorities in any jurisdiction. We have only limited experience in filing and supporting the applications necessary to gain marketing approvals and expect to rely on third-party contract research organizations to assist us in this process. Securing marketing approval requires the submission of extensive preclinical and clinical data and supporting information to regulatory authorities for each therapeutic indication to establish the product candidate's safety and efficacy. Securing marketing approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the regulatory authorities. One or more of our product candidates or any future product candidate may not be effective, may be only moderately effective or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude our obtaining marketing approval or prevent or limit commercial use. If any of our product candidates or any future product candidate receives marketing approval, the accompanying label may limit the approved use of our drug in this way, which could limit sales of the product.

The process of obtaining marketing approvals, both in the United States and abroad, is expensive, may take many years if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. Changes in marketing approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted product application may cause delays in the approval or rejection of an application. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data is insufficient for approval and require additional preclinical studies or clinical trials. In addition, varying interpretations of the data obtained from preclinical and clinical testing could delay, limit or prevent marketing approval of a product candidate. Any marketing approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

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

In addition, even if we were to obtain approval, regulatory authorities may approve any of our product candidates or any future product candidate for fewer or more limited indications than we request, may not approve the price we intend to charge for our products, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. The regulatory authority may also require the label to contain warnings, contraindications, or precautions that limit the commercialization of that product. Any of these scenarios could compromise the commercial prospects for one or more of our product candidates or any future product candidate.

Moreover, in all interactions with regulatory authorities, we are exposed to liability risks under the Foreign Corrupt Practices Act or similar anti-bribery laws.

If any of our product candidates is approved and we or our contract manufacturer(s) fail to produce the product in the volumes that we require on a timely basis, or fail to comply with stringent regulations applicable to pharmaceutical drug manufacturers, we may face delays in the commercialization of our product candidates or be unable to meet market demand, and may lose potential revenues.

The manufacture of pharmaceutical products requires significant expertise and capital investment, including the development of advanced manufacturing techniques and process controls, and the use of specialized processing equipment. We may enter into development and supply agreements with contract manufacturers for the completion of pre-commercialization manufacturing development activities and the manufacture of commercial supplies for one or more of our product candidates. Any termination or disruption of our relationships with our contract manufacturers may materially harm our business and financial condition and frustrate any commercialization efforts for each respective product candidate.

All of our contract manufacturers must comply with strictly enforced federal, state and foreign regulations, including cGMP requirements enforced by the FDA through its facilities inspection program, and we have little control over their compliance with these regulations. Any failure to comply with applicable regulations may result in fines and civil penalties, suspension of production, suspension or delay in product approval, product seizure or recall, or withdrawal of product approval, and would limit the availability of our product and customer confidence in our product. Any manufacturing defect or error discovered after products have been produced and distributed could result in even more significant consequences, including costly recall procedures, re-stocking costs, damage to our reputation and potential for product liability claims.

If the commercial manufacturers upon whom we may rely to manufacture one or more of our product candidates, and any future product candidate we may in-license, fail to deliver the required commercial quantities on a timely basis at commercially reasonable prices, we would likely be unable to meet demand for our products and we would lose potential revenues.

Our approach to the discovery and development of our product candidates is unproven, and we do not know whether we will be able to develop any products of commercial value.

Our product candidates are emerging technologies and, consequently, it is conceivable that such technologies may ultimately fail to identify commercially viable drugs to treat human patients with cancer or other diseases.

If serious adverse or unacceptable side effects are identified during the development of one or more of our product candidates or any future product candidate, we may need to abandon or limit our development of some of our product candidates.

If one or more of our product candidates or any future product candidate are associated with undesirable side effects in clinical trials or have characteristics that are unexpected, we may need to abandon their development or limit development to more narrow uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective. In our industry, many compounds that initially showed promise in early stage testing have later been found to cause serious side effects that prevented further development of the compound. In the event that our clinical trials reveal a high or unacceptable severity and prevalence of side effects, our trials could be suspended or terminated, and the FDA or comparable foreign regulatory authorities could order us to cease further development or deny approval of one or more of our product candidates or any future product candidate for any or all targeted indications. The FDA could also issue a letter requesting additional data or information prior to making a final decision regarding whether or not to approve a product candidate. The number of requests for additional data or information issued by the FDA in recent years has increased and has resulted in substantial delays in the approval of several new drugs. Undesirable side effects caused by one or more of our product candidates or any future product candidate could also result in the inclusion of unfavorable information in our product labeling, denial of regulatory approval by the FDA or other regulatory authorities for any or all targeted indications, and in turn prevent us from commercializing and generating market acceptance and revenues from the sale of that product candidate. Drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial and could result in potential product liability claims.

Additionally, if one or more of our product candidates or any future product candidate receives marketing approval and we or others later identify undesirable side effects caused by this product, a number of potentially significant negative consequences could result, including:

- regulatory authorities may require the addition of unfavorable labeling statements, specific warnings or a contraindication;
- regulatory authorities may suspend or withdraw their approval of the product, or require it to be removed from the market;
- we may be required to change the way the product is administered, conduct additional clinical trials or change the labeling of the product; or
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of any of our product candidates or any future product candidate or could substantially increase our commercialization costs and expenses, which in turn could delay or prevent us from generating significant revenues from its sale.

Even if one or more of our product candidates receives regulatory approval, it and any other products we may market will remain subject to substantial regulatory scrutiny.

One or more of our product candidates that we may license or acquire will also be subject to ongoing requirements and review of the FDA and other regulatory authorities. These requirements include labeling, packaging, storage, advertising, promotion, record-keeping and submission of safety and other post-market 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 of the drug, and requirements regarding our presentations to and interactions with health care professionals.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of the product. The FDA closely regulates the post-approval marketing and promotion of drugs to ensure drugs are marketed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we do not market our products for only their approved indications, we may be subject to enforcement action for off-label marketing. Violations of the FDCA 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 adverse events or other problems with our products, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

- restrictions on such products, operations, 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;
- suspension or withdrawal of marketing or regulatory approvals;
- suspension of any ongoing clinical trials;
- refusal to permit the import or export of our products;
- product seizure; or
- injunctions or the imposition of civil or criminal penalties.

The FDA's policies may change, and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained.

We will need to obtain FDA approval of any proposed product brand names, and any failure or delay associated with such approval may adversely impact our business.

A pharmaceutical product cannot be marketed in the US or other countries until we have completed a rigorous and extensive regulatory review processes, including approval of a brand name. Any brand names we intend to use for our product candidates will require approval from the FDA regardless of whether we have secured a formal trademark registration from the US Patent and Trademark Office (PTO). The FDA typically conducts a review of proposed product brand names, including an evaluation of potential for confusion with other product names. The FDA may also object to a product brand name if it believes the name inappropriately implies medical claims. If the FDA objects to any of our proposed product brand names, we may be required to adopt an alternative brand name for our product candidates. If we adopt an alternative brand name, we would lose the benefit of our existing trademark applications for such product candidate and may be required to expend significant additional resources in an effort to identify a suitable product brand name that would qualify under applicable trademark laws, not infringe the existing rights of third parties and be acceptable to the FDA. We may be unable to build a successful brand identity for a new trademark in a timely manner or at all, which would limit our ability to commercialize our product candidates.

Our current and future relationships with customers and third-party payors in the United States and elsewhere may be subject, directly or indirectly, to applicable anti-kickback, fraud and abuse, false claims, transparency, health information privacy and security and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, administrative burdens and diminished profits and future earnings.

Healthcare providers, physicians and third-party payors in the US and elsewhere will play a primary role in the recommendation and prescription of any product candidates for which we obtain marketing approval. Our future arrangements with third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations, including, without limitation, the federal Anti-Kickback Statute and the federal False Claims Act, which may constrain the business or financial arrangements and relationships through which we sell, market and distribute any product candidates for which we obtain marketing approval. In addition, we may be subject to transparency laws and patient privacy regulation by the federal and state governments and by governments in foreign jurisdictions in which we conduct our business. The applicable federal, state and foreign healthcare laws and regulations that may affect our ability to operate include, but are not necessarily limited to:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under federal and state healthcare programs, such as Medicare and Medicaid;
- federal civil and criminal false claims laws and civil monetary penalty laws, including the federal False Claims Act, which impose criminal and civil penalties, including civil whistleblower or *qui tam* actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, including the Medicare and Medicaid programs, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government; the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which imposes criminal and civil liability for 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 respective implementing regulations, which impose obligations on covered healthcare providers, health plans, and healthcare clearinghouses, as well as their business associates that create, receive, maintain or transmit individually identifiable health information for or on behalf of a covered entity, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;
- the federal Open Payments program, which requires manufacturers of certain approved drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program, with specific exceptions, to report annually to the Centers for Medicare & Medicaid Services, or CMS, information related to “payments or other transfers of value” made to physicians, which is defined to include doctors, dentists, optometrists, podiatrists and chiropractors, and teaching hospitals and applicable manufacturers and applicable group purchasing organizations to report annually to CMS ownership and investment interests held by the physicians and their immediate family members. Data collection began on August 1, 2013 with requirements for manufacturers to submit reports to CMS by March 31, 2014 and 90 days after the end each subsequent calendar year. Disclosure of such information was made by CMS on a publicly available website beginning in September 2014 and is annually updated; and
- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers; state and foreign laws that require pharmaceutical companies to comply with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government or otherwise restrict payments that may be made to healthcare providers; state and foreign laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; 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.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations may involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, including, without limitation, damages, fines, imprisonment, exclusion from participation in government healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations, which could have a material adverse effect on our business. If any of the physicians or other healthcare providers or entities with whom we expect to do business, including our collaborators, is found not to be in compliance with applicable laws, it may be subject to criminal, civil or administrative sanctions, including exclusions from participation in government healthcare programs, which could also materially affect our business.

Regulatory approval for any approved product is limited by the FDA to those specific indications and conditions for which clinical safety and efficacy have been demonstrated.

Any regulatory approval is limited to those specific diseases and indications for which a product is deemed to be safe and effective by the FDA. In addition to the FDA approval required for new formulations, any new indication for an approved product also requires FDA approval. If we are not able to obtain FDA approval for any desired future indications for our products, our ability to effectively market and sell our products may be reduced and our business may be adversely affected.

While physicians may choose to prescribe drugs for uses that are not described in the product's labeling and for uses that differ from those tested in clinical studies and approved by the regulatory authorities, our ability to promote the products is limited to those indications that are specifically approved by the FDA. These "off-label" uses are common across medical specialties and may constitute an appropriate treatment for some patients in varied circumstances. Regulatory authorities in the US generally do not regulate the behavior of physicians in their choice of treatments. Regulatory authorities do, however, restrict communications by pharmaceutical companies on the subject of off-label use. If our promotional activities fail to comply with these regulations or guidelines, we may be subject to warnings from, or enforcement action by, these authorities. In addition, our failure to follow FDA rules and guidelines relating to promotion and advertising may cause the FDA to suspend or withdraw an approved product from the market, require a recall or institute fines, or could result in disgorgement of money, operating restrictions, corrective advertising, injunctions or criminal prosecution, any of which could harm our business.

We are subject to new legislation, regulatory proposals and managed care initiatives that may increase our costs of compliance and adversely affect our ability to market our products, obtain collaborators and raise capital.

In the US and some foreign jurisdictions, there have been a number of proposed and enacted legislative and regulatory changes regarding the healthcare system that could prevent or delay marketing approval of one or more of our product candidates, restrict or regulate post-approval activities and affect our ability to profitably sell any of our product candidates for which we obtain marketing approval.

Among policy makers and payors in the US and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and expanding access. In the US, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives.

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act, collectively the "ACA", was enacted in 2010 and made significant changes to the United States' healthcare system. The ACA and any revisions or replacements of that Act, any substitute legislation, and other changes in the law or regulatory framework could have a material adverse effect on our business.

Among the provisions of the ACA of importance to our potential product candidates are:

- an annual, nondeductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13.0% of the average manufacturer price for branded and generic drugs, respectively;
- expansion of healthcare fraud and abuse laws, including the federal False Claims Act and the federal Anti-Kickback Statute, new government investigative powers and enhanced penalties for non-compliance;
- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for a manufacturer's outpatient drugs to be covered under Medicare Part D;
- extension of a manufacturer's Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for certain individuals with income at or below 138% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;
- expansion of the entities eligible for discounts under the 340B Drug Pricing Program;
- the new requirements under the federal Open Payments program and its implementing regulations;
- a new requirement to annually report drug samples that manufacturers and distributors provide to physicians; and
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

The Supreme Court upheld the ACA in the main challenge to the constitutionality of the law in 2012. Specifically, the Supreme Court held that the individual mandate and corresponding penalty was constitutional because it would be considered a tax by the federal government. The Supreme Court also upheld federal subsidies for purchasers of insurance through federally facilitated exchanges in a decision released in June 2015.

President Trump ran for office on a platform that supported the repeal of the ACA, and one of his first actions after his inauguration was to sign an Executive Order instructing federal agencies to waive or delay requirements of the ACA that impose economic or regulatory burdens on states, families, the health-care industry and others. Modifications to or repeal of all or certain provisions of the ACA have been attempted in Congress as a result of the outcome of the recent presidential and congressional elections, consistent with statements made by the incoming administration and members of Congress during the presidential and congressional campaigns and following the election. In January 2017, Congress voted to adopt a budget resolution for fiscal year 2017, or the Budget Resolution, that authorizes the implementation of legislation that would repeal portions of the ACA. The Budget Resolution is not a law. However, it is widely viewed as the first step toward the passage of legislation that would repeal certain aspects of the ACA. In March 2017, following the passage of the budget resolution for fiscal year 2017, the U.S. House of Representatives passed legislation known as the American Health Care Act of 2017, which, if enacted, would amend or repeal significant portions of the ACA. Attempts in the Senate to pass ACA repeal legislation, including the Better Care Reconciliation Act of 2017, so far have been unsuccessful. At the end of 2017, Congress passed the Tax Cuts and Jobs Act, which repealed the penalty for individuals who fail to maintain minimum essential health coverage as required by the ACA. Following this legislation, Texas and 19 other states filed a lawsuit alleging that the ACA is unconstitutional as the individual mandate was repealed, undermining the legal basis for the Supreme Court's prior decision. This lawsuit is ongoing and the outcome may have a significant impact on our business.

Most recently, the Bipartisan Budget Act of 2018, the "BBA," which set government spending levels for Fiscal Years 2018 and 2019, revised certain provisions of the ACA. Specifically, beginning in 2019, the BBA increased manufacturer point-of-sale discounts off negotiated prices of applicable brand drugs in the Medicare Part D coverage gap from 50% to 70%, ultimately increasing the liability for brand drug manufacturers. Further, this mandatory manufacturer discount applies to biosimilars beginning in 2019.

The Trump Administration has also taken several regulatory steps to redirect ACA implementation. The Department of Health and Human Services ("HHS") finalized a hospital payment reduction for drugs acquired through the 340B Drug Pricing Program and has proposed to expand this payment reduction to other hospital settings. HHS also has taken steps to increase the availability of cheaper health insurance options, typically with fewer benefits. The Administration has also signaled its intention to address drug prices and to increase competition, including by increasing the availability of biosimilars and generic drugs. As these are regulatory actions, a new administration could undo or modify these efforts.

There have been, and likely will continue to be, legislative and regulatory proposals at the federal and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare products and services. We cannot predict the initiatives that may be adopted in the future. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of healthcare may adversely affect:

- the demand for any products for which we may obtain regulatory approval;
- our ability to set a price that we believe is fair for our products;
- our ability to generate revenues and achieve or maintain profitability;
- the level of taxes that we are required to pay; and
- the availability of capital.

In addition, governments may impose price controls, which may adversely affect our future profitability. We expect that the ACA, as well as other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any approved drug. Any reduction in reimbursement from Medicare or other government healthcare programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability or commercialize our drugs.

Legislative proposals such as expanding the Medicaid drug rebate program to the Medicare Part D program, providing authority for the government to negotiate drug prices under the Medicare Part D program and lowering reimbursement for drugs covered under the Medicare Part B program have been raised in Congress, but have been met with opposition and have not been enacted so far.

The administration can rely on its existing statutory authority to make policy changes that could have an impact on the drug industry. For example, the Medicare program has in the past proposed to test alternative payment methodologies for drugs covered under the Part B program and currently is proposing to pay hospitals less for Part B-covered drugs purchased through the 340B Drug Pricing Program.

