

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

FORM 10-Q

(Mark One)

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

For the quarterly period ended **June 30, 2020**

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: **001-36374**

ACTINIUM PHARMACEUTICALS, INC.
(Exact name of registrant as specified in its charter)

Delaware

(State or Other Jurisdiction of
Incorporation or Organization)

**275 Madison Ave, 7th Floor
New York, NY**

(Address of Principal Executive Offices)

74-2963609

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

10016

(Zip Code)

(646) 677-3870

(Registrant's Telephone Number, Including Area Code)

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

Title of each class	Trading Symbol	Name of exchange on which registered
Common stock, par value \$0.001	ATNM	NYSE American

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 checked="" type="checkbox"/>
		Emerging growth company	<input 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 issuer's classes of common stock, as of August 13, 2020: 13,585,222

Actinium Pharmaceuticals, Inc.
FORM 10-Q
For the six months ended June 30, 2020

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PART I - FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

The accompanying consolidated financial statements have been prepared by the Company and are unaudited. In the opinion of management, all adjustments (which include only normal recurring adjustments) necessary to present fairly the financial position at June 30, 2020 and December 31, 2019, and the results of operations and cash flows for the three and six months ended June 30, 2020 and 2019, respectively, have been made. Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States of America have been condensed or omitted. It is suggested that these financial statements be read in conjunction with the financial statements and notes thereto included in the Company's audited financial statements for the year ended December 31, 2019 in the Company's Annual Report on Form 10-K. The results of operations for the three and six months ended June 30, 2020 are not necessarily indicative of the operating results for the full year.

Actinium Pharmaceuticals, Inc.
Consolidated Balance Sheets
(amounts in thousands, except share and per share data)

	June 30, 2020	December 31, 2019
	(Unaudited)	
Assets		
Current Assets:		
Cash and cash equivalents	\$ 53,466	\$ 9,254
Restricted cash – current	48	48
Prepaid expenses and other current assets	994	786
Total Current Assets	54,508	10,088
Property and equipment, net of accumulated depreciation of \$260 and \$237, respectively	90	113
Operating leases right-of-use assets	738	807
Finance leases right-of-use assets	181	221
Security deposit	50	50
Restricted cash	391	391
Total Assets	\$ 55,958	\$ 11,670
Liabilities and Stockholders' Equity		
Current Liabilities:		
Accounts payable and accrued expenses	\$ 4,092	\$ 4,598
Note payable	154	381
Operating leases current liability	328	286
Finance leases current liability	82	79
Total Current Liabilities	4,656	5,344
Long-term operating leases obligations	419	531
Long-term finance leases obligations	109	151
Total Liabilities	5,184	6,026
Commitments and contingencies		
Stockholders' Equity:		
Preferred stock, \$0.001 par value; 50,000,000 shares authorized, 0 shares issued and outstanding	-	-
Common stock, \$0.001 par value; 1,000,000,000 shares authorized; 13,171,824 and 5,490,038 shares issued and outstanding, respectively	13	5
Additional paid-in capital	269,815	214,397
Accumulated deficit	(219,054)	(208,758)
Total Stockholders' Equity	50,774	5,644
Total Liabilities and Stockholders' Equity	\$ 55,958	\$ 11,670

See accompanying notes to the consolidated financial statements.

Actinium Pharmaceuticals, Inc.
Consolidated Statements of Operations
(Unaudited)
(amounts in thousands, except share and per share data)

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
	2020	2019	2020	2019
Revenue	\$ -	\$ -	\$ -	\$ -
Operating expenses:				
Research and development, net of reimbursements	3,508	4,010	7,659	8,345
General and administrative	1,154	1,076	2,686	2,440
Total operating expenses	<u>4,662</u>	<u>5,086</u>	<u>10,345</u>	<u>10,785</u>
Loss from operations	<u>(4,662)</u>	<u>(5,086)</u>	<u>(10,345)</u>	<u>(10,785)</u>
Other income:				
Interest income - net	37	59	50	88
Total other income	<u>37</u>	<u>59</u>	<u>50</u>	<u>88</u>
Net loss	<u>\$ (4,625)</u>	<u>\$ (5,027)</u>	<u>\$ (10,295)</u>	<u>\$ (10,697)</u>
Deemed dividend for warrant down-round protection provision	(1)	(1)	(1)	(1)
Net loss applicable to common stockholders	<u>\$ (4,626)</u>	<u>\$ (5,028)</u>	<u>\$ (10,296)</u>	<u>\$ (10,698)</u>
Net loss per share of common stock – basic and diluted	<u>\$ (0.41)</u>	<u>\$ (1.00)</u>	<u>\$ (1.20)</u>	<u>\$ (2.39)</u>
Weighted average shares of common stock outstanding, including outstanding pre-funded warrants– basic and diluted	<u>11,379,345</u>	<u>5,051,471</u>	<u>8,559,385</u>	<u>4,476,215</u>

See accompanying notes to the consolidated financial statements.

Actinium Pharmaceuticals, Inc.
Consolidated Statement of Changes in Stockholders' Equity
For the Three and Six Months Ended June 30, 2020
(Unaudited)

(amounts in thousands, except share amounts)

	<u>Common Stock</u>		<u>Additional Paid- In Capital</u>	<u>Accumulated Deficit</u>	<u>Stockholders' Equity</u>
	<u>Shares</u>	<u>Amount</u>			
Balance, January 1, 2020	5,490,038	\$ 5	\$ 214,397	\$ (208,758)	\$ 5,644
Stock-based compensation	-	-	372	-	372
Sale of common stock, net of offering costs	337,944	1	2,673	-	2,674
Net loss	-	-	-	(5,670)	(5,670)
Balance, March 31, 2020	5,827,982	6	217,442	(214,428)	3,020
Stock-based compensation	5,240	-	210	-	210
Issuance of common stock from exercise of pre-funded warrants	1,200,000	1	3	-	4
Sale of common stock and pre-funded warrants, net of offering costs	6,138,602	6	52,159	-	52,165
Deemed dividend for warrant down-round protection provision	-	-	1	(1)	-
Net loss	-	-	-	(4,625)	(4,625)
Balance, June 30, 2020	13,171,824	\$ 13	\$ 269,815	\$ (219,054)	\$ 50,774

See accompanying notes to the consolidated financial statements.

Actinium Pharmaceuticals, Inc.
Consolidated Statement of Changes in Stockholders' Equity
For the Three and Six Months Ended June 30, 2019
(Unaudited)

(amounts in thousands, except share amounts)

	<u>Common Stock</u>		<u>Additional Paid- In Capital</u>	<u>Accumulated Deficit</u>	<u>Stockholders' Equity</u>
	<u>Shares</u>	<u>Amount</u>			
Balance, January 1, 2019	3,856,768	\$ 4	\$ 195,666	\$ (186,857)	\$ 8,813
Stock-based compensation	74	-	316	-	316
Issuance of common stock from exercise of warrants	83,542	-	1,504	-	1,504
Sale of common stock, net of offering costs	30,817	-	380	-	380
Net loss	-	-	-	(5,670)	(5,670)
Balance, March 31, 2019	3,971,201	4	197,866	(192,527)	5,343
Stock-based compensation	-	-	277	-	277
Issuance of common stock from exercise of warrants	1,249	-	-	-	-
Sale of common stock and warrants, net of offering costs	1,428,667	1	15,107	-	15,108
Deemed dividend for warrant down-round protection provision	-	-	1	(1)	-
Net loss	-	-	-	(5,027)	(5,027)
Balance, June 30, 2019	5,401,117	\$ 5	\$ 213,251	\$ (197,555)	\$ 15,701

See accompanying notes to the consolidated financial statements.

Actinium Pharmaceuticals, Inc.
Consolidated Statements of Cash Flows
(Unaudited)
(amounts in thousands)

	For the Six Months Ended	
	June 30,	
	2020	2019
Cash Flows From Operating Activities:		
Net loss	\$ (10,295)	\$ (10,697)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	582	593
Depreciation & amortization expenses	216	209
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(208)	280
Accounts payable and accrued expenses	(506)	(1,111)
Operating lease liabilities	(154)	(127)
Net Cash Used In Operating Activities	(10,365)	(10,853)
Cash Flows Used In Investing Activities:		
Purchase of property and equipment	-	(59)
Net Cash Used In Investing Activities	-	(59)
Cash Flows From Financing Activities:		
Payments on note payable	(227)	(148)
Payments on finance leases	(39)	(36)
Sales of shares of common stock and pre-funded warrants, net of costs	54,839	-
Sales of shares of common stock and warrants, net of costs	-	15,488
Proceeds from exercise of pre-funded warrants	4	-
Proceeds from exercise of warrants	-	1,504
Net Cash Provided By Financing Activities	54,577	16,808
Net change in cash, cash equivalents, and restricted cash	44,212	5,896
Cash, cash equivalents, and restricted cash at beginning of period	9,693	14,104
Cash, cash equivalents, and restricted cash at end of period	\$ 53,905	\$ 20,000
Supplemental disclosure of cash flow information:		
Cash paid for interest on note payable	\$ 6	\$ 4
Cash paid for taxes	\$ -	\$ -
Supplemental disclosure of non-cash flow information:		
Deemed dividend for warrant down-round protection provision	\$ 1	\$ 1

See accompanying notes to the consolidated financial statements.

Actinium Pharmaceuticals, Inc.
Notes to Consolidated Financial Statements
(Unaudited)

Note 1 - Description of Business and Summary of Significant Accounting Policies

Nature of Business - Actinium Pharmaceuticals, Inc. (the “Company”, “Actinium”, or “We”) is a clinical-stage, biopharmaceutical company applying its proprietary platform technology and deep understanding of radioimmunobiology to the development of novel targeted therapies known as ARCs or Antibody Radiation-Conjugates.

Basis of Presentation - Unaudited Interim Financial Information - The accompanying unaudited interim consolidated financial statements and related notes have been prepared in accordance with accounting principles generally accepted in the United States of America (“U.S. GAAP”) for interim financial information, and in accordance with the rules and regulations of the United States Securities and Exchange Commission (the “SEC”) with respect to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by U.S. GAAP for complete financial statements. The unaudited interim consolidated financial statements furnished reflect all adjustments (consisting of normal recurring adjustments) which are, in the opinion of management, necessary for a fair statement of the results for the interim periods presented. Interim results are not necessarily indicative of the results for the full year. These unaudited interim consolidated financial statements should be read in conjunction with the audited consolidated financial statements and notes thereto contained in the Company’s annual report on Form 10-K for the year ended December 31, 2019.

Reverse Stock Split - On April 29, 2020, the Company received a deficiency letter from the NYSE American LLC, or NYSE American, indicating that the Company was not in compliance with the NYSE American continued listing standard set forth in Section 1003(f)(v) of the NYSE American Company Guide because its shares of common stock had been selling for a substantial period of time at a low price per share. Pursuant to Section 1003(f)(v) of the NYSE American Company Guide, the NYSE American staff determined that the Company’s continued listing is predicated on the Company effecting a reverse stock split of its common stock or otherwise demonstrating sustained price improvement within a reasonable period of time, which the staff determined to be no later than October 29, 2020.

On October 18, 2019, the Company’s board of directors, or the Board, unanimously approved, subject to stockholder approval, an amendment to the Company’s certificate of incorporation to effect a reverse stock split of its outstanding common stock by combining outstanding shares of common stock into a lesser number of outstanding shares of common stock by a ratio of not more than 1-for-75 prior to December 18, 2020, with the exact ratio to be set within this range by the Board at its sole discretion. At its Annual Meeting of Stockholders held on December 18, 2019, the Company’s stockholders approved such amendment to its certificate of incorporation.

On August 7, 2020, the Board unanimously approved a reverse stock split of its outstanding common stock by combining outstanding shares of common stock into a lesser number of outstanding shares of common stock by a ratio of 1-for-30, and on August 10, 2020, the Company filed with the Secretary of State of Delaware a certificate of amendment to its certificate of incorporation to effect the reverse stock split. The reverse stock split became effective as of 5:00 p.m. Eastern Time on August 10, 2020, and the Company's common stock began trading on a split-adjusted basis when the market opened on August 11, 2020. Accordingly, all common share and per common share data in these consolidated financial statements and related notes hereto have been retroactively adjusted to account for the effect of this reverse stock split for all periods presented. In addition, at the effective time of the reverse stock split, the number of shares of our common stock reserved for issuance upon exercise of all options and warrants to acquire common stock have been proportionally decreased, and the exercise price of all options and warrants to acquire common stock have been proportionally increased.

Principles of Consolidation - The consolidated financial statements include the Company's accounts and those of the Company's wholly owned subsidiary.

Use of Estimates in Financial Statement Presentation - The preparation of these consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the consolidated financial statements and the reported amounts of expenses during the reporting period. Actual results could differ from those estimates.