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for drugs. We cannot be sure whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of our product candidates, if any, may be. In addition, increased scrutiny by the US Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-marketing testing and other requirements.

Public concern regarding the safety of drug products could delay or limit our ability to obtain regulatory approval, result in the inclusion of unfavorable information in our labeling, or require us to undertake other activities that may entail additional costs.

In light of widely publicized events concerning the safety risk of certain drug products, the FDA, members of the US Congress, the Government Accountability Office, medical professionals and the general public have raised concerns about potential drug safety issues. These events have resulted in the withdrawal of drug products, revisions to drug labeling that further limit use of the drug products and the establishment of risk management programs. The Food and Drug Administration Amendments Act of 2007, or FDAAA, grants significant expanded authority to the FDA, much of which is aimed at improving the safety of drug products before and after approval. In particular, the new law authorizes the FDA to, among other things, require post-approval studies and clinical trials, mandate changes to drug labeling to reflect new safety information and require risk evaluation and mitigation strategies for certain drugs, including certain currently approved drugs. It also significantly expands the federal government's clinical trial registry and results databank, which we expect will result in significantly increased government oversight of clinical trials. Under the FDAAA, companies that violate these and other provisions of the new law are subject to substantial civil monetary penalties, among other regulatory, civil and criminal penalties. The increased attention to drug safety issues may result in a more cautious approach by the FDA in its review of data from our clinical trials. Data from clinical trials may receive greater scrutiny, particularly with respect to safety, which may make the FDA or other regulatory authorities more likely to require additional preclinical studies or clinical trials. If the FDA requires us to conduct additional preclinical studies or clinical trials prior to approving any of our product candidates, our ability to obtain approval of this product candidate will be delayed. If the FDA requires us to provide additional clinical or preclinical data following the approval of any of our product candidates, the indications for which this product candidate is approved may be limited or there may be specific warnings or limitations on dosing, and our efforts to commercialize our product candidates may be otherwise adversely impacted.

If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

We may not be able to initiate or continue clinical trials for one or more of our product candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or similar regulatory authorities outside the United States. Some of our competitors have ongoing clinical trials for product candidates that treat the same indications as our product candidates, and patients who would otherwise be eligible for our clinical trials may instead enroll in clinical trials of our competitors' product candidates. Available therapies for the indications we are pursuing can also affect enrollment in our clinical trials. Patient enrollment is affected by other factors including, but not necessarily limited to:

- the severity of the disease under investigation;
- the eligibility criteria for the study in question;
- the perceived risks and benefits of the product candidate under study;
- the efforts to facilitate timely enrollment in clinical trials;
- the patient referral practices of physicians;
- the number of clinical trials sponsored by other companies for the same patient population;
- the ability to monitor patients adequately during and after treatment; and
- the proximity and availability of clinical trial sites for prospective patients.

Our inability to enroll a sufficient number of patients for our clinical trials would result in significant delays and could require us to abandon one or more clinical trials altogether. Enrollment delays in our clinical trials may result in increased development costs for our product candidate or future product candidates, which would cause the value of our company to decline and limit our ability to obtain additional financing.

Our product candidates are in scientific areas of intense competition from many large pharmaceutical and biotechnology companies, many of which are significantly further along in development or are already on the market with competing products. We expect competition for our product candidates will intensify, and new products may emerge that provide different or better therapeutic alternatives for our targeted indications.

The biotechnology and pharmaceutical industries are subject to rapid and intense technological change. We face, and will continue to face, competition in the development and marketing of our product candidates from academic institutions, government agencies, research institutions and biotechnology and pharmaceutical companies. There can be no assurance that developments by others will not render one or more of our product candidates obsolete or noncompetitive. Furthermore, new developments, including the development of other drug technologies and methods of preventing the incidence of disease, occur in the pharmaceutical industry at a rapid pace. These developments may render one or more of our product candidates obsolete or noncompetitive.

Competitors may seek to develop alternative formulations that do not directly infringe on our in-licensed patent rights. The commercial opportunity for one or more of our product candidates could be significantly harmed if competitors are able to develop alternative formulations outside the scope of our in-licensed patents. Compared to us, many of our potential competitors have substantially greater:

- capital resources;
- development resources, including personnel and technology;
- clinical trial experience;
- regulatory experience;
- expertise in prosecution of intellectual property rights; and
- manufacturing, distribution and sales and marketing experience.

As a result of these factors, our competitors may obtain regulatory approval of their products more rapidly than we are able to or may obtain patent protection or other intellectual property rights that limit our ability to develop or commercialize one or more of our product candidates. Our competitors may also develop drugs that are more effective, safe, useful and less costly than ours and may be more successful than us in manufacturing and marketing their products.

Our commercial success depends upon us attaining significant market acceptance of our product candidates, if approved for sale, among physicians, patients, healthcare payors and major operators of cancer and other clinics.

Even if we obtain regulatory approval for one or more of our product candidates, the product may not gain market acceptance among physicians, health care payors, patients and the medical community, which are critical to commercial success. Market acceptance of any product candidate for which we receive approval depends on a number of factors, including, but not necessarily limited to:

- the efficacy and safety as demonstrated in clinical trials;
- the timing of market introduction of such product candidate as well as competitive products;
- the clinical indications for which the drug is approved;
- acceptance by physicians, major operators of cancer clinics and patients of the drug as a safe and effective treatment;
- the safety of such product candidate seen in a broader patient group, including its use outside the approved indications;
- the availability, cost and potential advantages of alternative treatments, including less expensive generic drugs;
- the availability of adequate reimbursement and pricing by third-party payors and government authorities;
- changes in regulatory requirements by government authorities for our product candidates;
- the relative convenience and ease of administration of the product candidate for clinical practices;
- the product labeling or product insert required by the FDA or regulatory authority in other countries;
- the approval, availability, market acceptance and reimbursement for a companion diagnostic, if any;

- the prevalence and severity of adverse side effects; and
- the effectiveness of our sales and marketing efforts.

If any product candidate that we develop does not provide a treatment regimen that is as beneficial as, or is not perceived as being as beneficial as, the current standard of care or otherwise does not provide patient benefit, that product candidate, if approved for commercial sale by the FDA or other regulatory authorities, likely will not achieve market acceptance. Our ability to effectively promote and sell any approved products will also depend on pricing and cost-effectiveness, including our ability to produce a product at a competitive price and our ability to obtain sufficient third-party coverage or reimbursement. If any product candidate is approved but does not achieve an adequate level of acceptance by physicians, patients and third-party payors, our ability to generate revenues from that product would be substantially reduced. In addition, our efforts to educate the medical community and third-party payors on the benefits of our product candidates may require significant resources, may be constrained by FDA rules and policies on product promotion, and may never be successful.

If approved, our product candidates will face competition from less expensive generic products of competitors, and, if we are unable to differentiate the benefits of our product candidates over these less expensive alternatives, we may never generate meaningful product revenues.

Generic therapies are typically sold at lower prices than branded therapies and are generally preferred by hospital formularies and managed care providers of health services. We anticipate that, if approved, our product candidates will face increasing competition in the form of generic versions of branded products of competitors that have lost or will lose their patent exclusivity. In the future, we may face additional competition from a generic form when the patents covering it begin to expire, or earlier if the patents are successfully challenged. If we are unable to demonstrate to physicians and payers that the key differentiating features of our product candidates translate to overall clinical benefit or lower cost of care, we may not be able to compete with generic alternatives.

Reimbursement may be limited or unavailable in certain market segments for our product candidates, which could make it difficult for us to sell our products profitably.

There is significant uncertainty related to the third-party coverage and reimbursement of newly approved drugs. Such third-party payors include government health programs such as Medicare, managed care providers, private health insurers and other organizations. We intend to seek approval to market our product candidates in the US, the EU and other selected foreign jurisdictions. Market acceptance and sales of our product candidates in both domestic and international markets will depend significantly on the availability of adequate coverage and reimbursement from third-party payors for any of our product candidates and may be affected by existing and future health care reform measures. Government and other third-party payors are increasingly attempting to contain healthcare costs by limiting both coverage and the level of reimbursement for new drugs and, as a result, they may not cover or provide adequate payment for our product candidates. These payors may conclude that our product candidates are less safe, less effective or less cost-effective than existing or future introduced products, and third-party payors may not approve our product candidates for coverage and reimbursement or may cease providing coverage and reimbursement for these product candidates.

Obtaining coverage and reimbursement approval for a product from a government or other third-party payor is a time consuming and costly process that could require us to provide to the payor supporting scientific, clinical and cost-effectiveness data for the use of our products. We may not be able to provide data sufficient to gain acceptance with respect to coverage and reimbursement. If reimbursement of our future products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, we may be unable to achieve or sustain profitability.

In some foreign countries, particularly in the EU, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product candidate. To obtain reimbursement or pricing approval in some countries, we may be required to conduct additional clinical trials that compare the cost-effectiveness of our product candidates to other available therapies. If reimbursement of our product candidates is unavailable or limited in scope or amount in a particular country, or if pricing is set at unsatisfactory levels, we may be unable to achieve or sustain profitability of our products in such country.

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

We currently do not have a marketing or sales organization for the marketing, sales and distribution of pharmaceutical products. In order to commercialize any product candidate that receives marketing approval, we would need to build marketing, sales, distribution, managerial and other non-technical capabilities or make arrangements with third parties to perform these services, and we may not be successful in doing so. In the event of successful development and regulatory approval of one or more of our product candidates or any future product candidate, we expect to build a targeted specialist sales force to market or co-promote the product. There are risks involved with establishing our own sales, marketing and distribution capabilities. For example, recruiting and training a sales force is expensive and time consuming and could delay any product launch. If the commercial launch of a product candidate for which we recruit a sales force and establish marketing capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses. This may be costly, and our investment would be lost if we cannot retain or reposition our sales and marketing personnel.

Factors that may inhibit our efforts to commercialize our products on our own include, but are not necessarily limited to:

- our inability to recruit, train and retain adequate numbers of effective sales and marketing personnel;
- the inability of sales personnel to obtain access to physicians or persuade adequate numbers of physicians to prescribe any future products;
- the lack of complementary or other products to be offered by sales personnel, which may put us at a competitive disadvantage from the perspective of sales efficiency relative to companies with more extensive product lines; and
- unforeseen costs and expenses associated with creating an independent sales and marketing organization.

As an alternative to establishing our own sales force, we may choose to partner with third parties that have well-established direct sales forces to sell, market and distribute our products.

We rely, and expect to continue to rely, on third parties to conduct our preclinical studies and clinical trials, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials or complying with applicable regulatory requirements.

We rely on third-party contract research organizations and site management organizations to conduct some of our preclinical studies and all of our clinical trials for our product candidates and for any future product candidate. We expect to continue to rely on third parties, such as contract research organizations, site management organizations, clinical data management organizations, medical institutions and clinical investigators, to conduct some of our preclinical studies and all of our clinical trials. The agreements with these third parties might terminate for a variety of reasons, including a failure to perform by the third parties. If we need to enter into alternative arrangements, that could delay our product development activities.

Our reliance on these third parties for research and development activities will reduce our control over these activities but will not relieve us of our responsibilities. For example, we will remain responsible for ensuring that each of our preclinical studies and clinical trials are conducted in accordance with the general investigational plan and protocols for the trial and for ensuring that our preclinical studies are conducted in accordance with good laboratory practice (GLP) as appropriate. Moreover, the FDA requires us to comply with standards, commonly referred to as good clinical practices (GCPs) for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. Regulatory authorities enforce these requirements through periodic inspections of trial sponsors, clinical investigators and trial sites. If we or any of our clinical research organizations fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials complies with GCP regulations. In addition, our clinical trials must be conducted with product produced under cGMP regulations. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process. We also are required to register ongoing clinical trials and post the results of completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within specified timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions.

The third parties with whom we have contracted to help perform our preclinical studies or clinical trials may also have relationships with other entities, some of which may be our competitors. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our preclinical studies or clinical trials in accordance with regulatory requirements or our stated protocols, we will not be able to obtain, or may be delayed in obtaining, marketing approvals for our product candidates and will not be able to, or may be delayed in our efforts to, successfully commercialize our product candidates.

If any of our relationships with these third-party contract research organizations or site management organizations terminates, we may not be able to enter into arrangements with alternative contract research organizations or site management organizations or to do so on commercially reasonable terms. Switching or adding additional contract research organizations or site management organizations involves additional cost and requires management time and focus. In addition, there is a natural transition period when a new contract research organization or site management organization commences work. As a result, delays could occur, which could compromise our ability to meet our desired development timelines. Though we carefully manage our relationships with our contract research organizations or site management organizations, there can be no assurance that we will not encounter similar challenges or delays in the future.

We contract with third parties for the manufacture of our product candidates for preclinical and clinical testing and also do so for commercialization. This reliance on third parties increases the risk that we will not have sufficient quantities of our product candidates or any future product candidate or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We have opened our own cell processing facility in Worcester, Massachusetts and eventually hope to supply product candidates for all clinical trials that will be conducted under IND applications to be filed by us, but we currently rely on third parties for the manufacture of the majority of our product candidates for preclinical and clinical testing. This reliance on third parties increases the risk that we will not have sufficient quantities of our product candidates or any future product candidate or such quantities at an acceptable cost or quality, which could delay, prevent or impair our development or commercialization efforts.

We may also rely on third-party manufacturers or third-party collaborators for the manufacture of commercial supply of one or more product candidates for which our collaborators or we obtain marketing approval. We may be unable to establish any agreements with third-party manufacturers or to do so on acceptable terms. Even if we are able to establish agreements with third-party manufacturers, reliance on third-party manufacturers entails additional risks, including, but not necessarily limited to:

- reliance on the third party for regulatory compliance and quality assurance;
- the possible breach of the manufacturing agreement by the third party;
- manufacturing delays if our third-party manufacturers give greater priority to the supply of other products over our product candidates or otherwise do not satisfactorily perform according to the terms of the agreement between us;
- the possible misappropriation of our proprietary information, including our trade secrets and know-how; and
- the possible termination or nonrenewal of the agreement by the third party at a time that is costly or inconvenient for us.

We rely on our third-party manufacturers to produce or purchase from third-party suppliers the majority of materials and equipment necessary to produce our product candidates for our preclinical and clinical trials. There are a limited number of suppliers for raw materials and equipment that we use (or that are used on our behalf) to manufacture our drugs, and there may be a need to assess alternate suppliers to prevent a possible disruption of the manufacture of the materials and equipment necessary to produce our product candidates for our preclinical and clinical trials, and if approved, ultimately for commercial sale. We do not have any control over the process or timing of the acquisition of these raw materials or equipment by our third-party manufacturers. Any significant delay in the supply of a product candidate, or the raw material components thereof, for an ongoing preclinical or clinical trial due to the need to replace a third-party manufacturer could considerably delay completion of our preclinical or clinical trials, product testing and potential regulatory approval of our product candidates. If our third-party manufacturers or we are unable to purchase these raw materials or equipment after regulatory approval has been obtained for our product candidates, the commercial launch of our product candidates would be delayed or there would be a shortage in supply, which would impair our ability to generate revenues from the sale of our product candidates.

The facilities used by our contract manufacturers to manufacture our product candidates must be approved by the FDA pursuant to inspections that will be conducted after we submit applicable NDAs to the FDA. We do not control the manufacturing process of, and are completely dependent on, our contract manufacturers for compliance with cGMP regulations for manufacture of the majority of our product candidates. Third-party manufacturers may not be able to comply with the 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 product candidates or products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our products.

One or more of the product candidates that we may develop may compete with other product candidates and products for access to manufacturing facilities. There are a limited number of manufacturers that operate under cGMP regulations and that might be capable of manufacturing for us. Any performance failure on the part of our existing or future manufacturers could delay clinical development or marketing approval. We do not currently have arrangements in place for redundant supply. If our current contract manufacturers cannot perform as agreed, we may be required to replace such manufacturers. We may incur added costs and delays in identifying and qualifying any replacement manufacturers. The DEA restricts the importation of a controlled substance finished drug product when the same substance is commercially available in the United States, which could reduce the number of potential alternative manufacturers for one or more of our product candidates.

Our current and anticipated future dependence upon others for the manufacture of our product candidates or products may adversely affect our future profit margins and our ability to commercialize any products that receive marketing approval on a timely and competitive basis.

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

We will face increased regulatory scrutiny of our manufacturing processes.