Impact of COVID-19 Pandemic on Financial Statements

In December 2019, a novel strain of COVID-19 was reported in China. Since then, COVID-19 has spread globally. The spread of COVID-19 from China to other countries has resulted in the World Health Organization ("WHO") declaring the outbreak of COVID-19 as a "pandemic," or a worldwide spread of a new disease, on March 11, 2020. Many countries around the world have imposed quarantines and restrictions on travel and mass gatherings to slow the spread of the virus and have closed non-essential businesses, and many local jurisdictions continue to have such restrictions in place.

As local jurisdictions continue to put restrictions in place, the Company's ability to continue to operate its business may also be limited. Such events may result in a period of business, supply and drug product manufacturing disruption, and in reduced operations, any of which could materially affect the Company's business, financial condition and results of operations. In response to COVID-19, the Company implemented remote working and thus far, has not experienced a significant disruption or delay in its operations as it relates to the clinical development or drug production of our drug candidates.

The spread of COVID-19, which has caused a broad impact globally, may materially affect the Company economically. While the ultimate economic impact brought by, and the duration of, the COVID-19 pandemic may be difficult to assess or predict, including new information which may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others, the pandemic has resulted significant disruptions in the general commercial activity and the global economy and caused financial market volatility and uncertainty in significant and unforeseen ways in the recent months. A continuation or worsening of the levels of market disruption and volatility seen in the recent past could have an adverse effect on the Company's ability to access capital, which could in the future negatively affect the Company's liquidity. In addition, a recession or market correction resulting from the spread of COVID-19 could materially affect the Company's business and the value of the Company's common stock.

Additionally, COVID-19 may result in delays in receiving approvals from local and foreign regulatory authorities, delays in necessary interactions with IRB's or Institutional Review Boards, local and foreign regulators, ethics committees and other important agencies and contractors due to limitations in employee resources or forced furlough of government employees.

To date, COVID-19 has not had a financial impact on the Company. However, COVID-19 has caused severe disruptions in transportation and limited access to the Company's facility, resulting in limited support from its staff and professional advisors.

Cash, Cash Equivalents and Restricted Cash - The Company considers all highly liquid accounts with original maturities of three months or less to be cash equivalents. Balances held by the Company are typically in excess of Federal Deposit Insurance Corporation insured limits.

The following is a summary of cash, cash equivalents and restricted cash at June 30, 2020 and December 31, 2019:

(in thousands)	June 30, 2020	December 31, 2019
Cash and cash equivalents	\$ 53,466	\$ 9,254
Restricted cash – current	48	48
Restricted cash – long-term	391	391
Cash, cash equivalents and restricted cash	<u>\$ 53,905</u>	<u>\$ 9,693</u>

Current restricted cash relates to credit card accounts, while long-term restricted cash relates to a certificate of deposit held as collateral for a letter of credit issued in connection with the Company's lease for corporate office space.

Leases – The Company has operating and finance leases for corporate office space, office equipment and furniture located at the corporate office space. Leases with an initial term of 12 months or less are not recorded on the balance sheet; lease expense for these leases is recognized on a straight-line basis over the lease term.

Fair Value of Financial Instruments - Fair value is defined as the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants. A fair value hierarchy has been established for valuation inputs that gives the highest priority to quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs.

Research and Development Costs - Research and development costs are expensed as incurred. These costs include the costs of manufacturing drug product, the costs of clinical trials, costs of employees and associated overhead, and depreciation and amortization costs related to facilities and equipment. Research and development reimbursements are recorded by the Company as a reduction of research and development costs.

Share-Based Payments - The Company estimates the fair value of each stock option award at the grant date by using the Black-Scholes option pricing model. The fair value determined represents the cost for the award and is recognized over the vesting period during which an employee is required to provide service in exchange for the award. The Company accounts for forfeitures of stock options as they occur.

Net Loss Per Common Share- Basic loss per common share is computed by dividing the net loss available to common stockholders by the weighted average number of common shares outstanding during the reporting period. For periods of net income, and when the effects are not anti-dilutive, diluted earnings per share is computed by dividing net income available to common stockholders by the weighted-average number of shares outstanding plus the impact of all potential dilutive common shares, consisting primarily of common shares underlying common stock options and warrants using the treasury stock method. The Company issued pre-funded warrants in April 2020 and June 2020 that are considered outstanding shares for the purposes of calculating net loss per common share, see Note 4 for additional information. Since the shares underlying the outstanding 2.3 million pre-funded warrants are issuable for negligible consideration and are fully vested and exercisable, they are considered outstanding for the calculations of both basic and diluted loss per share.

For periods of net loss, diluted loss per share is calculated similarly to basic loss per share because the impact of all potential dilutive common shares is anti-dilutive. For the six months ended June 30, 2020 and 2019, the Company's potentially dilutive shares, which include outstanding common stock options and warrants have not been included in the computation of diluted net loss per share as the result would have been anti-dilutive.

(in thousands)	June 30, 2020	June 30, 2019
Options	365	264
Warrants	2,871	2,878
Total	<u>3,236</u>	<u>3,142</u>

Accounting Standards Recently Adopted

In August 2018, FASB issued ASU 2018-13, *Fair Value Measurement - Disclosure Framework (Topic 820)*. The updated guidance improves the disclosure requirements on fair value measurements, primarily associated with Level 3 fair value measurements and 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 standard for disclosures modified or removed with a delay of adoption of the additional disclosures until their effective date. The Company adopted this standard effective January 1, 2020 and the standard did not have a significant impact to the Company's financial statements.

In November 2018, FASB issued ASU 2018-18, *Collaborative Arrangements (Topic 808): Clarifying the Interaction Between Topic 808 and Topic 606*, which, among other things, provides guidance on how to assess whether certain collaborative arrangement transactions should be accounted for under Topic 606. The amendments in this ASU are effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019, with early adoption permitted. The Company adopted this standard effective January 1, 2020 and the standard did not have a significant impact to the Company's financial statements.

Note 2 - Commitments and Contingencies

Agreements

The Company has entered into agreements with third parties for the rights to certain intellectual property, manufacturing and clinical trial services under which the Company may incur obligations to make payments including upfront payments as well as milestone and royalty payments. Notable inclusions in this category are:

- a. Oak Ridge National Laboratory ("ORNL") – The Company is contracted to purchase radioactive material to be used for research and development, with a renewal option at the contract end. During the six months ended June 30, 2020 and 2019, the Company purchased material from ORNL of \$0.1 million in each period. In November 2019, the Company signed a contract with ORNL to purchase \$0.3 million of radioactive material during calendar year 2020.
- b. On June 15, 2012, the Company entered into a license and sponsored research agreement with Fred Hutchinson Cancer Research Center ("FHCRC") to build upon previous and ongoing clinical trials with BC8 (licensed antibody). FHCRC has completed both a Phase 1 and Phase 2 clinical trial with BC8. The Company has been granted exclusive rights to the BC8 antibody and related master cell bank developed by FHCRC. A milestone payment of \$1 million will be due to FHCRC upon FDA approval of the first drug utilizing the licensed BC 8 antibody. Upon commercial sale of the drug, royalty payments of 2% of net sales will be due to FHCRC.

Collaborative Agreement

In March 2018, the Company entered into a research and option agreement with Astellas Pharma Inc. ("Astellas") to develop ARCs using the Company's AWE Technology Platform. Under this collaboration, the Company will utilize its AWE Platform to conjugate and label selected Astellas targeting agents with an Actinium-225 payload. The Company is also responsible for conducting preclinical validation studies on any ARCs generated. Payments from Astellas under this agreement are accounted for as a reduction to research and development expense.

Note 3 - Leases

The Company adopted ASC 842 as of January 1, 2019, using a modified retrospective approach and applying the standard's transition provisions at January 1, 2019, the effective date. The Company made an accounting policy election to exclude from balance sheet reporting those leases with initial terms of 12 months or less.

The Company determines if an arrangement is a lease at inception. This determination generally depends on whether the arrangement conveys to the Company the right to control the use of a fixed asset for a period of time in exchange for consideration. Control of an underlying asset is conveyed to the Company if the Company obtains the rights to direct the use of and to obtain substantially all of the economic benefits from using the underlying asset. The Company has lease agreements which include lease and non-lease components, which the Company has elected to account for as a single lease component for all classes of underlying assets. Lease expense for variable lease components are recognized when the obligation is probable.

Right-of-use assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. ASC 842 requires a lessee to discount its unpaid lease payments using the interest rate implicit in the lease or, if that rate cannot be readily determined, its incremental borrowing rate. As an implicit interest rate is not readily determinable in the Company's leases, the incremental borrowing rate is used based on the information available at commencement date in determining the present value of lease payments.

The lease term for all of the Company's leases includes the non-cancellable period of the lease plus any additional periods covered by either a Company option to extend (or not to terminate) the lease that the Company is reasonably certain to exercise, or an option to extend (or not to terminate) the lease controlled by the lessor. Options for lease renewals have been excluded from the lease term (and lease liability) for the majority of the Company's leases as the reasonably certain threshold is not met.

At June 30, 2020, the Company has an operating lease for corporate office space and two finance leases for office equipment and furniture located in the corporate office space. In addition, the Company has auxiliary corporate office space that it rents on a month-to-month basis; this rental is accounted for as an operating lease with the same term as the Company's main office in the same building.

The components of lease expense are as follows:

(in thousands)	Three months ended		Six months ended	
	June 30, 2020	June 30, 2019	June 30, 2020	June 30, 2019
Operating lease expense	\$ 93	\$ 93	\$ 186	\$ 186
Finance lease cost				
Amortization of right-to-use assets	\$ 21	\$ 20	\$ 41	\$ 41
Interest on lease liabilities	\$ 4	\$ 6	\$ 9	\$ 11
Total finance lease cost	\$ 25	\$ 26	\$ 50	\$ 52

Supplemental cash flow information related to leases are as follows:

Cash flow information:	Six months ended	
	June 30, 2020	June 30, 2019
(in thousands)		
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flow use from operating leases	\$ 188	\$ 172
Operating cash flow use from finance leases	\$ 9	\$ 12
Financing cash flow use from finance leases	\$ 39	\$ 36
Non-cash activity:		
Right-of-use assets obtained in exchange for lease obligations:		
Operating leases	\$ 83	\$ 1,177
Finance Leases	\$ -	\$ 302

Weighted average remaining lease terms are as follows at June 30, 2020:

Weighted average remaining lease term:	
Operating leases	2.2 years
Finance Leases	2.2 years

As the Company's leases do not provide an implicit rate, the Company used its incremental borrowing rate based on the information available at adoption date in determining the present value of lease payments. Below is information on the weighted average discount rates used:

Weighted average discount rates:	
Operating leases	8%
Finance Leases	8%

Maturities of lease liabilities are as follows:

(in thousands)	Operating Leases	Finance Leases
Year ending December 31,		
2020 (excluding six months ended June 30, 2020)	187	47
2021	377	94
2022	252	64
2023	-	4
Total lease payments	\$ 816	\$ 209
Less imputed interest	(69)	(18)
Present value of lease liabilities	<u>\$ 747</u>	<u>\$ 191</u>

Note 4 - Equity

On August 7, 2020, the Board unanimously approved a reverse stock split of its outstanding common stock by combining outstanding shares of common stock into a lesser number of outstanding shares of common stock by a ratio of 1-for-30, and on August 10, 2020, the Company filed with the Secretary of State of Delaware a certificate of amendment to its certificate of incorporation to effect the reverse stock split. Accordingly, all common share and per common share data in these consolidated financial statements and related notes hereto have been retroactively adjusted to account for the effect of this reverse stock split for all periods presented.

On April 24, 2020, the Company issued and sold 4.3 million shares of common stock and 2.8 million pre-funded warrants to purchase shares of common stock. The price to the public in this offering for each share of common stock was \$4.50 and for each pre-funded warrant was \$4.497. Each pre-funded warrant has an exercise price of \$0.003 per share and is exercisable immediately upon issuance. The pre-funded warrants are subject to certain limitations on beneficial ownership. Gross proceeds from this offering to Actinium were \$31.6 million, before deducting underwriting discounts and commissions and other offering expenses payable by the Company. Net proceeds from this offering were \$29.1 million.

In June 2020, holders of 1.2 million pre-funded April 2020 warrants exercised their warrants at \$0.003 per share and received 1.2 million shares of common stock.

On June 19, 2020, the Company issued and sold 1.9 million shares of common stock and 0.7 million pre-funded warrants to purchase shares of common stock. The price to the public in this offering for each share of common stock was \$9.75 and for each pre-funded warrant was \$9.747. Each pre-funded warrant has an exercise price of \$0.003 per share and is exercisable immediately upon issuance. The pre-funded warrants are subject to certain limitations on beneficial ownership. Gross proceeds from this offering to Actinium were \$25.0 million, before deducting underwriting discounts and commissions and other offering expenses payable by the Company. Net proceeds from this offering were \$23.0 million.

In December 2018, the Company entered into the Amended and Restated At Market Issuance Sales Agreement with B. Riley FBR, Inc. and JonesTrading Institutional Services LLC, pursuant to which the Company conducted its at-the market program. During the six months ended June 30, 2020, the Company sold 0.3 million common shares through its at-the-market program, resulting in net proceeds of \$2.5 million.