There has recently been increased regulatory scrutiny of pharmaceutical manufacturers. We must register our facilities, whether located in the United States or elsewhere, with the FDA and similar regulators, and our product candidates may be forced to be manufactured in a manner consistent with current good manufacturing practices (cGMP), or similar standards in each territory in which we manufacture. In addition, the FDA and other agencies may periodically inspect our manufacturing facilities. Following an inspection, an agency may issue a notice listing conditions that are believed to violate cGMP or other regulations, or a warning letter for violations of “regulatory significance” that may result in enforcement action if not promptly and adequately corrected. Compliance with production and quality control regulations requires substantial expenditure of resources. If any regulatory body were to require our manufacturing facility to cease or limit production, our business could be adversely affected.

We rely on clinical data and results obtained by third parties that could ultimately prove to be inaccurate or unreliable.

As part of our strategy to mitigate development risk, we seek to develop product candidates with validated mechanisms of action and we utilize biomarkers to assess potential clinical efficacy early in the development process. This strategy necessarily relies upon clinical data and other results obtained by third parties that may ultimately prove to be inaccurate or unreliable. Further, such clinical data and results may be based on products or product candidates that are significantly different from our product candidates or any future product candidate. If the third-party data and results we rely upon prove to be inaccurate, unreliable or not applicable to our product candidates or future product candidate, we could make inaccurate assumptions and conclusions about our product candidates and our research and development efforts could be compromised.

If we breach any of the agreements under which we license rights to one or more of product candidates from others, we could lose the ability to continue to develop and commercialize such product candidate.

Because we have in-licensed the rights to all of our product candidates from COH, Fred Hutch and St. Jude, and in the future will continue to in-license from additional third parties, if there is any dispute between us and our licensors regarding our rights under our license agreements, our ability to develop and commercialize these product candidates may be adversely affected. Any uncured, material breach under our license agreements could result in our loss of exclusive rights to our product candidates and may lead to a complete termination of our related product development efforts.

We may not be able to manage our business effectively if we are unable to attract and retain key personnel.

We may not be able to attract or retain qualified management and commercial, scientific and clinical personnel in the future 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.

Our employees may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could have a material adverse effect on our business.

We are exposed to the risk of employee fraud or other misconduct. Misconduct by employees could include intentional failures to comply with FDA regulations, provide accurate information to the FDA, comply with manufacturing standards we have established, comply with federal and state health-care fraud and abuse laws and regulations, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Employee misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation, as well as civil and criminal liability. The precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business and results of operations, including the imposition of significant fines or other civil and/or criminal sanctions.

We face potential product liability exposure, and if successful claims are brought against us, we may incur substantial liability for one or more of our product candidates or a future product candidate we may license or acquire and may have to limit their commercialization.

The use of one or more of our product candidates and any future product candidate we may license or acquire in clinical trials and the sale of any products for which we obtain marketing approval expose us to the risk of product liability claims. For example, we may be sued if any product we develop allegedly causes injury or is found to be otherwise unsuitable during clinical testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability or a breach of warranties. Product liability claims might be brought against us by consumers, health care providers or others using, administering or selling our products. If we cannot successfully defend ourselves against these claims, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- withdrawal of clinical trial participants;
- suspension or termination of clinical trial sites or entire trial programs;
- decreased demand for any product candidates or products that we may develop;
- initiation of investigations by regulators;
- impairment of our business reputation;
- costs of related litigation;
- substantial monetary awards to patients or other claimants;
- loss of revenues;
- reduced resources of our management to pursue our business strategy; and
- the inability to commercialize our product candidate or future product candidates.

We will obtain limited product liability insurance coverage for any and all of our upcoming clinical trials. However, our insurance coverage may not reimburse us or may not be sufficient to reimburse us for any expenses or losses we may suffer. Moreover, insurance coverage is becoming increasingly expensive, and, in the future, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses due to liability. When needed we intend to expand our insurance coverage to include the sale of commercial products if we obtain marketing approval for one or more of our product candidates in development, but we may be unable to obtain commercially reasonable product liability insurance for any products approved for marketing. On occasion, large judgments have been awarded in class action lawsuits based on drugs that had unanticipated side effects. A successful product liability claim or series of claims brought against us could cause our stock price to fall and, if judgments exceed our insurance coverage, could decrease our cash and adversely affect our business.

Our future growth depends on our ability to identify and acquire or in-license products and if we do not successfully identify and acquire or in-license related product candidates or integrate them into our operations, we may have limited growth opportunities.

An important part of our business strategy is to continue to develop a pipeline of product candidates by acquiring or in-licensing products, businesses or technologies that we believe are a strategic fit with our dual focus on (1) ex vivo gene therapy of hematopoietic stem cells to treat genetic diseases and (2) novel combinations of CAR T cells with other immuno-oncology therapies. Future in-licenses or acquisitions, however, may entail numerous operational and financial risks, including, but not necessarily limited to:

- exposure to unknown liabilities;
- disruption of our business and diversion of our management's time and attention to develop acquired products or technologies;
- difficulty or inability to secure financing to fund development activities for such acquired or in-licensed technologies in the current economic environment;
- incurrence of substantial debt or dilutive issuances of securities to pay for acquisitions;
- higher than expected acquisition and integration costs;

- increased amortization expenses;
- difficulty and cost in combining the operations and personnel of any acquired businesses with our operations and personnel;
- impairment of relationships with key suppliers or customers of any acquired businesses due to changes in management and ownership; and
- inability to retain key employees of any acquired businesses.

We have limited resources to identify and execute the acquisition or in-licensing of third-party products, businesses and technologies and integrate them into our current infrastructure. In particular, we may compete with larger pharmaceutical companies and other competitors in our efforts to establish new collaborations and in-licensing opportunities. These competitors likely will have access to greater financial resources than us and may have greater expertise in identifying and evaluating new opportunities. Moreover, we may devote resources to potential acquisitions or in-licensing opportunities that are never completed, or we may fail to realize the anticipated benefits of such efforts.

We may expend our limited resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus on research programs and product candidates that we identify for specific indications. As a result, we may forego or delay pursuit of opportunities with other product candidates or for other indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could harm our business; even if we comply with such laws and regulations, they may result in higher costs for us in the form of higher raw material, energy, freight and compliance costs.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. Although we believe that the safety procedures for handling and disposing of these materials comply with the standards prescribed by these laws and regulations, we cannot eliminate the risk of accidental contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties for failure to comply with such laws and regulations.

Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or production efforts. Our failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions. Increased environmental legislation or regulation could also result in higher costs for us in the form of higher raw materials, as well as energy and freight costs. It is possible that certain materials might cease to be permitted to be used in our processes. We could also incur additional compliance costs for monitoring and reporting emissions and for maintaining permits.

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

Despite the implementation of security measures, our internal computer systems are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. Any system failure, accident or security breach that causes interruptions in our operations could result in a material disruption of our drug development programs. For example, the loss of clinical trial data from completed clinical trials for one or more of our product candidates could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach results in a loss or damage to our data or applications, or inappropriate disclosure of confidential or proprietary information, we may incur liability and the further development of one or more of our product candidates may be delayed.

We are currently reliant on the City of Hope National Medical Center, Fred Hutchinson Cancer Research Center and St. Jude Children’s Research Hospital for a substantial portion of our research and development efforts and the early clinical testing of our product candidates.

A substantial portion of our research and development has been and will continue to be conducted by COH, Fred Hutch and St. Jude pursuant to a sponsored research agreement and/or clinical trial agreement with each of those parties. As a result, our future success is heavily dependent on the results of research and development efforts of Dr. Stephen Forman and his team at COH, of Dr. Brian Till and his team at Fred Hutch and of Dr. Brian Sorrentino and his team at St. Jude. We have limited control over the nature or timing of their research and limited visibility into their day-to-day activities, and as a result can provide little assurance that their efforts will be successful.

CAR T is a new approach to cancer treatment that presents significant challenges.

We have concentrated a majority of our research and development efforts on CAR T technology, and our future success is highly dependent on the successful development of T cell immunotherapies in general and our CAR T technology and product candidates in particular. Because CAR T is a new approach to cancer immunotherapy and cancer treatment generally, developing and commercializing our product candidates subjects us to a number of challenges, including, but not necessarily limited to:

- obtaining regulatory approval from the FDA and other regulatory authorities that may have very limited experience with the commercial development of genetically modified T cell therapies for cancer;
- developing and deploying consistent and reliable processes for engineering a patient’s T cells ex vivo and infusing the engineered T cells back into the patient;
- conditioning patients with chemotherapy in conjunction with delivering each of our products, which may increase the risk of adverse side effects of our products;
- educating medical personnel regarding the potential side effect profile of each of our products;
- developing processes for the safe administration of these products, including long-term follow-up for all patients who receive our product candidates;
- sourcing clinical and, if approved, commercial supplies for the materials used to manufacture and process our product candidates;
- 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, and obtaining adequate coverage, reimbursement and pricing by third-party payors and government authorities; and
- developing therapies for types of cancers beyond those addressed by our current product candidates.

Product candidates, even if successfully developed and commercialized, may be effective only in combating certain specific types of cancer, and the market for drugs designed to combat such cancer type(s) may be small and unprofitable.

There are many different types of cancer, and a treatment that is effective against one type of cancer may not be effective against another. CAR T or other technologies we pursue may only be effective in combating specific types of cancer but not others. Even if one or more of our products proves to be an effective treatment against a given type of cancer, the number of patients suffering from such cancer may be small, in which case potential sales from a drug designed to combat such cancer would be limited.

Our gene therapy product candidate is based on novel technology, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. Currently, only a few gene therapy products have been approved in the United States and the European Union.

We cannot guarantee that we will not experience problems or delays in developing current or future product candidates or that such problems or delays will not cause unanticipated costs, or that any such development problems or delays can be resolved. We may also experience unanticipated problems or delays in developing our manufacturing capacity or transferring our manufacturing process to commercial partners, which may prevent us from completing our clinical studies or commercializing our products on a timely or profitable basis, if at all.

In addition, the clinical study requirements of the FDA, the European Medicines Agency, (“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 more extensively studied pharmaceutical or other product candidates. Currently, only a few gene therapy products have received marketing authorization in the U.S. or the European Union, including Novartis’ Kymriah, Kite Pharma’s Yescarta, Spark Therapeutics’ Luxturna and Orchard Therapeutics’ Strimvelis. It is therefore difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in the United States, the European Union or other jurisdictions. Approvals by the EMA may not be indicative of what the FDA may require for approval. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approvals necessary to bring a potential product to market could decrease our ability to generate sufficient product revenue and our business, financial condition, results of operations and prospects could be materially harmed.

Regulatory requirements governing gene therapy products have evolved and may continue to change in the future. For example, FDA's Center for Biologics Evaluation and Research ("CBER") may require us to perform additional nonclinical studies or clinical trials that may increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of our gene therapy product candidates or lead to significant post-approval limitations or restrictions.

In addition, EMA's Committee for Advanced Therapies ("CAT") and other regulatory review committees and advisory groups and any 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 our product candidates or lead to significant post-approval limitations or restrictions. As we advance our product candidates, we will be required to consult with these regulatory and advisory groups, and comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of certain of our product candidates. These additional processes may result in a review and approval process that is longer than we otherwise would have expected. 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 product revenue, and our business, financial condition, results of operations and prospects would be materially harmed.

Collaborative relationships with third parties could cause us to expend significant resources and incur substantial business risk with no assurance of financial return.

Establishing strategic collaborations is difficult and time-consuming. Our discussions with potential collaborators may not lead to the establishment of collaborations on favorable terms, if at all. Potential collaborators may reject collaborations based upon their assessment of our financial, regulatory or intellectual property position. In addition, there has been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. Even if we successfully establish new collaborations, these relationships may never result in the successful development or commercialization of product candidates or the generation of sales revenue. To the extent that we enter into collaborative arrangements, the related product revenues are likely to be lower than if we directly marketed and sold products. Such collaborators may also consider alternative product candidates or technologies for similar indications that may be available to collaborate on and whether such a collaboration could be more attractive than the one with us for any future product candidate.

Risks Related to Intellectual Property

If we are unable to obtain and maintain patent protection for our technology and products or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize technology and products similar or identical to ours, and our ability to successfully commercialize our technology and products may be impaired.

Our commercial success will depend in part on obtaining and maintaining patent protection and trade secret protection in the US and other countries with respect to our product candidates or any future product candidate that we may license or acquire and the methods we use to manufacture them, as well as successfully defending these patents and trade secrets against third-party challenges. We seek to protect our proprietary position by filing patent applications in the United States and abroad related to our novel technologies and product candidates, and by maintenance of our trade secrets through proper procedures. We will only be able to protect our technologies from unauthorized use by third parties to the extent that valid and enforceable patents or trade secrets cover them in the market they are being used or developed.

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 or in a timely manner. It is also possible that we will fail to identify any patentable aspects of our research and development output and methodology, and, even if we do, an opportunity to obtain patent protection may have passed. Given the uncertain and time-consuming process of filing patent applications and prosecuting them, it is possible that our product(s) or process(es) originally covered by the scope of the patent application may have changed or been modified, leaving our product(s) or process(es) without patent protection. If our licensors or we fail to obtain or maintain patent protection or trade secret protection for one or more product candidates or any future product candidate we may license or acquire, third parties may be able to leverage our proprietary information and products without risk of infringement, which could impair our ability to compete in the market and adversely affect our ability to generate revenues and achieve profitability. Moreover, should we enter into other collaborations we may be required to consult with or cede control to collaborators regarding the prosecution, maintenance and enforcement of licensed patents. 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, no consistent policy regarding the breadth of claims allowed in pharmaceutical or biotechnology patents has emerged to date in the US. The patent situation outside the US is even more uncertain. The laws of foreign countries may not protect our rights to the same extent as the laws of the US, 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 US law does. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the US and other jurisdictions are typically not published until 18 months after a first filing, or in some cases not at all. Therefore, we cannot know with certainty whether we or our licensors were the first to make the inventions claimed in patents or pending patent applications that we own or licensed, or that we or our licensors were the first to file for patent protection of such inventions. In the event that a third party has also filed a US patent application relating to our product candidates or a similar invention, depending upon the priority dates claimed by the competing parties, we may have to participate in interference proceedings declared by the PTO to determine priority of invention in the US. We might also become involved in derivation proceedings in an event that a third party misappropriates one or more of our inventions and files their own patent application directed to such one or more inventions. The costs of these proceedings could be substantial and it is possible that our efforts to establish priority of invention (or that a third party derived an invention from us) would be unsuccessful, resulting in a material adverse effect on our US patent position. As a result, the issuance, scope, validity, enforceability and commercial value of our or any of our respective licensors' 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 US and other countries may diminish the value of our patents or narrow the scope of our patent protection. For example, the federal courts of the US have taken an increasingly dim view of the patent eligibility of certain subject matter, such as naturally occurring nucleic acid sequences, amino acid sequences and certain methods of utilizing same, which include their detection in a biological sample and diagnostic conclusions arising from their detection. Such subject matter, which had long been a staple of the biotechnology and biopharmaceutical industry to protect their discoveries, is now considered, with few exceptions, ineligible in the first instance for protection under the patent laws of the US. Accordingly, we cannot predict the breadth of claims that may be allowed and remain enforceable in our patents or in those licensed from a third party.

In addition, U.S. patent laws may change, which could prevent or limit us from filing patent applications or patent claims to protect products and/or technologies or limit the exclusivity periods that are available to patent holders, as well as affect the validity, enforceability, or scope of issued patents. For example, on September 16, 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to United States patent law. These include changes to transition from a “first-to-invent” system to a “first inventor-to-file” system and to the way issued patents are challenged. The formation of the Patent Trial and Appeal Board now provides a less burdensome, quicker and less expensive process for challenging issued patents. The PTO recently developed new regulations and procedures to govern administration of the Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act, and in particular, the first inventor-to-file provisions, only became effective on March 16, 2013. Accordingly, it is not clear what, if any, impact the Leahy-Smith Act will have on the operation of our business. However, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business and financial condition.