In October 2018, the Company and Lincoln Park Capital Fund, LLC (“Lincoln Park”) entered into a purchase agreement and a registration rights agreement, pursuant to which the Company has the right to sell to Lincoln Park shares of the Company’s common stock having an aggregate value of up to \$32.5 million, subject to certain limitations and conditions set forth in the agreement. During the six months ended June 30, 2020, the Company elected to sell to Lincoln Park 27 thousand shares and received \$0.2 million.

In June 2020, the Company issued 5 thousand shares of restricted common stock, valued at \$30 thousand, for consulting services.

For the six months ended June 30, 2019, holders of March 2018 series A warrants exercised 83 thousand shares, resulting in the Company receiving \$1.5 million. The remaining March 2018 series A warrants expired in March 2019.

The Company has outstanding warrants to purchase 1,907 shares of common stock that include down-round protection. For warrants with down-round protection, a deemed dividend is recorded for the change in fair value of the warrants when the down-round provision is triggered. As result of the April 2019 offering, the exercise price of the warrant was reset from \$37.50 per share to \$26.40 per share. As a result of the April 2020 offering and June 2020 offering, the exercise price of the warrant was reset from \$26.40 per share to \$15.60 per share. The down-round protection provision in the above warrants created a deemed dividend to common stockholders of \$1 thousand in the six months ended June 30, 2020 and 2019, which are reflected in the accompanying consolidated statement of operations and consolidated statement of changes in stockholders’ equity.

Stock Options

The following is a summary of stock option activity for the six months ended June 30, 2020:

(in thousands, except for per-share amounts)	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding, December 31, 2019	380	\$ 35.10	7.88	\$ -
Granted	-			
Cancelled	(15)	15.86		
Outstanding, June 30, 2020	<u>365</u>	36.00	7.49	519
Exercisable, June 30, 2020	<u>194</u>	56.43	6.47	112

During the six months ended June 30, 2020, options to purchase 15 thousand shares were cancelled upon the termination of employment for several employees.

The fair values of all options issued and outstanding are being amortized over their respective vesting periods. The unrecognized compensation expense at June 30, 2020 was \$1.5 million related to unvested options, which is expected to be expensed over a weighted average of 2.8 years. During the six months ended June 30, 2020 and 2019, the Company recorded compensation expense related to stock options of \$0.5 million and \$0.3 million, respectively.

Pre-funded Warrants

As part of the April 2020 offering and the June 2020 offering, the Company issued pre-funded warrants. Each pre-funded warrant has an exercise price of \$0.003 per share and is exercisable immediately upon issuance. The pre-funded warrants are subject to certain limitations on beneficial ownership. The pre-funded warrants do not have an expiration date. Management determined that the pre-funded warrants are freestanding instruments and that the pre-funded warrants should be classified as permanent equity in accordance with authoritative guidance.

Following is a summary of pre-funded warrant activity for the six months ended June 30, 2020.

(in thousands, except for per-share amounts)	Number of Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding, December 31, 2019	-	\$ -	\$ -
Granted	3,459	0.003	
Exercised	(1,200)	0.003	
Outstanding, June 30, 2020	<u>2,259</u>	\$ 0.003	\$ 23,814
Exercisable, June 30, 2020	<u>2,259</u>	\$ 0.003	\$ 23,814

Warrants

Following is a summary of warrant activity for the six months ended June 30, 2020:

(in thousands, except for per-share amounts)	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding, December 31, 2019	2,871	\$ 20.71	2.95	\$ 301
Granted	-	-		
Exercised	-	-		
Cancelled/Expired	-	-		
Outstanding, June 30, 2020	<u>2,871</u>	\$ 20.71	2.45	\$ 497
Exercisable, June 30, 2020	<u>2,865</u>	\$ 20.37	2.45	\$ 496

Subsequent Events

In July 2020, holders of 0.4 million pre-funded April 2020 and June 2020 warrants exercised their warrants at \$0.003 per share and received 0.4 million shares of common stock. Holders of 2 thousand April 2019 warrants exercised their warrants at \$15.00 per share and received 2 thousand shares.

In August 2020, the Company filed a registration statement including a base prospectus which covers the offering, issuance and sale of up to \$500 million of common stock, preferred stock, warrants, units and/or subscription rights; and a sales agreement prospectus covering the offering, issuance and sale of up to a maximum aggregate offering price of \$200 million of common stock that may be issued and sold under the Capital on Demand™ Sales Agreement with JonesTrading Institutional Services LLC.

Since June 30, 2020, the Company has issued stock options for 357,189 shares to employees and 33,332 shares to non-employee directors.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATION

FORWARD-LOOKING STATEMENT NOTICE

This Form 10-Q contains certain forward-looking statements. For this purpose, any statements contained in this Form 10-Q that are not statements of historical fact may be deemed to be forward-looking statements. Without limiting the foregoing, words such as "may," "will," "expect," "believe," "anticipate," "estimate" or "continue" or comparable terminology are intended to identify forward-looking statements. These statements by their nature involve substantial risks and uncertainties, and actual results may differ materially depending on a variety of factors, many of which are not within our control. These factors include but are not limited to economic conditions generally and in the industries in which we may participate; competition within our chosen industry, including competition from much larger competitors; technological advances and failure to successfully develop business relationships.

Description of Business

Actinium Pharmaceuticals, Inc. is a clinical-stage, biopharmaceutical company applying its proprietary platform technology and deep understanding of radioimmunobiology to the development of novel targeted therapies known as ARCs or Antibody Radiation-Conjugates. Radiation is an effective therapeutic modality that is used in the treatment of over fifty percent of all cancer patients and often combined with chemotherapy and immunotherapy for greater therapeutic effect. Radiation is typically administered from outside the body, which constrains the amount that can be administered to patients due to dose-limiting toxicities. In addition, due to the diffuse nature of the external radiation beam, its usage is limited to solid tumors and cannot be used in blood cancers, which are diffuse. ARCs combine the cell-killing ability of a radioisotope payload with a targeting agent, such as a monoclonal antibody, or mAb, to deliver radiation inside the body to specific cells, to potentially generate greater efficacy and less toxicity. ARCs usage is broader than external delivered radiation as they can be used for both solid tumors and blood cancers. Blood or hematologic cancers are highly sensitive to radiation and our clinical pipeline is focused on ARCs targeting the antigens CD45 and CD33, both of which are expressed in multiple hematologic cancers. Our clinical programs are focused on two primary areas: targeted conditioning prior to a cell or gene therapy procedure and therapeutics, either in combination with other agents or as a monotherapy. Our product development strategy is actively informed by clinical data with our ARCs in over 500 patients, including the ongoing SIERRA trial. Our clinical pipeline has emanated from our AWE, or Antibody Warhead Enabling technology platform, which is protected by over 120 issued and pending patents, trade secrets and know-how and is being utilized in a collaborative research partnership with Astellas Pharma, Inc.