Moreover, we may be subject to a third-party preissuance submission of prior art to the PTO, or become involved in opposition, derivation, reexamination^{inter partes} review, post-grant review or interference proceedings challenging our patent rights or the patent rights of others. The costs of these proceedings could be substantial and it is possible that our efforts to establish priority of invention (or that another derived an invention from us or one of our licensors) would be unsuccessful, resulting in a material adverse effect on our US patent position. An adverse determination in any such submission, patent office trial, proceeding or litigation could reduce the scope of, render unenforceable, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

Even if our 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 does not foreclose challenges to its inventorship, scope, validity or enforceability. Therefore, 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 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 product candidates might expire before or shortly after such product candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

We depend on our licensors for the maintenance and enforcement of intellectual property covering certain of our product candidates and have limited control, if any, over the amount or timing of resources that our licensors devote on our behalf, or whether any financial difficulties experienced by our licensors could result in their unwillingness or inability to secure, maintain and enforce patents protecting certain of our product candidates.

We depend on our licensors to protect the proprietary rights covering our product candidates and we have limited, if any, control over the amount or timing of resources that they devote on our behalf, or the priority they place on, maintaining patent rights and prosecuting patent applications to our advantage. Moreover, we have limited, if any, control over the strategies and arguments employed in the maintenance of patent rights and the prosecution of patent applications to our advantage. Our licensors might become involved in disputes with one of their other licensees, and we or a portion of our licensed patent rights might become embroiled in such disputes.

Our licensors, depending on the patent or application, are responsible for maintaining issued patents and prosecuting patent applications. We cannot be sure that they will perform as required. Should they decide they no longer want to maintain any of the patents licensed to us, they are required to afford us the opportunity to do so at our expense. If our licensors do not perform, and if we do not assume the maintenance of the licensed patents in sufficient time to make required payments or filings with the appropriate governmental agencies, we risk losing the benefit of all or some of those patent rights. Moreover, and possibly unbeknownst to us, our licensors may experience serious difficulties related to their overall business or financial stability, and they may be unwilling or unable to continue to expend the financial resources required to maintain and prosecute these patents and patent applications. While we intend to take actions reasonably necessary to enforce our patent rights, we depend, in part, on our licensors to protect a substantial portion of our proprietary rights and to inform us of the status of those protections and efforts thereto.

Our licensors may also be notified of alleged infringement and be sued for infringement of third-party patents or other proprietary rights. We may have limited, if any, control or involvement over the defense of these claims, and our licensors could be subject to injunctions and temporary or permanent exclusionary orders in the US or other countries. Our licensors are not obligated to defend or assist in our defense against third-party claims of infringement. We have limited, if any, control over the amount or timing of resources, if any, that our licensors devote on our behalf or the priority they place on defense of such third-party claims of infringement.

Because of the uncertainty inherent in any patent or other litigation involving proprietary rights, we or our licensors may not be successful in defending claims of intellectual property infringement alleged by third parties, which could have a material adverse effect on our results of operations. Regardless of the outcome of any litigation, defending the litigation may be expensive, time-consuming and distracting to management.

Because it is difficult and costly to protect our proprietary rights, we may not be able to ensure their protection.

The degree of future protection for our proprietary rights is uncertain, because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage, in addition to being costly and time consuming to undertake. For example:

- our licensors might not have been the first to make the inventions covered by each of our pending patent applications and issued patents;
- our licensors might not have been the first to file patent applications for these inventions;
- others may independently develop similar or alternative technologies or duplicate our product candidates or any future product candidate technologies;
- it is possible that none of the pending patent applications licensed to us will result in issued patents;
- the scope of our issued patents may not extend to competitive products developed or produced by others;
- the issued patents covering our product candidates or any future product candidate may not provide a basis for market exclusivity for active products, may not provide us with any competitive advantages, or may be challenged by third parties;
- we may not develop additional proprietary technologies that are patentable; or
- intellectual property rights of others may have an adverse effect on our business.

We may become involved in lawsuits to protect or enforce our patents or other intellectual property, which could be expensive, time consuming and unsuccessful.

Competitors may infringe our issued patents or other intellectual property. To counter infringement or unauthorized use, we may be required to file one or more actions for patent infringement, which can be expensive and time consuming. Any claims we assert against accused infringers could provoke these parties to assert counterclaims against us alleging invalidity of our or certain of our subsidiaries' patents or that we infringe their patents; or provoke those parties to petition the PTO to institute *inter partes* review against the asserted patents, which may lead to a finding that all or some of the claims of the patent are invalid. In addition, in a patent infringement proceeding, a court may decide that a patent of ours is invalid or unenforceable, in whole or in part, construe the patent's claims narrowly or refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation proceeding could put one or more of our pending patents at risk of being invalidated, rendered unenforceable, or interpreted narrowly. Because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. Furthermore, adverse results on US patents may affect related patents in our global portfolio.

If we are sued for infringing intellectual property rights of third parties, it will be costly and time consuming, and an unfavorable outcome in any litigation would harm our business.

Our ability to develop, manufacture, market and sell one or more of our product candidates or any future product candidate that we may license or acquire depends upon our ability to avoid infringing the proprietary rights of third parties. Numerous US and foreign issued patents and pending patent applications, which are owned by third parties, exist in the general fields of fully human immuno-oncology targeted antibodies and cover the use of numerous compounds and formulations in our targeted markets. Because of the uncertainty inherent in any patent or other litigation involving proprietary rights, we and our licensors may not be successful in defending intellectual property claims asserted by third parties, which could have a material adverse effect on our results or operations. Regardless of the outcome of any litigation, defending the litigation may be expensive, time-consuming and distracting to management. In addition, because patent applications can take many years to issue, there may be currently pending applications that are unknown to us, which may later result in issued patents that one or more of our product candidates may infringe. There could also be existing patents of which we are not aware that one or more of our product candidates may infringe, even if only inadvertently.

There is a substantial amount of litigation involving patent and other intellectual property rights in the biotechnology and biopharmaceutical industries generally. If a third-party claims that we infringe their patents or misappropriated their technology, we could face a number of issues, including:

- infringement and other intellectual property claims which, with or without merit, can be expensive and time consuming to litigate and can divert management's attention from our core business;
- substantial damages for past infringement which we may have to pay if a court decides that our product infringes a competitor's patent;

- a court prohibiting us from selling or licensing our product unless the patent holder licenses the patent to us, which it would not be required to do;
- if a license is available from a patent holder, we may have to pay substantial royalties or grant cross licenses to our patents; and
- redesigning our processes so they do not infringe, which may not be possible or could require substantial funds, time, and may result in an inferior or less-desirable process or product.

Intellectual property litigation could cause us to spend substantial resources and distract our personnel from their normal responsibilities.

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

We may need to license certain intellectual property from third parties, and such licenses may not be available or may not be available on commercially reasonable terms.

A third party may hold intellectual property, including patent rights that are important or necessary to the development and commercialization of our products. It may be necessary for us to use the patented or proprietary technology of third parties, who may or may not be interested in granting such a license, to commercialize our products, in which case we would be required to obtain a license from these third parties on commercially reasonable terms, or our business could be harmed, possibly materially.

If we fail to comply with our obligations in our intellectual property licenses and funding arrangements with third parties, we could lose rights that are important to our business.

We are currently a party to license agreements with the City of Hope, the Fred Hutchinson Cancer Research Center, St. Jude Children's Research Hospital, the Regents of the University of California and other institutions. In the future, we may become party to licenses that are important for product development and commercialization. If we fail to comply with our obligations under current or future license and funding agreements, our counterparties may have the right to terminate these agreements, in which event we might not be able to develop, manufacture or market any product or utilize any technology that is covered by these agreements or may face other penalties under the agreements. Such an occurrence could materially and adversely affect the value of a product candidate being developed under any such agreement or could restrict our drug discovery activities. Termination of these agreements or reduction or elimination of our rights under these agreements may result in our having to negotiate new or reinstated agreements with less favorable terms, or cause us to lose our rights under these agreements, including our rights to important intellectual property or technology.

We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

As is common in the biotechnology and pharmaceutical industry, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although no claims against us are currently pending, we may be subject to claims that we or these employees have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Even if frivolous or unsubstantiated in nature, litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management and the implicated employee(s).

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

In addition to seeking patent protection for our product candidates or any future product candidate, we also rely on trade secrets, including unpatented know-how, technology and other proprietary information, to maintain our competitive position, particularly where we do not believe patent protection is appropriate or obtainable. However, trade secrets are difficult to protect. We limit disclosure of such trade secrets where possible, but we also seek to protect these trade secrets, in part, by entering into non-disclosure and confidentiality agreements with parties who do have access to them, such as our employees, our licensors, corporate collaborators, outside scientific collaborators, contract manufacturers, consultants, advisors and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and consultants. Despite these efforts, any of these parties may breach the agreements and may unintentionally or willfully disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret 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. Moreover, if any of our trade secrets 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 were to be disclosed to or independently developed by a competitor, our competitive position would be harmed.

Because we in-license intellectual property pertaining to certain product candidates from third parties, any dispute with the licensors or the non-performance of such license agreements may adversely affect our ability to develop and commercialize the applicable product candidates.

The types of disputes which may arise between us and the third parties from whom we license intellectual property include, but are not limited to:

- the scope of rights granted under such license agreements and other interpretation-related issues;
- the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to such license agreements;
- the sublicensing of patent and other rights under our license agreements and/or collaborative development relationships, and the rights and obligations associated with such sublicensing;
- the diligence and development obligations under license agreements (which may include specific diligence milestones) and what activities or achievements satisfy those diligence obligations;
- whether or not the milestones associated with certain milestone payment obligations have been achieved or satisfied;
- the applicability or scope of indemnification claims or obligations under such license agreements;
- the permissibility and advisability of, and strategy regarding, the pursuit of potential third-party infringers of the intellectual property that is the subject of such license agreements;
- the calculation of royalty, sublicense revenue and other payment obligations under such license agreements;
- the extent to which license rights, if any, are retained by licensors under such license agreements;
- whether or not a material breach has occurred under such license agreements and the extent to which such breach, if deemed to have occurred, is or can be cured within applicable cure periods, if any;
- disputes regarding patent filing and prosecution decisions, as well as payment obligations regarding past and ongoing patent expenses;
- the inventorship and ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners; and
- the priority of invention of patented technology.

In addition, the agreements under which we currently license intellectual property or technology from third parties are complex, and certain provisions in such agreements may be susceptible to multiple interpretations or may conflict in such a way that puts us in breach of one or more agreements, which would make us susceptible to lengthy and expensive disputes with one or more of such third-party licensing partners. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreements, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects. Moreover, if disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on commercially acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates, which could have a material adverse effect on our business, financial conditions, results of operations and prospects.

Risks Related to Our Finances and Capital Requirements

We have incurred significant losses since our inception. We expect to incur losses for the foreseeable future, and may never achieve or maintain profitability.

We are an emerging growth company with a limited operating history. We have focused primarily on in-licensing and developing our product candidates, with the goal of supporting regulatory approval for these product candidates. We have incurred losses since our inception in March 2015, and have an accumulated deficit of \$67.3 million as of September 30, 2018. We expect to continue to incur significant operating losses for the foreseeable future. We also do not anticipate that we will achieve profitability for a period of time after generating material revenues, if ever. If we are unable to generate revenues, we will not become profitable and may be unable to continue operations without continued funding.

Because of the numerous risks and uncertainties associated with developing pharmaceutical products, we are unable to predict the timing or amount of increased expenses or when or if, we will be able to achieve profitability. Our net losses may fluctuate significantly from quarter to quarter and year to year. We anticipate that our expenses will increase substantially if:

- one or more of our product candidates are approved for commercial sale, due to our ability to establish the necessary commercial infrastructure to launch this product candidate without substantial delays, including hiring sales and marketing personnel and contracting with third parties for warehousing, distribution, cash collection and related commercial activities;
- we are required by the FDA or foreign regulatory authorities, to perform studies in addition to those currently expected;
- there are any delays in completing our clinical trials or the development of any of our product candidates;
- we execute other collaborative, licensing or similar arrangements and the timing of payments we may make or receive under these arrangements;
- there are variations in the level of expenses related to our future development programs;
- there are any product liability or intellectual property infringement lawsuits in which we may become involved;
- there are any regulatory developments affecting product candidates of our competitors; and
- one or more of our product candidates receives regulatory approval.

Our ability to become profitable depends upon our ability to generate revenue. To date, we have not generated any revenue from our development stage products, and we do not know when, or if, we will generate any revenue. Our ability to generate revenue depends on a number of factors, including, but not limited to, our ability to:

- obtain regulatory approval for one or more of our product candidates, or any future product candidate that we may license or acquire;
- manufacture commercial quantities of one or more of our product candidates or any future product candidate, if approved, at acceptable cost levels; and
- develop a commercial organization and the supporting infrastructure required to successfully market and sell one or more of our product candidates or any future product candidate, if approved.

Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would depress the value of our company and could impair our ability to raise capital, expand our business, maintain our research and development efforts, diversify our product offerings or even continue our operations. A decline in the value of our company could also cause you to lose all or part of your investment.

Our short operating history makes it difficult to evaluate our business and prospects.

We were incorporated in March 2015 and have only been conducting operations since March 2015. Our operations to date have been limited to preclinical operations and the licensing of our product candidates. We have not yet demonstrated an ability to successfully complete clinical trials, obtain regulatory approvals, manufacture a clinical scale or commercial scale product, or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization. Consequently, any predictions about our future performance may not be as accurate as they could be if we had a history of successfully developing and commercializing pharmaceutical products.

In addition, as a young business, we may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown factors. We will need to expand our capabilities to support commercial activities. We may not be successful in adding such capabilities.

We expect our financial condition and operating results to continue to fluctuate significantly from quarter to quarter and year to year due to a variety of factors, many of which are beyond our control. Accordingly, you should not rely upon the results of any past quarterly period as an indication of future operating performance.

We do not have any products that are approved for commercial sale and therefore do not expect to generate any revenues from product sales in the foreseeable future, if ever.

We have not generated any product related revenues to date, and do not expect to generate any such revenues for at least the next several years, if at all. To obtain revenues from sales of our product candidates, we must succeed, either alone or with third parties, in developing, obtaining regulatory approval for, manufacturing and marketing products with commercial potential. We may never succeed in these activities, and we may not generate sufficient revenues to continue our business operations or achieve profitability.

We will require substantial additional funding which may not be available to us on acceptable terms, or at all. If we fail to raise the necessary additional capital, we may be unable to complete the development and commercialization of our product candidates, or continue our development programs.

Our operations have consumed substantial amounts of cash since inception. We expect to significantly increase our spending to advance the preclinical and clinical development of our product candidates and launch and commercialize any product candidates for which we receive regulatory approval, including building our own commercial organizations to address certain markets. We will require additional capital for the further development and commercialization of our product candidates, as well as to fund our other operating expenses and capital expenditures. As of September 30, 2018, we had \$41.3 million in cash and short-term investments (certificates of deposit) and restricted cash. We cannot provide any assurance that we will be able to raise funds to complete the development of our product candidates.

We cannot be certain that additional funding will be available on acceptable terms, or at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our product candidates. We may also seek collaborators for one or more of our current or future product candidates at an earlier stage than otherwise would be desirable or on terms that are less favorable than might otherwise be available. Any of these events could significantly harm our business, financial condition and prospects.

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

- the timing, design and conduct of, and results from, preclinical and clinical trials for our product candidates;
- the potential for delays in our efforts to seek regulatory approval for our product candidates, and any costs associated with such delays;
- the costs of establishing a commercial organization to sell, market and distribute our product candidates;
- the rate of progress and costs of our efforts to prepare for the submission of an NDA for any product candidates that we may in-license or acquire in the future, and the potential that we may need to conduct additional clinical trials to support applications for regulatory approval;
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights associated with our product candidates, including any such costs we may be required to expend if our licensors are unwilling or unable to do so;
- the cost and timing of securing sufficient supplies of our product candidates from our contract manufacturers for clinical trials and in preparation for commercialization;
- the effect of competing technological and market developments;
- the terms and timing of any collaborative, licensing, co-promotion or other arrangements that we may establish;
- if one or more of our product candidates are approved, the potential that we may be required to file a lawsuit to defend our patent rights or regulatory exclusivities from challenges by companies seeking to market generic versions of one or more of our product candidates; and
- the success of the commercialization of one or more of our product candidates.

Future capital requirements will also depend on the extent to which we acquire or invest in additional complementary businesses, products and technologies, but we currently have no commitments or agreements relating to any of these types of transactions.