We are advancing the only multi-target, multi-indication clinical-stage pipeline for targeted conditioning and the only ARC-based targeted conditioning regimens in development. Our ARCs for targeted conditioning are intended to potentially enable improved access to cell-based therapies with curative potential, including BMT, or bone marrow transplant, ACT, or adoptive cell therapy such as CAR-T, and Gene Therapy, as well as improved outcomes. Conditioning in the context of BMT, ACT or Gene Therapy is the act of depleting certain blood and immune-forming cells, including bone marrow stem cells and, in some cases, diseased cells prior to transplanting new cells into a patient. Currently, conditioning is accomplished using a combination of chemotherapeutic agents and external radiation. These non-targeted conditioning regimens may prevent a patient from receiving a potentially curative therapy and hinder outcomes due to their toxicities. ARCs have the potential to increase patient access and outcomes by way of their ability to selectively deplete targeted cells while sparing normal healthy cells. We use our ARCs at high isotope dose levels to achieve myeloablation, which fully depletes bone marrow stem cells and at lower isotope dose levels to achieve lymphodepletion, which spares bone marrow stem cells from depletion. In addition, dosing may be titrated downward from myeloablative doses to achieve partial myeloablation, which may be appropriate for certain gene therapy programs.

CD45 Targeted Conditioning Program

Our CD45 ARC is comprised of the anti-CD45 monoclonal antibody known as apamistamab (formerly BC8) and the radioisotope I-131 or Iodine-131. CD45 is an antigen expressed on leukemia, lymphoma and myeloma cancer cells, as well as nucleated immune cells, but is not expressed outside of the hematopoietic, or blood, system. This unique expression on blood cancer and immune cells enables simultaneous depletion of both cell types, making CD45 an optimal antigen for targeted conditioning applications. CD45 is a cell surface antigen with an average expression of 200,000 copies per cell, however, it only internalizes at a rate of 10-15%. We believe our ARC approach is the most effective method to target CD45 positive cells, as the radioisotope payload linear energy transfer can readily ablate a targeted cell without requiring payload internalization like an antibody drug conjugate or rely on biological effector function processes like a naked antibody. Furthermore, since CD45 expression level varies from low to high antigen density as the immune cells become more terminally differentiated, we can selectively condition depending on the therapeutic application, from full myeloablation to transient lymphodepletion, by adjusting the dose or intensity of the I-131 isotope payload. Full myeloablation can be achieved with high doses of I-131, as its energy pathlength and crossfire effect can penetrate into bone marrow niches to target and deplete blood and immune system forming bone marrow stem cells. Myeloablation is applicable to autologous or allogeneic BMT and to autologous gene-edited or modified therapies that can reconstitute a patient's blood and immune systems. Alternatively, low doses of I-131 can be transiently lymphodepleting and spare a patient's bone marrow stem cells, which we believe is ideal for ACT applications such as CAR-T. We intend to develop our CD45 targeted conditioning program for BMT, ACT and Gene Therapy applications for malignant and non-malignant diseases.

Our lead CD45 targeted conditioning product candidate is Iomab-B, which uses high doses of I-131 to achieve myeloablative conditioning prior to a BMT. Iomab-B is currently being studied in the pivotal Phase 3 Study of Iomab-B in Elderly Relapsed or Refractory AML, or SIERRA, clinical trial for targeted conditioning prior to an allogeneic BMT for patients with active, relapsed or refractory (r/r) Acute Myeloid Leukemia, or AML, who are age 55 or older. Patients with active, r/r AML are not normally considered eligible for BMT and the SIERRA trial is the only randomized Phase 3 trial to offer BMT as a treatment option for this patient population. The SIERRA trial compares outcomes of patients randomized to receive Iomab-B and a BMT (the study arm) to those patients randomized to receive physician's choice of salvage chemotherapy (the control arm). Salvage chemotherapy is also defined as conventional care, as no standard of care exists for this patient population. Patients who fail to achieve a CR or Complete Response on the control arm are ineligible to proceed to a BMT, but the trial design permits these patients to "cross over" to receive the study arm treatment if they meet the eligibility criteria. The primary endpoint of the SIERRA trial is durable Complete Remission, or dCR, of six months and the secondary endpoint is one-year Overall Survival, or OS. When the crossover patients receive Iomab-B and BMT, they have not achieved remission with their salvage therapy and are considered to be failures for the primary endpoint of the study. The SIERRA trial is currently active at 20 sites in the United States and Canada, which includes many of the leading BMT sites based on volume. We expect to complete enrollment of the SIERRA trial and have topline data that we believe will support the submission of a Biologics License Application, or BLA, with the U.S. Food and Drug Administration, or FDA, in 2021. If approved, we expect our initial commercial launch would target the leading 50-100 BMT and medical centers that perform the vast majority of BMT's in the United States. In the European Union or EU, we received favorable feedback from the European Medicines Agency or EMA via their scientific advice program that the trial design, primary endpoint and planned statistical analysis from the SIERRA trial are acceptable as the basis for a Marketing Authorization Application or MAA. Additionally, the EMA commented that it does not anticipate the need for further standalone preclinical toxicology or safety studies. Overall, transplant procedures in the EU are approximately fifty percent higher than in the United States with a similar market dynamic with a majority of BMT volume being conducted in a concentrated number of leading medical centers. We intend to secure a partner for Iomab-B in the EU.

Safety and feasibility data from the first 75 patients enrolled on the SIERRA trial, which represents 50% of the total of 150 patients to be enrolled in the trial, was presented in an oral presentation at the Transplantation & Cellular Therapy Meetings of the American Society for Transplantation and Cellular Therapy (ASTCT) and Center for International Bone & Marrow Transplant Research (CIBMTR) in February 2020. It was reported that 100% of patients (31/31) on the study arm that received a therapeutic dose of Iomab-B received a BMT, with a median time to BMT of 30 days, and all patients achieved neutrophil and platelet engraftment in a median time of 20 days despite a high median blast count of 30%. On the control arm, only 18% of patients (7/38) achieved remission after salvage therapy, and then received a BMT with a median time to BMT of 67 days and median blast count of 26%. Of the 82% of patients failing to achieve a CR with conventional care (31/38), 20 patients were eligible to cross over to the study arm. These patients are considered as having failed the primary endpoint of the study. All crossover patients who received the therapeutic dose of Iomab-B (20/20) received a BMT, with a median time to BMT of 64 days and all patients achieved engraftment in a median time of 19 days despite high median blast count of 35% at time of crossover. It was also reported that 100-day non-relapse transplant-related mortality (100-day TRM) of the study or Iomab-B arm was 6% (2/31) of patients that received a BMT compared to 29% of patients (2/7) who received a BMT after salvage therapy on the control arm. The universal engraftment rate and low 100-day TRM rate of the Iomab-B arm resulted in 29 patients potentially evaluable for the primary endpoint compared to 5 patients in the control arm, a nearly six times difference.