In order to carry out our business plan and implement our strategy, we anticipate that we will need to obtain additional financing from time to time and may choose to raise additional funds through strategic collaborations, licensing arrangements, public or private equity or debt financing, bank lines of credit, asset sales, government grants, or other arrangements. We cannot be sure that any additional funding, if needed, will be available on terms favorable to us or at all. Furthermore, any additional equity or equity-related financing may be dilutive to our stockholders, and debt or equity financing, if available, may subject us to restrictive covenants and significant interest costs. If we obtain funding through a strategic collaboration or licensing arrangement, we may be required to relinquish our rights to certain of our product candidates or marketing territories.

Our inability to raise capital when needed would harm our business, financial condition and results of operations, and could cause our stock value to decline or require that we wind down our operations altogether.

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

Until such time, if ever, as we can generate substantial product revenue, we expect to finance our cash needs through a combination of equity offerings, debt financings, grants and license and development agreements in connection with any collaborations. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a stockholder. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends.

If we raise additional funds through 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. 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.

We will continue to incur significant increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives.

On August 22, 2017, we became a listed and traded public company. As a public company, we incur significant legal, accounting and other expenses under the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, as well as rules subsequently implemented by the SEC, and the rules of the Nasdaq Stock Exchange. These rules impose various requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and appropriate corporate governance practices. Our management and other personnel have devoted and will continue to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations increase our legal and financial compliance costs and make some activities more time-consuming and costly. For example, these rules and regulations make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as executive officers.

The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal controls for financial reporting and disclosure controls and procedures. As a result, we are required to periodically perform an evaluation of our internal controls over financial reporting to allow management to report on the effectiveness of those controls, as required by Section 404 of the Sarbanes-Oxley Act. Additionally, our independent auditors are required to perform a similar evaluation and report on the effectiveness of our internal controls over financial reporting. These efforts to comply with Section 404 and related regulations have required, and continue to require, the commitment of significant financial and managerial resources. While we anticipate maintaining the integrity of our internal controls over financial reporting and all other aspects of Section 404, we cannot be certain that a material weakness will not be identified when we test the effectiveness of our control systems in the future. If a material weakness is identified, we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources, costly litigation or a loss of public confidence in our internal controls, which could have an adverse effect on the market price of our stock.

Compliance with the Sarbanes-Oxley Act of 2002 will require substantial financial and management resources and may increase the time and costs of completing an acquisition.

A business that we identify as a potential acquisition target may not be in compliance with the provisions of the Sarbanes-Oxley Act regarding the adequacy of internal controls. The development of the internal controls of any such entity to achieve compliance with the Sarbanes-Oxley Act may increase the time and costs necessary to complete any such acquisition. Furthermore, any failure to implement required new or improved controls, or difficulties encountered in the implementation of adequate controls over our financial processes and reporting in the future, could harm our operating results or cause us to fail to meet our reporting obligations. Inferior internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our securities.

We are an “emerging growth company” and we cannot be certain if the reduced disclosure requirements applicable to emerging growth companies will make our securities less attractive to investors.

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act (the “JOBS Act”). We will remain an “emerging growth company” for up to five years. However, if our non-convertible debt issued within a three-year period or revenues exceeds \$1 billion, or the market value of our equity shares that are held by non-affiliates exceeds \$700 million on the last day of the second fiscal quarter of any given fiscal year, we would cease to be an emerging growth company as of the following fiscal year. As an emerging growth company, we are not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, we have reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and we are exempt from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

Further, Section 102(b)(1) of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies (that is, those that have not had a Securities Act registration statement declared effective or do not have a class of securities registered under the Exchange Act) are required to comply with the new or revised financial accounting standards. The JOBS Act provides that a company can elect to opt out of the extended transition period and comply with the requirements that apply to non-emerging growth companies, but any such an election to opt out is irrevocable. We have elected not to opt out of such extended transition period which means that when a standard is issued or revised and it has different application dates for public or private companies, we, as an emerging growth company, will not adopt the new or revised standard until the time private companies are required to adopt the new or revised standard. This may make comparison of our financial statements with another public company, which is neither an emerging growth company nor an emerging growth company, which has opted out of using the extended transition period, difficult or impossible because of the potential differences in accounting standards used.

Our results of operations and liquidity needs could be materially negatively affected by market fluctuations and economic downturn.

Our results of operations could be materially negatively affected by economic conditions generally, both in the US and elsewhere around the world. Continuing concerns over inflation, energy costs, geopolitical issues, the availability and cost of credit, the US mortgage market and residential real estate market in the US have contributed to increased volatility and diminished expectations for the economy and the markets going forward. These factors, combined with volatile oil prices, declining business and consumer confidence and increased unemployment, have precipitated an economic recession and fears of a possible depression. Domestic and international equity markets continue to experience heightened volatility and turmoil. These events and the continuing market upheavals may have an adverse effect on us. In the event of a continuing market downturn, our results of operations could be adversely affected by those factors in many ways, including making it more difficult for us to raise funds if necessary, and our stock price may further decline.

Our ability to use our pre-change NOLs and other pre-change tax attributes to offset post-change taxable income or taxes may be subject to limitation.

We may, from time to time, carry net operating loss carryforwards (“NOLs”) as deferred tax assets on our balance sheet. Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, if a corporation undergoes an “ownership change” (generally defined as a greater than 50-percent- point cumulative change (by value) in the equity ownership of certain stockholders over a rolling three-year period), the corporation’s ability to use its pre-change NOLs and other pre-change tax attributes to offset its post-change taxable income or taxes may be limited. We may experience ownership changes in the future as a result of shifts in our stock ownership, some of which changes are outside our control. As a result, our ability to use our pre-change NOLs and other pre-change tax attributes to offset post-change taxable income or taxes may be subject to limitation.

Risks Relating to Securities Markets and Investment in Our Stock

Our stock may be subject to substantial price and volume fluctuations due to a number of factors, many of which are beyond our control and may prevent our stockholders from reselling our common stock at a profit.

The market prices for securities of biotechnology and pharmaceutical companies have historically been highly volatile, and the market has from time to time experienced significant price and volume fluctuations that are unrelated to the operating performance of particular companies.

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

- announcements concerning the progress of our efforts to obtain regulatory approval for and commercialize our product candidates or any future product candidate, including any requests we receive from the FDA for additional studies or data that result in delays in obtaining regulatory approval or launching these product candidates, if approved;
- market conditions in the pharmaceutical and biotechnology sectors or the economy as a whole;
- price and volume fluctuations in the overall stock market;
- the failure of one or more of our product candidates or any future product candidate, if approved, to achieve commercial success;
- announcements of the introduction of new products by us or our competitors;
- developments concerning product development results or intellectual property rights of others;
- litigation or public concern about the safety of our potential products;

- actual fluctuations in our quarterly operating results, and concerns by investors that such fluctuations may occur in the future;
- deviations in our operating results from the estimates of securities analysts or other analyst comments;
- additions or departures of key personnel;
- health care reform legislation, including measures directed at controlling the pricing of pharmaceutical products, and third-party coverage and reimbursement policies;
- developments concerning current or future strategic collaborations; and
- discussion of us or our stock price by the financial and scientific press and in online investor communities.

Fortress controls a voting majority of our common stock.

Pursuant to the terms of the Class A Preferred Stock held by Fortress, Fortress is entitled to cast, for each share of Class A Preferred held by Fortress, the number of votes that is equal to one and one-tenth (1.1) times a fraction, the numerator of which is the sum of (A) the shares of outstanding common stock and (B) the whole shares of common stock into which the shares of outstanding Class A common shares and the Class A Preferred Stock are convertible and the denominator of which is the number of shares of outstanding Class A Preferred Stock. Accordingly, Fortress is able to control or significantly influence all matters requiring approval by our stockholders, including the election of directors and the approval of mergers or other business combination transactions. The interests of Fortress may not always coincide with the interests of other stockholders, and Fortress may take actions that advance its own interests and are contrary to the desires of our other stockholders. Moreover, this concentration of voting power may delay, prevent or deter a change in control of us even when such a change may be in the best interests of all stockholders, could deprive our stockholders of an opportunity to receive a premium for their common stock as part of a sale of Mustang or our assets, and might affect the prevailing market price of our common stock.

Fortress has the right to receive a significant grant of shares of our common stock annually which will result in the dilution of your holdings of common stock upon each grant, which could reduce their value. City of Hope has anti-dilution protection that could result in the dilution of your holding.

Under the terms of the Second Amended and Restated Founders Agreement, which became effective July 22, 2016, Fortress will receive a grant of shares of our common stock equal to two and one-half percent (2.5%) of the gross amount of any equity or debt financing. Additionally, the Class A Preferred Stock, as a class, will receive an annual dividend on January 1st, payable in shares of common stock in an amount equal to two and one-half percent (2.5%) of our fully-diluted outstanding capital stock as of the business day immediately prior to January 1st of such year. Fortress currently owns all outstanding shares of Class A Preferred Stock. These share issuances to Fortress and any other holder of Class A Preferred Stock will dilute your holdings in our common stock and, if the value of Mustang has not grown proportionately over the prior year, would result in a reduction in the value of your shares. The Second Amended and Restated Founders Agreement has a term of 15 years and renews automatically for subsequent one-year periods unless terminated by Fortress or upon a Change in Control (as defined in the Second Amended and Restated Founders Agreement).

The shares of Class A common stock held by the City of Hope have anti-dilution protection that gives them the right to additional shares of stock under certain circumstances. The number of shares received by COH will vary depending on the triggering event. If any shares are required to be issued to COH, your holdings in our common stock will be diluted and result in a reduction in the value of your shares.

We might have received better terms from unaffiliated third parties than the terms we receive in our agreements with Fortress.

The agreements we have entered into with Fortress include a Management Services Agreement and the Founders Agreement. While we believe the terms of these agreements are reasonable, they might not reflect terms that would have resulted from arm's-length negotiations between unaffiliated third parties. The terms of the agreements relate to, among other things, payment of a royalty on product sales and the provision of employment and transition services. We might have received better terms from third parties because, among other things, third parties might have competed with each other to win our business.

The dual roles of our officers and directors who also serve in similar roles with Fortress could create a conflict of interest and will require careful monitoring by our independent directors.

We share some directors with Fortress, and in addition, under the Management Services Agreement, we will also share some officers with Fortress. This could create conflicts of interest between the two companies in the future. While we believe that the Founders Agreement and the Management Services Agreement were negotiated by independent parties on both sides on arm's length terms, and the fiduciary duties of both parties were thereby satisfied, in the future situations may arise under the operation of both agreements that may create a conflict of interest. We will have to be diligent to ensure that any such situation is resolved by independent parties. In particular, under the Management Services Agreement, Fortress and its affiliates are free to pursue opportunities which could potentially be of interest to Mustang, and they are not required to notify Mustang prior to pursuing such opportunities. Any such conflict of interest or pursuit by Fortress of a corporate opportunity independent of Mustang could expose us to claims by our investors and creditors and could harm our results of operations.

We may become involved in securities class action litigation that could divert management's attention and harm our business.

The stock markets have from time to time experienced significant price and volume fluctuations that have affected the market prices for the common stock of biotechnology and pharmaceutical companies. These broad market fluctuations may cause the market price of our stock to decline. In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because biotechnology and biopharmaceutical companies have experienced significant stock price volatility in recent years. We may become involved in this type of litigation in the future. Litigation often is expensive and diverts management's attention and resources, which could adversely affect our business.

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

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

None.

Item 5. Other Information

None.

Item 6. Exhibits

The exhibits listed on the Exhibit Index are either filed or furnished with this report or incorporated herein by reference.

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
10.1	Executive Employment Agreement, by and between Mustang Bio, Inc. and Martina A. Sersch, M.D., Ph.D., entered into as of October 4, 2018 (filed herewith).
31.1	Certification of President and Chief Executive Officer (Principal Executive Officer), pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
31.2	Certification of Vice President of Finance & Corporate Controller (Principal Financial Officer), pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
32.1	Certification of President and Chief Executive Officer (Principal Executive Officer), pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith).
32.2	Certification of Vice President of Finance & Corporate Controller (Principal Financial Officer), pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith).
101	The following financial information from the Company's Quarterly Report on Form 10-Q for the period ended September 30, 2018, formatted in Extensible Business Reporting Language (XBRL): (i) the Condensed Balance Sheets, (ii) the Condensed Statements of Operations, (iii) the Condensed Statement of Stockholders' Equity, (iv) the Condensed Statements of Cash Flows, and (v) Notes to the Condensed Financial Statements (filed herewith).

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.

November 13, 2018

MUSTANG BIO, INC.

By: /s/ Manuel Litchman
Manuel Litchman, M.D., President and
Chief Executive Officer
(Principal Executive Officer)

By: /s/ Brian Achenbach
Brian Achenbach
Vice President of Finance & Corporate Controller
(Principal Financial Officer)

EXECUTIVE EMPLOYMENT AGREEMENT

This **Executive Employment Agreement** (this “*Agreement*”) is made and entered into as of October 4, 2018, by and between **Mustang Bio, Inc.** (the “*Company*”) and **Martina A. Sersch, M.D., Ph.D.** (“*Executive*”). The Company and Executive are hereinafter collectively referred to as the “*Parties*”, and either may be individually referred to as a “*Party*”.

Recitals

WHEREAS the Company desires to employ Executive and Executive desires to accept such employment, on the terms and conditions set forth in this Agreement;

WHEREAS, in her position, Executive will have access to confidential information concerning the Company’s business, its customers and employees; and

WHEREAS, the Company wishes to protect itself from unauthorized use of this information and to protect its investment in its employees and confidential information.

NOW, THEREFORE, in consideration of the foregoing, the mutual agreements contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

Agreement**1. Employment.**

1.1 Title. Effective as of the Effective Date, Executive is employed by the Company in the position of Chief Medical Officer (“*CMO*”), subject to the terms and conditions set forth in this Agreement.

1.2 Term. The term of this Agreement shall begin on October 15, 2018 (the “*Effective Date*”), and shall continue until it is terminated pursuant to Section 4 herein (the “*Term*”).

1.3 Duties. Executive shall do and perform all services, acts or things necessary or advisable to conduct the business of the Company and that are normally associated with the position of CMO. In her capacity as CMO, Executive shall report to the Company’s Chief Executive Officer.

1.4 Location. Executive’s principal place of business for performance of the services under this Agreement shall be her home office in California, *provided, however*, that the Company may from time to time require the Executive to travel temporarily to other locations (domestic and international) in connection with the Company’s business, including but not limited to regular travel to the facilities of the Company and its affiliates in New York and Massachusetts.

1.5 Policies and Practices. Executive will abide by the policies and practices established by the Company and/or the Company’s Board of Directors (the “*Board*”), or any designated committee thereof. In the event that the terms of this Agreement differ from or are in conflict with the Company’s policies or practices or the Company’s Employee Handbook, this Agreement shall control.

2. Loyalty; Nonsolicitation.

2.1 Loyalty; Conflicts of Interest. During Executive's employment by the Company, Executive will devote Executive's full business energies, interest, abilities and productive time to the proper and efficient performance of Executive's duties under this Agreement.

2.1.1 During her employment with the Company, Executive will not, on her own behalf or on behalf of any other person, engage in any business activity competitive with or adverse to that of the Company. In addition, during her employment with the Company, Executive will not acquire, assume or participate in, directly or indirectly, any position, investment or interest known by Executive to be adverse or antagonistic to the Company, its Business, or prospects, financial or otherwise, or in any company, person, or entity that is, directly or indirectly, in competition with the Business of the Company or any of its Affiliates (as defined below). Ownership by Executive, in professionally managed funds over which the Executive does not have control or discretion in investment decisions, or as a passive investment, of less than two percent (2%) of the outstanding shares of capital stock of any corporation with one or more classes of its capital stock listed on a national securities exchange or publicly traded on a national securities exchange or in the over-the-counter market shall not constitute a breach of this Section 2.1.1. As used in this Agreement, "**Affiliate**" means, with respect to any specific entity, any other entity that, directly or indirectly, through one or more intermediaries, controls, is controlled by or is under common control with such specified entity; and "**Business**" means the business(es) in which the Company or its Affiliates are or were engaged at the time of, or during the 12 month period prior to the conduct in question.

2.1.2 Notwithstanding the above, Executive may, on her own time, at her own expense and to the extent consistent with and non-deleterious to her duties and responsibilities at the Company: (i) participate in civic, educational, charitable or fraternal organizations; (ii) manage her personal investments; (iii) with prior approval of the Executive Chairman, serve as a consultant to, or on the board of directors of, other companies that do not compete with the Company.

2.2 Agreements Protecting Confidential and Proprietary Information. In connection with and as a material condition of the Company's decision to offer Executive employment, Executive understands, acknowledges and agrees to immediately execute and be bound by certain covenants in effect during and after her employment with the Company, as contained in the Company's Proprietary Information and Inventions Agreement ("**PIIA**"). A copy of the PIIA is attached to this Agreement as Exhibit A.

2.3 Non-Solicitation of Employees and Contractors. Executive understands and agrees that the relationship between the Company and each of its employees and contractors constitutes a valuable asset of the Company and may not be converted to Executive's own use or benefit or for the use or benefit of any other third party. Executive therefore agrees that during her employment and for a period of six (6) months thereafter, Executive will not, without the Company's prior written consent, directly or indirectly, solicit, induce, or attempt to solicit or induce any employee or contractor of the Company to terminate his or her employment or engagement with the Company. Executive acknowledges and agrees that the covenants in this Section 2.3 are essential elements of Executive's employment by the Company and are reasonable given Executive's access to the Company's confidential information and the substantial knowledge and goodwill Executive will acquire with respect to the business of the Company as a result of her employment with the Company. Executive further acknowledges and agrees that the Company will suffer irreparable harm in the event that Executive breaches any of Executive's obligations under this Section 2.3 and that monetary damages would be inadequate to compensate the Company for such breach. Accordingly, Executive agrees that, in the event of a breach by Executive of any of Executive's obligations under this Section 2.3, the Company will be entitled to obtain from any court of competent jurisdiction preliminary and permanent injunctive relief, in order to prevent or to restrain any such breach. Executive agrees to waive any requirement for the securing or posting of any bond in connection with such remedies. The Company will be entitled to recover its costs incurred in connection with enforcing this Section 2.3, including reasonable attorneys' fees and expenses, to the maximum extent permitted by law.

3. Compensation of Executive.

3.1 Base Salary. The Company shall pay Executive a base salary at the annualized rate of Four Hundred Twenty-Five Thousand Dollars (\$425,000.00) (the “**Base Salary**”), less all applicable taxes, deductions and withholdings, to be paid in equal installments in accord with the Company’s normal payroll practices. The Base Salary shall be prorated for any partial year of employment on the basis of a 365-day fiscal year and may be changed in the discretion of the Board. The Base Salary may only be decreased in connection with a Company-wide decrease in executive compensation; provided, however that Executive shall not be subject to any greater percentage reduction than any other Company executive. The Board shall review annually and may increase the Base Salary thereby setting a new level for the entirety of this Agreement.

3.2 Commencement Bonus. The Company will pay Executive a one-time bonus in the gross amount of One Hundred Fifty Thousand Dollars (\$150,000) (the “**Commencement Bonus**”). The Commencement Bonus will be paid on or about October 19, 2018.

3.3 Annual Bonus. At the sole discretion of the Board or the compensation committee of the Board, if established (the “**Compensation Committee**”), following each calendar year of the Company while employed hereunder, Executive will be eligible to receive an additional target cash bonus of up to forty percent (40%) of the Base Salary (the “**Annual Bonus**”). The amount of the Annual Bonus to be paid shall be based on Executive’s attainment of certain financial, clinical development, and/or business milestones (the “**Milestones**”) to be established annually by the Board or the Compensation Committee. The determination of whether Executive has met or exceeded the Milestones, and if so, the bonus amount (if any) that will be paid, shall be determined by the Board or the Compensation Committee in its sole discretion. Except as described in Sections 4.5.2, 4.5.4, or 4.5.5 below, Executive must remain employed by the Company through and including the last day of the applicable calendar year in order to be eligible to earn or receive any Annual Bonus for that year. The Annual Bonus for any given calendar year will be paid in cash as a single lump-sum payment no later than March 15 of the year following the conclusion of the calendar year to which the Annual Bonus relates.

3.4 Equity. Subject to approval by the Board, the Company shall grant to Executive a number of restricted shares of the Company’s common stock equal to one percent (1%) of the Company’s issued and outstanding Common Stock, calculated as of the Effective Date, subject to vesting as set forth below (the “**Restricted Shares**”). One-half of the Restricted Shares will vest over time (the “**Time Based Shares**”), with twenty five percent (25%) of the Time Based Shares vesting after twelve (12) months of employment, and the remaining shares vesting in twelve (12) equal quarterly installments thereafter, subject to Executive’s Continuous Service (as defined in the Company’s 2016 Incentive Plan) to the Company on each vesting date. The remaining one-half of the Restricted Shares (the “**Performance Shares**”) will vest upon the occurrence of the following milestones being achieved: (i) 25% of the Performance Share grant will vest upon the dosing of the first patient in the first Phase 2 clinical trial of any Company product candidate, (ii) 25% of the Performance Share grant will vest upon the dosing of the first patient in the first Phase 2 clinical trial of a second Company product candidate, (iii) 25% of the Performance Share grant will vest upon the Company’s achievement of a fully-diluted Market Capitalization of \$500,000,000, and (iv) 25% of the Performance Share grant will vest upon the Company’s achievement of a fully-diluted Market Capitalization of \$1,000,000,000; in each case subject to Executive’s Continuous Service to the Company on the date of such occurrences. Notwithstanding the foregoing, in the event that a Phase 2 clinical trial for either of the Company product candidates referenced in subsections 3.4(i) or 3.4(ii) herein is bypassed, the corresponding percentage of the Performance Share grant that would have otherwise vested pursuant to subsections 3.4(i) or 3.4(ii) herein will vest upon the earlier of (x) the dosing of the first patient in the first Phase 3 clinical trial for that Company product candidate, or (y) the filing of a Biologics License Application (“**BLA**”) or New Drug Application (“**NDA**”) with the U.S. Food and Drug Administration, or alternatively the filing of an equivalent regulatory filing with a foreign regulatory agency, with respect to that Company product candidate. Vesting of the Restricted Shares will terminate upon the termination of the Executive’s Continuous Service, except as described in Sections 4.5.4 and 4.5.5 below. In addition, all of the Restricted Shares will automatically vest in their entirety upon a Change in Control (as defined in the Plan) provided that Executive provides Continuous Service to the Company through such date. The Restricted Shares will be subject to the Plan and the execution of a Restricted Share Agreement to be entered between the Company and Executive. “**Market Capitalization**” shall be determined by multiplying the total shares of the Company’s common stock that are outstanding (including common stock issuable upon conversion, exchange or exercise of any derivative security, including without limitation, options, warrants, convertible equity or debt or restricted equity) by the last reported closing price of the Company’s common stock on a nationally recognized exchange or in the over-the-counter market.

3.5 Expense Reimbursements. The Company will reimburse Executive for all reasonable business expenses incurred by Executive in connection with the performance of her duties hereunder, subject to the Company's reimbursement policies in effect from time to time.

3.6 Benefits. Executive shall, in accordance with Company policy and the applicable plan documents, be eligible to participate in benefits under any benefit plan or arrangement that may be in effect from time to time and made available to the Company's senior management employees.

3.7 Holidays and Vacation. Executive shall be eligible to accrue up to four (4) weeks of paid vacation per year and will receive paid Company holidays in accordance with Company policy. Accrued vacation time is capped at four (4) weeks, such that once Executive has accrued four (4) weeks of vacation, no further accrual of vacation time will occur until Executive has used a portion of the previously-accrued vacation time. All available time off must be used in accordance with the Company's policies and procedures. To the extent Executive would be entitled to a greater number of vacation days or personal days under any other Company policy, such other policy shall govern. In any event, this provision and all policies related to paid time off will be construed and applied in a manner compliant with applicable law.

3.8 Withholdings. The Company may withhold from any amounts payable under this Agreement such federal, state and local taxes as the Company determines are required to be withheld pursuant to any applicable law along with any other amount properly requested by Executive.

4. Termination.

4.1 Termination by the Company. Executive's employment with the Company is at will and may be terminated by the Company at any time and for any reason, or for no reason, including, but not limited to, under the following conditions:

4.1.1 Termination by the Company for Cause. The Company may terminate Executive's employment under this Agreement for "Cause" (as defined below) by delivery of written notice to Executive in accordance with the procedures set forth in Section 4.6.2 below. Any notice of termination given pursuant to this Section 4.1.1 shall effect termination as of the date of the notice or as of such other date as specified in the notice, subject to Section 4.6.2.

4.1.2 Termination by the Company without Cause. The Company may terminate Executive's employment under this Agreement without Cause at any time and for any reason or for no reason. Such termination shall be effective on the date Executive is so informed or as otherwise specified by the Company.

4.2 Termination by Resignation of Executive. Executive's employment with the Company is at will and may be terminated by Executive at any time and for any reason or for no reason, including via a resignation for Good Reason in accordance with the procedures set forth in Section 4.6.3 below.

4.3 Termination for Death or Complete Disability. Executive's employment with the Company shall terminate effective upon the date of Executive's death or Complete Disability (as defined below).

4.4 Termination by Mutual Agreement of the Parties. Executive's employment with the Company may be terminated at any time upon a mutual agreement in writing of the Parties. Any such termination of employment shall have the consequences specified in such agreement.

4.5 Compensation Upon Termination.

4.5.1 Generally. When this Agreement is terminated for any reason, Executive, or her estate, as the case may be, will be entitled to receive the compensation and benefits earned through the effective date of termination, including, but not limited to, as applicable, any Base Salary earned by Executive, expense reimbursement amounts owed to Executive, all unpaid amounts of the Annual Bonus for the prior year, if any, Executive earned prior to the termination date by meeting the conditions set forth in Section 3.3, less standard deductions and withholdings.

4.5.2 Death or Complete Disability. If Executive's employment under this Agreement is terminated by her death or Complete Disability, then, in addition to the amounts described in Section 4.5.1, and conditioned upon Executive (or her estate or heirs as applicable) executing and not revoking a release of claims in the form attached as Exhibit B (the "**Release**") within the time periods specified therein, the Company will provide the following separation benefits: (i) the Company will continue Executive's Base Salary (at the rate in effect as of the termination) for a period of ninety (90) days beginning on the sixtieth (60th) day following the termination of Executive's employment with the Company, provided that the first installment will include all installments that would have been paid from the date of termination had the initial payment not be delayed, and (ii) Executive shall be entitled to a pro-rata share of the Annual Bonus, to be paid when and if such Annual Bonus would have been paid under this Agreement.

4.5.3 Termination For Cause or Resignation without Good Reason. If Executive's employment is terminated by the Company for Cause, or Executive resigns her employment hereunder without Good Reason, the Company shall pay Executive the amounts described in Section 4.5.1. The Company shall thereafter have no further obligations to Executive under this Agreement, except as otherwise provided by law.

4.5.4 Termination Without Cause or Resignation For Good Reason Not In Connection with a Change in Control. If Executive's employment under this Agreement is terminated by the Company without Cause or Executive resigns for Good Reason, at any time other than at the time of, or within twelve (12) months following a Change in Control, then, in addition to the amounts described in Section 4.5.1, and conditioned upon Executive executing and not revoking the Release within the time periods specified therein, the Company will provide the following separation benefits: (i) the Company will continue Executive's Base Salary (at the rate in effect as of the termination) for a period of twelve (12) months, beginning on the sixtieth (60th) day following the termination of Executive's employment with the Company, provided that the first installment will include all installments that would have been paid from the date of termination had the initial payment not be delayed; (ii) if Executive timely elects continued health insurance coverage under COBRA, the Company shall pay the entire premium necessary to continue such coverage for Executive and Executive's eligible dependents until the conclusion of the time when Executive is receiving continuation of Base Salary payments or until Executive becomes eligible for group health insurance coverage under another employer's plan, whichever occurs first, provided however that the Company has the right to terminate such payment of COBRA premiums on behalf of Executive and instead pay Executive a lump sum amount equal to the COBRA premium times the number of months remaining in the specified period if the Company determines in its discretion that continued payment of the COBRA premiums is or may be discriminatory under Section 105(h) of the Internal Revenue Code; (iii) Executive shall be entitled to a pro-rata share of the Annual Bonus for the year in which the termination occurred, to be paid when and if such Annual Bonus would have been paid under this Agreement; and (iv) immediate partial accelerated vesting of all unvested time-based equity awards with respect to the same number of shares that would have vested if Executive had continued in employment for one year after the termination date.

4.5.5 Termination Without Cause or Resignation For Good Reason In Connection with a Change in Control. If the Company terminates Executive's employment without Cause, or if Executive resigns for Good Reason, upon the occurrence of, or within the twelve (12) months following, the effective date of a Change in Control, then, in addition to the amounts described in Section 4.5.1, and conditioned upon Executive executing and not revoking the Release within the time periods specified therein, the Company will provide the following separation benefits: (i) the Company will continue Executive's Base Salary (at the rate in effect as of the termination) for a period of twelve (12) months, beginning on the sixtieth (60th) day following the termination of Executive's employment with the Company, provided that the first installment will include all installments that would have been paid from the date of termination had the initial payment not be delayed; (ii) if Executive timely elects continued health insurance coverage under COBRA, the Company shall pay the entire premium necessary to continue such coverage for Executive and Executive's eligible dependents until the conclusion of the time when Executive is receiving continuation of Base Salary payments or until Executive becomes eligible for group health insurance coverage under another employer's plan, whichever occurs first, provided however that the Company has the right to terminate such payment of COBRA premiums on behalf of Executive and instead pay Executive a lump sum amount equal to the COBRA premium times the number of months remaining in the specified period if the Company determines in its discretion that continued payment of the COBRA premiums is or may be discriminatory under Section 105(h) of the Internal Revenue Code; (iii) Executive shall be entitled to a pro-rata share of the Annual Bonus for the year in which the termination occurred, to be paid when and if such Annual Bonus would have been paid under this Agreement; and (iv) immediate accelerated vesting of all unvested equity awards such that, on the effective date of the Release, the Executive shall be vested in one hundred percent (100%) of all such equity awards.

4.6 Definitions. For purposes of this Agreement, the following terms shall have the following meanings:

4.6.1 Complete Disability. As used herein, "**Complete Disability**" means the inability of Executive, due to the condition of her physical, mental or emotional health, effectively to perform the essential functions of her job with or without reasonable accommodation for a continuous period of more than 90 days or for 90 days in any period of 180 consecutive days, as determined by the Board in consultation with an independent physician retained for such purpose. For purposes of making a determination as to whether a Complete Disability exists, at the Board's request Executive agrees to make himself available and to cooperate in a reasonable examination by the independent physician retained by the Board and to authorize the disclosure and release to the Board of all medical records related to such examination.

4.6.2 Cause. As used herein, "**Cause**" means: (i) Executive's fraud, embezzlement or misappropriation with respect to the Company, (ii) Executive's material breach of this Agreement, (iii) Executive's material breach of the PIIA, (iv) Executive's breach of fiduciary duties to the Company, (v) Executive's willful failure or refusal to perform her material duties under this Agreement or failure to follow any specific lawful instructions of the Board, (vi) Executive's conviction or plea of nolo contendere in respect of a felony or of a misdemeanor involving moral turpitude, or (vii) Executive's willful or negligent misconduct that has a material adverse effect on the property, business, or reputation of the Company. Prior to terminating Executive's employment for Cause pursuant to clauses (ii), (iii), (iv), (v) or (vii), Executive shall have thirty (30) days after Executive's receipt of written notice thereof from the Company to cure any such failure, action or breach, to the extent subject to being cured.

4.6.3 Good Reason. For purposes of this Agreement, "**Good Reason**" means the occurrence of any of the following events without Executive's consent: (i) a material reduction of Executive's Base Salary (except in connection with a Company-wide decrease in executive compensation, as provided in Section 3.1 of this Agreement) (ii) a material diminution of Executive's authority, duties, responsibilities, or line of reporting (iii) the relocation of Executive's then-principal place of employment, without Executive's consent, in a manner that lengthens her one-way commute distance by fifty (50) miles from her then-current principal place of employment immediately prior to such relocation, or (iv) the Company's material breach of this Agreement. In order for Executive to resign for Good Reason, Executive must provide written notice to the Company of the existence of the Good Reason condition within thirty (30) days of the date on which Executive discovers, or reasonably should have discovered, the existence of such Good Reason condition. Upon receipt of such notice, the Company will have thirty (30) days during which it may remedy the Good Reason condition and not be required to provide for the benefits described in Section 4.5.4 or 4.5.5 as applicable as a result of such proposed resignation. If the Good Reason condition is not remedied within such thirty (30) day period, Executive may resign based on the Good Reason condition specified in the notice effective immediately upon the expiration of the thirty (30) day cure period.