The SIERRA trial is powered for up to two interim analyses of the primary endpoint of dCR of 180 days exercisable at our discretion and triggered by an enrollment range of 70 to 110 patients. We exercised a single ad-hoc analysis in the second quarter of 2020, based on the data reported from SIERRA thus far and the status of enrollment at the time of triggering our ad hoc analysis. The ad hoc analysis is expected to be completed by the end of 2020, which could generate topline data for the primary endpoint and early termination of the trial if positive. Based on the statistical plan of the study, a single ad-hoc analysis would result in a minimal alpha spend of no more than 0.00925, depending on the number of patients included in the ad-hoc analysis.

Our Iomab-ACT program is intended for targeted conditioning prior to ACT or Gene Therapy and uses the same ¹³¹I-apamistamab ARC construct as Iomab-B at varying doses. At lower doses of one-eighth to one-sixth of the myeloablative dose, it is applicable for lymphodepletion prior to CAR-T or certain Gene Therapy applications where stem cell myeloablation is not necessary. At higher doses it is applicable for Gene Therapy applications where stem cell myeloablation is necessary.

In January 2020, we announced a collaboration with University of California Davis to utilize Iomab-ACT conditioning in an ongoing Phase 1/2 trial with a novel anti-HIV autologous stem cell gene therapy for patients with HIV-related lymphoma. We believe this to be the first Gene Therapy trial to use an ARC-based conditioning regimen. ¹³¹I-Apamistamab has clinical proof of concept as a targeted conditioning regimen for patients with high-risk, relapsed or refractory lymphoma prior to an autologous stem cell transplant from a previous study, where a favorable safety profile with no dose-limiting toxicities and minimal non-hematologic toxicities were observed and promising efficacy with median overall survival not reached (range: 29 months to not reached) and 31% of patients in prolonged remission at a median of 36 months follow up (range: 25 – 41 months). In this study, Iomab-ACT is intended to replace the chemotherapy-based condition regimen known as BEAM (BCNU/carmustine, etoposide, cytarabine, and melphalan) to simultaneously kill the patient's lymphoma cells and deplete the patient's stem cells to make room for the transplant. Upon engraftment, the transplanted gene-modified autologous stem cells containing three anti-HIV genes are intended to equip the patient with a new immune system that is resistant to the HIV virus. Iomab-ACT will be substituted for BEAM in the ongoing Phase 1/2 trial and we expect to have clinical proof of concept data in 2021.

We believe our Iomab-ACT program is highly differentiated when compared to Fludarabine and Cyclophosphamide or Flu/Cy or other chemotherapy-based regimens that are used as the standard of practice today for lymphodepletion prior to CAR-T. CD45 is an antigen expressed on certain immune cell types that are relevant to the mechanism of CAR-T therapies including lymphocytes, regulatory T cells and macrophages that have been associated with clinical responses that may limit the safety, efficacy and durability of response of these CAR-T therapies including Cytokine Release Syndrome, or CRS, and neurotoxicity. Some of these limitations may be attributable to the chemotherapy-based conditioning agents that are being used prior to CAR-T therapies. Preclinical data supporting the rationale for our Iomab-ACT program was presented at multiple medical conferences in 2019. Unlike chemotherapy, preclinical data suggests Iomab-ACT is targeted in nature and, due to this targeted effect, we expect we can improve CAR-T cell expansion more efficiently, potentially resulting in responses that are more durable, but also resulting in reduced CAR-T related toxicities. Importantly, we expect the Iomab-ACT program construct to enable lymphodepletion through a single-dose, outpatient administration versus Flu/Cy or other chemotherapy-based lymphodepletion regimens that can require multiple infusion cycles over several days. Because of this potentially superior profile, the Iomab-ACT construct could result in improved access to CAR-T therapy and better outcomes. We intend to begin a clinical trial with ¹³¹I-apamistamab as a targeted conditioning agent prior to CAR-T, subject to identifying a suitable partner and we expect to have Phase 1 clinical proof of concept data in 2021.

CD33 Program: Targeted Conditioning, Combinations and Therapeutics

Our CD33 program is evaluating the clinical utility of an ARC comprised of the anti-CD33 mAb lintuzumab linked to the potent alpha-emitting radioisotope Actinium-225 or Ac-225. CD33 is expressed in the majority of patients with AML and myelodysplastic syndrome, or MDS, as well as approximately one third of patients with multiple myeloma. Our CD33 development program is driven by data obtained from over one hundred treated patients, including results from a Phase 1/2 trial that was conducted in 58 patients with newly diagnosed AML, which was completed in 2018. This clinical data, as well as our experience with Iomab-B, is shaping a two-pronged approach with our CD33 program, where at high doses we are exploring its use for targeted conditioning and at low doses we are exploring its use for therapeutic purposes in combination with other modalities, such as chemotherapy, targeted agents or immunotherapy.

Actimab-MDS is our second clinical trial focused on targeted conditioning, in this case for patients with high-risk MDS and is our second pivotal program. Actimab-MDS is informed by prior experience with our CD33 ARC in multiple trials for patients with AML, MDS and for patients that have progressed from MDS to AML, which is also known as secondary AML. Data from these trials showed that our CD33 ARC had single-agent activity capable of producing complete remissions (CRs) in certain patients at varying dose levels with minimal non-hematologic extramedullary toxicities. However, dose-dependent myelosuppression, a class effect of CD33 directed therapies, was seen in many of these patients. Given that myelosuppression is necessary prior to a BMT and that a BMT can rescue patients with myelosuppression, we decided to pursue a trial in targeted conditioning in high-risk MDS patients with this ARC in combination with Reduced Intensity Conditioning, or RIC, regimens. RIC regimens are comprised of low doses of chemotherapies such as fludarabine, cytarabine, busulfan or melphalan. A BMT is the only curative treatment option for these patients with high-risk MDS who have poor, or very poor cytogenetics. However, these patients have poor outcomes due to high relapse rates following a BMT. Based on our interactions with FDA to date, we will conduct a Phase 1 dose-finding clinical trial that will be followed by a randomized trial that, depending on the results observed, may potentially serve as a pivotal trial to support the submission of a BLA. We are currently finalizing discussions with the FDA.