4.6.4 Change in Control. For purposes of this Agreement, "**Change in Control**" has the meaning provided to such term in the Company's 2016 Incentive Plan.

4.7 Survival of Certain Sections. Sections 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, and 18 of this Agreement will survive the termination of this Agreement.

4.8 Parachute Payment. If any payment or benefit the Executive would receive pursuant to this Agreement, either alone or together with other payments and benefits provided to her by the Company (the "**Total Payments**") would (i) constitute a "parachute payment" within the meaning of Section 280G of the Internal Revenue Code of 1986, as amended (the "**Code**"), and (ii) but for this sentence, be subject to the excise tax imposed by Section 4999 of the Code (the "**Excise Tax**"), then the Total Payments shall be reduced if and to the extent that a reduction in the Total Payments would result in Executive retaining a larger amount than if Executive received all of the Total Payments, in each case measured on an after-tax basis (taking into account federal, state, and local income taxes, and, if applicable, the Excise Tax). The determination of any reduction in the Total Payments will be made at the Company's expense by the Company's independent public accountants or a law or consulting firm selected by the Company, applying reasonable, good faith interpretations regarding the applicability of Section 280G and Section 4999, along with any other applicable portions of the Code or other tax laws. If a reduction in the Total Payment is necessary, such reduction shall occur in the following order: (i) reduction of cash payments; (ii) cancellation of accelerated vesting of equity awards other than stock options; (iii) cancellation of accelerated vesting of stock options; and (iv) reduction of other benefits paid to Executive. Within any such category of payments and benefits (that is, (i), (ii), (iii) or (iv)), a reduction shall occur first with respect to amounts that are not "deferred compensation" within the meaning of Section 409A (as defined in Section 4.9 below) and then with respect to amounts that are. In the event that acceleration of compensation from Executive's equity awards is to be reduced, such acceleration of vesting shall be canceled, subject to the immediately preceding sentence, in the reverse order of the date of grant.

4.9 Section 409A Compliance. The Parties intend that all provisions of this Agreement and the payments made pursuant thereto will comply with, or be exempt from, the application of Section 409A of the Code and the regulations and other guidance thereunder and any state law of similar effect (collectively "**Section 409A**"), and all provisions of this Agreement will be construed, to the maximum extent possible, in a manner consistent with the requirements for avoiding taxes or penalties under Section 409A. Notwithstanding anything to the contrary set forth herein, any payments and benefits provided under this Section 4 that constitute "deferred compensation" within the meaning of Section 409A will not commence in connection with Executive's termination of employment unless and until Executive has also incurred a "separation from service" (as such term is defined in Treasury Regulation Section 1.409A-1(h)), unless the Company reasonably determines that such amounts may be provided to Executive without causing Executive to incur the additional 20% tax under Section 409A. The parties intend that each installment of the separation benefits payments provided for in this Agreement is a separate "payment" for purposes of Section 409A. For the avoidance of doubt, the parties intend that payments of the Separation Benefits set forth in this Agreement satisfy, to the greatest extent possible, the exemptions from the application of Section 409A provided under Treasury Regulation Sections 1.409A-1(b)(4), 1.409A-1(b)(5) and 1.409A-1(b)(9). Executive and the Company agree to use their best efforts to amend the terms of this Agreement from time to time as may be necessary to avoid the imposition of penalties or additional taxes under Section 409A of the Internal Revenue Code; provided, however, any such amendment will provide Executive substantially equivalent economic payments and benefits as set forth herein and will not in the aggregate, materially increase the cost to, or liability of, the Company hereunder. However, if the Company determines that the Separation Benefits constitute "deferred compensation" under Section 409A and Executive is, on the termination of service, a "specified employee" of the Company or any successor entity thereto, as such term is defined in Section 409A, then, solely to the extent necessary to avoid the incurrence of the adverse personal tax consequences under Section 409A, the timing of the Separation Benefits payments will be delayed until the earlier to occur of: (i) the date that is six months and one day after Executive's separation from service, or (ii) the date of Executive's death (such applicable date, the "**Specified Employee Initial Payment Date**"), and the Company (or the successor entity thereto, as applicable) will (A) pay to Executive a lump sum amount equal to the sum of the Separation Benefits payments that Executive would otherwise have received through the Specified Employee Initial Payment Date if the commencement of the payment of the Separation Benefits had not been so delayed pursuant to this Section, and (B) commence paying the balance of the separation benefits in accordance with the applicable payment schedules set forth in this Agreement.

5. Assignment and Binding Effect.

This Agreement shall be binding upon and inure to the benefit of Executive and Executive's heirs, executors, personal representatives, assigns, administrators and legal representatives. Because of the unique and personal nature of Executive's duties under this Agreement, neither this Agreement nor any rights or obligations under this Agreement shall be assignable by Executive. This Agreement shall be binding upon and inure to the benefit of the Company and its successors, assigns and legal representatives. Any such successor of the Company will be deemed substituted for the Company under the terms of this Agreement for all purposes. For this purpose, "successor" means any person, firm, corporation or other business entity which at any time, whether by purchase, merger or otherwise, directly or indirectly acquires all or substantially all of the assets or business of the Company.

6. Notices.

All notices or demands of any kind required or permitted to be given by the Company or Executive under this Agreement shall be given in writing and shall be personally delivered (and accepted for) or mailed by certified mail, return receipt requested, postage prepaid, addressed as follows:

If to the Company:

Mustang Bio, Inc.
2 Gansevoort Street, 9th Floor
New York, New York 10014
Attn: CEO

If to Executive:

Martina A. Sersch, M.D., Ph.D.
2908 Salmon River Circle
Westlake Village, CA 91362

Any such written notice shall be deemed given on the earlier of the date on which such notice is personally delivered or three (3) days after its deposit in the United States mail as specified above. Either Party may change its address for notices by giving notice to the other Party in the manner specified in this Section.

7. Choice of Law.

This Agreement shall be construed and interpreted in accordance with the internal laws of the State of California without regard to its conflict of laws principles.

8. Integration.

This Agreement, including all documents referenced herein, contains the complete, final and exclusive agreement of the Parties relating to the terms and conditions of Executive's employment and the termination of Executive's employment, and supersedes all prior and contemporaneous oral and written employment agreements or arrangements between the Parties.

9. Amendment.

This Agreement cannot be amended or modified except by a written agreement signed by Executive and the Company.

10. Waiver.

No term, covenant or condition of this Agreement or any breach thereof shall be deemed waived, except with the written consent of the Party against whom the waiver is claimed, and any waiver or any such term, covenant, condition or breach shall not be deemed to be a waiver of any preceding or succeeding breach of the same or any other term, covenant, condition or breach.

11. Severability.

The finding by a court of competent jurisdiction of the unenforceability, invalidity or illegality of any provision of this Agreement shall not render any other provision of this Agreement unenforceable, invalid or illegal. Such court shall have the authority to modify or replace the invalid or unenforceable term or provision with a valid and enforceable term or provision, which most accurately represents the Parties' intention with respect to the invalid or unenforceable term, or provision.

12. Interpretation; Construction.

The headings set forth in this Agreement are for convenience of reference only and shall not be used in interpreting this Agreement. This Agreement has been drafted by legal counsel representing the Company, but Executive has been encouraged to consult with, and has consulted with, Executive's own independent counsel and tax advisors with respect to the terms of this Agreement. The Parties acknowledge that each Party and its counsel has reviewed and revised, or had an opportunity to review and revise, this Agreement, and any rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Agreement.

13. Attorneys' Fees.

Except as otherwise prohibited by law, in the event a Party brings an action to enforce the terms of this Agreement, in addition to any other remedies, the prevailing party in a final, non-appealable judgment by a court of competent jurisdiction will be entitled to recovery of its reasonable and documented attorneys' fees and costs incurred by it arising out of such breach or the defense thereof.

14. Representations and Warranties.

14.1 Obligations to Prior Employers. Executive represents and warrants to the Company that Executive is not obligated or restricted under any agreement (including any non-competition or confidentiality agreement), judgment, decree, order or other restraint of any kind that could impair Executive's ability to perform the duties and obligations required of Executive hereunder. Executive further represents and warrants to the Company that she has not violated any confidentiality agreement or other similar obligation that she has to any former employer and that she has not disclosed any confidential or trade secret information belonging to any former employer to the Company or its agents. Executive agrees that she will not use confidential information and/or trade secrets belonging to any former employer in her employment with the Company or otherwise as a resource for building the business of the Company and will structure her and the Company's work environment and practices in such a way to ensure that any such information will not be used or disclosed during the course of her relationship with the Company.

14.2 Litigation Support. Both during and after Executive's employment with the Company, if the Company is evaluating, pursuing, contesting or defending any proceeding, charge, complaint, claim, demand, notice, action, suit, litigation, hearing, audit, investigation, arbitration or mediation, in each case whether initiated by or against the Company (collectively, a "**Proceeding**"), other than a Proceeding initiated by or against Executive, Executive will reasonably cooperate with the Company and its counsel in the evaluation, pursuit, contest or defense of the Proceeding and provide such testimony and access to books and records as may be necessary in connection therewith. Any such cooperation shall be done at times mutually convenient for Executive and the Company, and the Company will ensure that any such cooperation does not interfere with any duties or obligations that Executive may have to a third party, including any future employer. The Company will reimburse Executive for Executive's reasonable out-of-pocket expenses related to such cooperation.

14.3 Future Employment. In the event of Executive's separation from the Company, regardless of the reason or cause of that separation, Executive agrees that for a period of twelve (12) months from the date her employment terminates, she will provide the Company with no fewer than three (3) business days' notice of her intent to accept employment with or for an organization other than Company for the express purpose of allowing the Company to determine if such proposed employment interferes with any of Executive's surviving obligations under this Agreement. The notice of intent to accept employment will identify the new employer, list Executive's anticipated title and describe her anticipated duties.

15. Indemnification.

The Company shall defend and indemnify Executive in her capacity as CMO of the Company to the fullest extent permitted under the Delaware General Corporate Law.

16. Counterparts.

This Agreement may be executed in two counterparts, each of which shall be deemed an original, all of which together shall contribute one and the same instrument. Signatures to this Agreement transmitted by fax, by email in "portable document format" (".pdf") or by any other electronic means intended to preserve the original graphic and pictorial appearance of this Agreement shall have the same effect as physical delivery of the paper document bearing original signature.

17. Jurisdiction; Venue.

The Parties agree that any litigation arising out of or related to this Agreement or Executive's employment by the Company shall be brought exclusively in any state or federal court in New York, New York. Each Party (i) consents to the personal jurisdiction of said courts, (ii) waives any venue or inconvenient forum defense to any proceeding maintained in such courts, and (iii) except as otherwise provided in this Agreement, agrees not to bring any proceeding arising out of or relating to this Agreement or Executive's employment by the Company in any other court.

18. Advertising Waiver.

Executive agrees to permit the Company, and persons or other organizations authorized by the Company, to use, publish and distribute advertising or sales promotional literature concerning the products and/or services of the Company, or the machinery and equipment used in the provision thereof, in which Executive's name and/or pictures of Executive taken in the course of Executive's provision of services to the Company appear. Executive hereby waives and releases any claim or right Executive may otherwise have arising out of such use, publication or distribution.

[Signature page follows]

In Witness Whereof, the Parties have executed this Agreement as of the date first above written.

Mustang Bio, Inc.

/s/ Manuel Litchman **Date: October 4, 2018**

Name: Manuel Litchman, M.D.

Title: President & CEO

Executive:

/s/ Martina A. Sersch **Date: October 4, 2018**

Martina A. Sersch, M.D., Ph.D.

EXHIBIT A

FORM OF PROPRIETARY INFORMATION AND INVENTIONS AGREEMENT

**MUSTANG BIO, INC.
EMPLOYEE PROPRIETARY INFORMATION
AND INVENTIONS AGREEMENT**

In consideration of my employment by Mustang Bio, Inc. (the "**Company**"), the compensation to be paid to me, and other valuable consideration, I hereby agree as follows:

1. Nondisclosure

1.1 Recognition of Company's Rights; Nondisclosure. At all times during my employment with the Company and thereafter, I will hold in strictest confidence and will not disclose, use, distribute, lecture upon, or publish any of the Company's and/or its Affiliates' Proprietary Information (defined below), except as may be required in connection with my work for the Company, or unless an officer of the Company expressly authorizes such in writing. I will obtain the Company's written approval before publishing or submitting for publication any material (written, verbal, or otherwise) that relates to my work at the Company and/or incorporates any Proprietary Information. I hereby assign to the Company any rights I may have or acquire in such Proprietary Information and recognize that all Proprietary Information shall be the sole property of the Company and its assigns. For purposes of this Agreement, "*Affiliate*" means, with respect to any specific entity, any other entity that, directly or indirectly, through one or more intermediaries, controls, is controlled by or is under common control with such specified entity. For purposes of clarification, the Company and Fortress Biotech, Inc. are Affiliates.

1.2 Proprietary Information. The term "**Proprietary Information**" shall mean any and all confidential and/or proprietary knowledge, data or information of the Company and/or its Affiliates. By way of illustration but not limitation, "**Proprietary Information**" includes (a) trade secrets, inventions, mask works, ideas, processes, formulas, screening and/or diagnostic techniques or tests, source and object codes, data, programs, other works of authorship, know-how, improvements, discoveries, developments, designs and techniques (hereinafter collectively referred to as "**Inventions**"); and (b) information, plans, strategies, and/or data regarding research, development, new products, marketing and selling, business plans, budgets and unpublished financial statements, licenses, prices and costs, suppliers and customers; and (c) information regarding the skills, potential, performance, and/or compensation of other employees of the Company and/or its Affiliates. Notwithstanding the foregoing, it is understood that I am free to use information which is generally known in the trade or industry, and which is not gained as a result of a breach of this Agreement.

1.3 Third Party Information. I understand, in addition, that the Company has received and in the future will receive from third parties confidential or proprietary information ("**Third Party Information**") subject to a duty on the Company's part to maintain the confidentiality of such information and to use it only for certain limited purposes. During the term of my employment and thereafter, I will hold Third Party Information in the strictest confidence and will not disclose to anyone (other than Company personnel who need to know such information in connection with their work for the Company) or use, except in connection with my work for the Company, Third Party Information unless expressly authorized by an officer of the Company in writing.

1.4 No Improper Use of Information of Prior Employers and Others. During my employment by the Company I will not improperly use or disclose any confidential information or trade secrets, if any, of any former employer or any other person to whom I have an obligation of confidentiality, and I will not bring onto the premises of the Company any unpublished documents or any property belonging to any former employer or any other person to whom I have an obligation of confidentiality unless consented to in writing by that former employer or person. I will use in the performance of my duties only information which is generally known and used by persons with training and experience comparable to my own, which is common knowledge in the industry or otherwise legally in the public domain, or which is otherwise provided or developed by the Company.

1.5 Employee's Acknowledgement. Nothing in this Agreement is intended to or will prohibit me from communicating with any governmental authority, or making a report in good faith and with a reasonable belief of any violations of law or regulation to a governmental authority, or from filing, testifying or participating in a legal proceeding relating to such violations, including making disclosures protected or required by any whistleblower law or regulation to the Securities and Exchange Commission, the Department of Labor, or any other appropriate government authority charged with the enforcement of any applicable laws. In addition, nothing in this Agreement is intended to or will limit any employee's right to discuss the terms, wages, and working conditions of their employment, as protected by applicable law. Pursuant to the Defend Trade Secrets Act of 2016, an individual will not be held criminally or civilly liable under any federal or state trade secret law for the disclosure of a trade secret that (i) is made (A) in confidence to a federal, state or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. An individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to his or her attorney and use the trade secret information in the court proceeding, if the individual files any document containing the trade secret under seal, and does not disclose the trade secret, except pursuant to court order.

2. Assignment of Inventions.

2.1 Proprietary Rights. The term "**Proprietary Rights**" shall mean all trade secret, patent, copyright, mask work and other intellectual property rights throughout the world.

2.2 Prior Inventions. Inventions, if any, patented or unpatented, which I made prior to the commencement of my employment with the Company are excluded from the scope of this Agreement. To preclude any possible uncertainty, *Exhibit A* hereto contains a complete list of all Inventions that I have, alone or jointly with others, conceived, developed or reduced to practice or caused to be conceived, developed or reduced to practice prior to the commencement of my employment with the Company, that I consider to be my property or the property of third parties and that I wish to have excluded from the scope of this Agreement (collectively referred to as "**Prior Inventions**"). If no Inventions are listed in *Exhibit A*, I represent that there are no Prior Inventions. If, in the course of my employment with the Company, I incorporate a Prior Invention into a Company product, process or machine, the Company is hereby granted and shall have a nonexclusive, royalty-free, irrevocable, perpetual, worldwide license (with rights to sublicense through multiple tiers of sublicensees) to make, have made, modify, use and sell such Prior Inventions. Notwithstanding the foregoing, I agree that I will not incorporate, or permit to be incorporated, Prior Inventions in any Company Inventions without the Company's prior written consent.

2.3 Assignment of Inventions. Subject to Sections 2.4, and 2.6, I hereby assign and agree to assign in the future (when any such Inventions or Proprietary Rights are first reduced to practice or first fixed in a tangible medium, as applicable) to the Company all my right, title and interest in and to any and all Inventions (and all Proprietary Rights with respect thereto) whether or not patentable or registrable under copyright or similar statutes, made or conceived or reduced to practice or learned by me, either alone or jointly with others, during the period of my employment with the Company. Inventions assigned to the Company, or to a third party as directed by the Company pursuant to this Section 2, are hereinafter referred to as "**Company Inventions**."

2.4 Nonassignable Inventions. This Agreement does not apply to any Invention that qualifies fully as a nonassignable Invention under the laws of the state where I am domiciled. Without limiting the generality of the preceding sentence, I recognize, however, that the provisions of Section 2.3 above do not apply to any Invention which qualifies fully under the provision of Section 2870 of the California Labor Code (a copy of which is attached hereto as Exhibit B).

2.5 Obligation to Keep Company Informed. During the period of my employment and for six (6) months after termination of my employment with the Company, I will promptly disclose to the Company fully and in writing all Inventions authored, conceived or reduced to practice by me, either alone or jointly with others.

2.6 Government or Third Party. I also agree to assign all my right, title and interest in and to any particular Company Invention to a third party, including without limitation the United States, as directed by the Company.

2.7 Works for Hire. I acknowledge that all original works of authorship which are made by me (solely or jointly with others) within the scope of my employment and which are protectable by copyright are "works made for hire," pursuant to United States Copyright Act (17 U.S.C., Section 101).

2.8 Enforcement of Proprietary Rights. I will assist the Company in every proper way to obtain, and from time to time enforce, United States and foreign Proprietary Rights relating to Company Inventions in any and all countries. To that end I will execute, verify and deliver such documents and perform such other acts (including appearances as a witness) as the Company may reasonably request for use in applying for, obtaining, perfecting, evidencing, sustaining and enforcing such Proprietary Rights and the assignment thereof. In addition, I will execute, verify and deliver assignments of such Proprietary Rights to the Company or its designee. My obligation to assist the Company with respect to Proprietary Rights relating to such Company Inventions in any and all countries shall continue beyond the termination of my employment, but the Company shall compensate me at a reasonable rate after my termination for the time actually spent by me at the Company's request on such assistance.

In the event the Company is unable for any reason, after reasonable effort, to secure my signature on any document needed in connection with the actions specified in the preceding paragraph, I hereby irrevocably designate and appoint the Company and its duly authorized officers and agents as my agent and attorney in fact, which appointment is coupled with an interest, to act for and in my behalf to execute, verify and file any such documents and to do all other lawfully permitted acts to further the purposes of the preceding paragraph with the same legal force and effect as if executed by me. I hereby waive and quitclaim to the Company any and all claims, of any nature whatsoever, which I now or may hereafter have for infringement of any Proprietary Rights assigned hereunder to the Company.

3. Records. I agree to keep and maintain adequate and current records (in the form of notes, sketches, drawings and in any other form that may be required by the Company) of all Proprietary Information developed by me and all Inventions made by me during the period of my employment with the Company, which records shall be available to and remain the sole property of the Company at all times.

4. Additional Activities. I agree that during the period of my employment by the Company I will not, without the Company's express written consent, engage in any employment or business activity which is competitive with, or would otherwise conflict with, my employment by the Company.

5. [Intentionally Omitted]

6. No Conflicting Obligation. I represent that my performance of all the terms of this Agreement and as an employee of the Company does not and will not breach any agreement to keep in confidence information acquired by me in confidence or in trust prior to my employment by the Company. I have not entered into, and I agree I will not enter into, any agreement either written or oral in conflict herewith.

7. Return of Company Documents. When I leave the employ of the Company, I will deliver to the Company any and all drawings, notes, memoranda, specifications, devices, formulas, and documents, together with all copies thereof, and any other material containing or disclosing any Company Inventions, Third Party Information or Proprietary Information of the Company. I further agree that any property situated on the Company's premises and owned by the Company, including but not limited to all storage media of any type, computer and related equipment, filing cabinets or other work areas, is subject to inspection by Company personnel at any time with or without notice. Prior to leaving, I will cooperate with the Company in completing and signing the Company's termination statement.

8. Legal and Equitable Remedies. Because my services are personal and unique and because I may have access to and become acquainted with the Proprietary Information of the Company, the Company shall have the right to enforce this Agreement and any of its provisions by injunction, specific performance or other equitable relief, without bond and without prejudice to any other rights and remedies that the Company may have for a breach of this Agreement.

9. Notices. Any notices required or permitted hereunder shall be given to the appropriate party at the address specified below or at such other address as the party shall specify in writing. Such notice shall be deemed given upon personal delivery to the appropriate address or if sent by certified or registered mail, three (3) days after the date of mailing.

10. Notification of New Employer. In the event that I leave the employ of the Company, I hereby consent to the notification of my new employer of my rights and obligations under this Agreement.

11. General Provisions.

11.1 Governing Law. This Agreement will be governed by and construed according to the laws of the State of California.

11.2 Severability. In case any one or more of the provisions contained in this Agreement shall, for any reason, be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect the other provisions of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein. If moreover, any one or more of the provisions contained in this Agreement shall for any reason be held to be excessively broad as to duration, geographical scope, activity or subject, it shall be construed by limiting and reducing it, so as to be enforceable to the extent compatible with the applicable law as it shall then appear.

11.3 Successors and Assigns. This Agreement will be binding upon my heirs, executors, administrators and other legal representatives and will be for the benefit of the Company, its successors, and its assigns.

11.4 Survival. The provisions of this Agreement shall survive the termination of my employment and the assignment of this Agreement by the Company to any successor in interest or other assignee.

11.5 Employment. I agree and understand that nothing in this Agreement shall confer any right with respect to continuation of employment by the Company, nor shall it interfere in any way with my right or the Company's right to terminate my employment at any time, with or without cause.

11.6 Waiver. No waiver by the Company of any breach of this Agreement shall be a waiver of any preceding or succeeding breach. No waiver by the Company of any right under this Agreement shall be construed as a waiver of any other right. The Company shall not be required to give notice to enforce strict adherence to all terms of this Agreement.

11.7 Entire Agreement. This Agreement, along with my Employment Agreement with the Company, constitutes the final, complete agreement of the parties with respect to the subject matter hereof and supersedes and merges all prior discussions between me and the Company, except as specifically noted herein. No modification or amendment to this Agreement, nor any waiver of any rights under this Agreement, will be effective unless in writing and signed by me and the Chief Executive Officer of the Company. Any subsequent change or changes in my duties, salary or compensation will not affect the validity or scope of this Agreement.

This Agreement shall be effective as of the first day of my employment with the Company.

I have read this Agreement carefully and understand its terms.

/s/ Martina A. Sersch
(Signature)

Martina A. Sersch, M.D., Ph.D.
(Printed Name)

Date: _____

Address of Residence:

Accepted and Agreed To:

Mustang Bio, Inc.

By: _____

Title: _____

Date: _____

Address:

2 Gansevoort, 9th Floor

New York, NY 10014

Exhibit A

Prior Inventions Disclosure

The following is a complete list of all Prior Inventions:

None

See immediately below:

Exhibit B

WRITTEN NOTIFICATION TO EMPLOYEE

In accordance with Section 2870 of the California Labor Code, the undersigned employee is hereby notified that the foregoing Proprietary Information and Inventions Agreement does not require him/her to assign to the Company of any Invention that the employee develops entirely on his/her own time without using the Company's equipment, supplies, facilities, or trade secret information, except for those inventions that either: (i) relate at the time of conception or reduction to practice of the invention to the Company's business, or actual or demonstrably anticipated research or development of the Company; or (ii) result from any work performed by the employee for the Company.

Below is the text of Section 2870 of the California Labor Code:

(a) Any provision in an employment agreement which provides that an employee shall assign, or offer to assign, any of his or her rights in an invention to his or her employer shall not apply to an invention that the employee developed entirely on his or her own time without using the employer's equipment, supplies, facilities, or trade secret information except for those inventions that either:

(1) Relate at the time of conception or reduction to practice of the invention to the employer's business, or actual or demonstrably anticipated research or development of the employer; or

(2) Result from any work performed by the employee for the employer.

(b) To the extent a provision in an employment agreement purports to require an employee to assign an invention otherwise excluded from being required to be assigned under subdivision (a), the provision is against the public policy of this state and is unenforceable.

The undersigned acknowledges receipt of this written notification as of the date indicated below.

EMPLOYEE:

/s/ Martina Sersch _____

Date: 10/5/18 _____

EXHIBIT B

RELEASE OF CLAIMS

THIS RELEASE OF CLAIMS (this "**Release**") is made by Martina A. Sersch, M.D., Ph.D. ("**Executive**") as of the date it is signed by Executive, as indicated on the signature page hereof.

Executive acknowledges that she previously executed an Executive Employment Agreement (the "**Agreement**") that included, among other items, a promise of severance pay and other benefits by Mustang Bio, Inc. (the "**Company**") in certain situations, contingent upon Executive's execution of a release of claims. Pursuant to the terms of the Agreement and Company's promise to provide severance pay and other benefits, Executive executes this Release.

Executive, on her own behalf and on behalf of her heirs, personal representatives, successors and assigns, hereby releases and forever discharges the Company and each of its Affiliates and each and every one of their respective present and former shareholders, directors, officers, members, employees, agents, insurers, predecessors, successors and assigns (the "**Released Parties**"), of and from any and all claims, demands, actions, causes of action, damages, costs and expenses which Executive now has or may have by reason of anything occurring, done or omitted to be done as of or prior to date she signs this Release including, but not limited to, (i) any and all claims related to Executive's employment with Company and the termination of same; (ii) any and all claims for additional compensation or benefits other than the compensation and benefits set forth in the Agreement, including but not limited to wages, commissions, deferred compensation, bonuses, or other benefits of any kind; (iii) any and all claims relating to employment practices or policies of Company or its Affiliates; (iv) any common law claims, including but not limited to wrongful discharge, breach of contract, negligent or intentional infliction of emotional distress, or negligent supervision or retention; and (v) any and all claims arising under any state or federal legislation, including, but not limited to, claims under the Employee Retirement Income Security Act, the Family Medical Leave Act, Title VII of the Civil Rights Act of 1964, as amended, the Civil Rights Act of 1991, the Age Discrimination in Employment Act, the Americans with Disabilities Act, as amended, the Older Workers Benefit Protection Act, the California Fair Employment and Housing Act, the California Family Rights Act, the California Equal Pay Law, the California Occupational Health and Safety Act of 1973, the California Labor Code, and any other federal, state or local law or regulation prohibiting employment discrimination or otherwise governing the employment relationship between Executive and Company (the "**Released Claims**").

Notwithstanding anything contained in this Release, Executive understands that she is not releasing (i) any claim for indemnification or advancement by the Company, whether pursuant to law, the Company's bylaws, or under any directors and officers insurance policy maintained by the Company (understanding that (A) this Release is not a concession, acknowledgment, or guarantee that Executive has any such rights in any given situation; (B) this Release does not create any additional rights to defense or indemnification; and (C) the Company retains any defenses it may have to such defense or indemnification); or (ii) any claims which cannot be released by private agreement as a matter of law.

Applicability to Known and Unknown Claims. Executive acknowledges that this Release applies both to known and unknown claims that may exist between Executive and the Released Parties. Executive expressly waives and relinquishes all rights and benefits which Executive may have under any state or federal statute or common law principle that would otherwise limit the effect of this Release to claims known or suspected prior to the date Executive executes this Release, and does so understanding and acknowledging the significance and consequences of such specific waiver. In addition, Executive hereby expressly understands and acknowledges that it is possible that unknown losses or claims exist or that present losses may have been underestimated in amount or severity, and Executive explicitly took that into account in giving this release.

Executive hereby waives any and all rights under California Civil Code § 1542, which provides that:

A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have materially affected his or her settlement with the debtor.

Executive further covenants and agrees that she will not sue or make any claim against any of the Released Parties on any ground arising out of or related to any of the Released Claims. Executive acknowledges and agrees that this covenant does not preclude him from filing a charge or complaint with, or cooperating in an investigation by, any government agency (including but not limited to the U.S. Equal Employment Opportunity Commission and the California Department of Fair Employment and Housing), to the extent permitted by law, but Executive expressly releases, waives, and disclaims any right to monetary damages, attorneys' fees and/or costs related to or arising from any charge, complaint or lawsuit filed by Executive or on her behalf, individually or collectively, involving the Released Parties.

In making this Release, Executive further represents and acknowledges that:

(a) She is voluntarily entering into and signing this Release;

(b) The claims waived, released and discharged in the above Release include any and all claims Executive has or may have arising out of or related to her employment with the Company and the termination of that employment, including any and all claims under the Age Discrimination in Employment Act;

(c) Those claims waived, released and discharged in this Release do not include, and Executive is not waiving, releasing or discharging, any claims that may arise after the date she signs this Release;

(d) The payments and benefits conditioned upon Executive's execution of this Release constitute consideration that Executive was not entitled to receive before the effective date of this Release absent the execution of this Release;

(e) Executive was given twenty-one (21) days within which to consider this Release;

(f) The Company has advised Executive of her right to consult with an attorney regarding this Release before executing the Release and encouraged her to exercise that right;

(g) Executive may revoke this Release at any time within seven (7) days after the date she signs this Release, and this document will not become effective or enforceable until the eighth (8th) day after the date she signs this Release (on which day this Release will automatically become effective and enforceable unless previously revoked within that seven (7) day period); and

(h) EXECUTIVE HAS CAREFULLY READ THIS DOCUMENT, AND FULLY UNDERSTANDS EACH AND EVERY TERM.

I hereby execute this Release on the ___ day of _____, _____.

Martina A. Sersch, M.D., Ph.D.

MUSTANG BIO, INC.
CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Manuel Litchman, M.D., President and Chief Executive Officer (Principal Executive Officer), certify that:

- (1) I have reviewed this Quarterly Report on Form 10-Q of Mustang Bio, Inc. (the "Registrant");
- (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 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 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 controls over financial reporting.

November 13, 2018

By: /s/ Manuel Litchman
Manuel Litchman, M.D., President and
Chief Executive Officer
(Principal Executive Officer)

MUSTANG BIO, INC.
CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Brian Achenbach, Vice President of Finance & Corporate Controller (Principal Financial Officer), certify that:

- (1) I have reviewed this Quarterly Report on Form 10-Q of Mustang Bio, Inc. (the “Registrant”);
- (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 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 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 controls over financial reporting.

November 13, 2018

By: /s/ Brian Achenbach

Brian Achenbach
Vice President of Finance & Corporate Controller
(Principal Financial Officer)

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

In connection with the Quarterly Report of Mustang Bio, Inc. (the "Company") on Form 10-Q for the quarterly period ended September 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Manuel Litchman, M.D., President and Chief Executive Officer (Principal Executive Officer), hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company, as of, and for, the periods presented in the Report.

November 13, 2018

By: /s/ Manuel Litchman
Manuel Litchman, M.D., President and
Chief Executive Officer
(Principal Executive Officer)

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

In connection with the Quarterly Report of Mustang Bio, Inc. (the "Company") on Form 10-Q for the quarterly period ended September 30, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Brian Achenbach, Vice President of Finance & Corporate Controller (Principal Financial Officer), hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company, as of, and for, the periods presented in the Report.

November 13, 2018

By: /s/ Brian Achenbach
Brian Achenbach
Vice President of Finance & Corporate Controller
(Principal Financial Officer)