We are also studying our CD33 ARC construct at various dose levels and dosing regimens in combination with other therapeutic modalities such as chemotherapy, targeted agents or immunotherapy in CD33 expressing hematologic disease indications. We believe that radiation can be synergistic when used in combination with these modalities based on mechanistic rationale supported by our own clinical data, preclinical research and scientific and clinical evidence in the literature. We have prioritized our efforts and resources in favor of combination trials for our CD33 program development strategy rather than single agent trials, which we are no longer advancing at this time. Our CD33 ARC development program encompasses the following ongoing and planned trials:

Combination Trials:

- Phase 1 investigator initiated Actimab-A + CLAG-M combination trial with the salvage chemotherapy regimen CLAG-M (cladribine, cytarabine, filgrastim and mitoxantrone) for patients with relapsed or refractory AML at the Medical College of Wisconsin. At the 2019 American Society of Hematology Annual Meeting, it was reported that 86% of patients (6/7) receiving 0.50 $\mu\text{Ci}/\text{kg}$ of Actimab-A, and CLAG-M achieved a complete remission after receiving Actimab-A + CLAG-M, which is nearly 60% greater than the 55% remission rate observed in a study of CLAG-M alone conducted at MCW in the same r/r AML patient population. In addition, 71% of these patients (5/7) achieved negative minimal residual disease status, indicating that these are deep remissions. The 0.50 $\mu\text{Ci}/\text{kg}$ dose of Actimab-A was shown to be subtherapeutic as a single agent. Since the combination to date has been well tolerated, the study progressed to the third and final cohort for the study of Actimab-A at a dose of 0.75 $\mu\text{Ci}/\text{kg}$ in March 2020 and we expect to complete this trial by the end of 2020. Upon completion, we intend to explore a regulatory pathway for a pivotal trial that could potentially support a registration. The combination of Actimab-A + CLAG-M is supported by mechanistic rationale for combining inhibitors of DNA replication and/or repair processes such as mitoxantrone, a topoisomerase-II inhibitor, and radiation, as imparted by tumor targeting of Ac-225 with Actimab-A. The Actimab-A + CLAG-M combination study has provided proof of principle that the addition of subtherapeutic doses of Actimab-A to other AML therapies can lead to well tolerated regimens with improved responses.

Phase 1 Actimab-A + Ven combination trial with the BCL-2 inhibitor Venetoclax (Ven) for patients with relapsed or refractory AML. This trial will be led by UCLA Medical Center and will be conducted at three additional trial sites. This combination is supported by mechanistic evidence in preclinical studies using Ven-resistant AML tumor cell lines. In these models, we have demonstrated that Actimab-A can deplete Mcl-1 and Bcl-XL, two proteins implicated in mediating resistance to venetoclax, in addition to causing potentially lethal double-stranded DNA breaks in these CD33 targeted cells. Furthermore, in vivo studies in animal models of Ven-resistant AML demonstrated robust tumor regression and improved survival in cohorts receiving the Actimab-A Ven combination compared to Ven alone. The rationale for this clinical study is that the addition of Actimab-A will: 1) have a direct anti-tumor effect via double-stranded DNA breaks and 2) deplete Mcl-1 and BCL-XL making the AML cells more susceptible to Ven. We expect to initiate the trial and have preliminary proof of concept clinical data from this combination study by the end of 2020.

- Phase 1 Actimab-A + 7+3 combination trial in patients with newly diagnosed AML with intermediate or high-risk cytogenetics or molecular markers. In February 2020, we announced plans to initiate this combination trial to add Actimab-A to 7+3, which is the standard of care chemotherapy regimen comprised of cytarabine and daunorubicin for patients with newly diagnosed AML who are fit for intensive therapy. As we have seen with the combination of Actimab-A + CLAG-M chemotherapy, we believe that Actimab-A will have synergistic and potentiating properties when added to 7+3, which causes DNA damage and has radiation sensitizing properties since daunorubicin is an anthracycline antibiotic that cytotoxicity inhibits DNA replication and repair and RNA synthesis through inhibition of topoisomerase II. The rationale for studying Actimab-A in combination with 7+3 is the potential for both additive and synergistic effects due to the interplay of various mechanisms including DNA damage from alpha radiation and the chemotherapy combination, radiation sensitization, and prevention of DNA damage repair. We expect to initiate this Phase 1 trial by the end of 2020 and have proof of concept data in 2021.

Antibody Warhead Enabling Technology Platform

Our proprietary Antibody Warhead Enabling, or AWE, Technology Platform is supported by intellectual property, know-how and trade secrets that cover the generation, development, methods of use and manufacture of ARCs and certain of their components. Our AWE technology patent portfolio includes 29 patent families comprised of over 120 issued and pending patent applications, of which 9 are issued and 25 pending in the United States, and 92 are issued or pending internationally. The effective life of the patents in our portfolio range from expirations between 2021 and 2040. Our technology enables the direct labeling, or conjugation and labeling, of a biomolecular targeting agent to a radionuclide warhead and its development and use as a therapeutic regimen for the treatment of diseases such as cancer. Our AWE intellectual property covers various methods of use for ARCs in multiple diseases, including indication, dose and scheduling, radionuclide warhead, and therapeutic combinations.

Recent Developments

Impact of COVID-19 Pandemic

In December 2019, a novel strain of COVID-19 was reported in China. Since then, COVID-19 has spread globally. The spread of COVID-19 from China to other countries has resulted in the World Health Organization (WHO) declaring the outbreak of COVID-19 as a “pandemic,” or a worldwide spread of a new disease, on March 11, 2020. Many countries around the world have imposed quarantines and restrictions on travel and mass gatherings to slow the spread of the virus and have closed non-essential businesses, and as of the date of this prospectus, many local jurisdictions continue to have such restrictions in place.

As many local jurisdictions continue to have such restrictions in place, our ability to continue to operate our business may also be limited. Such events may result in a period of business, supply and drug product manufacturing disruption, and in reduced operations, any of which could materially affect our business, financial condition and results of operations. In response to COVID-19, we implemented remote working and thus far have not experienced a significant disruption or delay in our operations as it relates to the clinical development of our drug candidates. Such government-imposed precautionary measures may have been relaxed in certain countries or states, but there is no assurance that more strict measures will be put in place again due to a resurgence in COVID-19 cases. Therefore, the COVID-19 pandemic may continue to affect our operation, may further divert the attention and efforts of the medical community to coping with COVID-19 and disrupt the marketplace in which we operate and may have a material adverse effect on our operations.

The spread of COVID-19, which has caused a broad impact globally, may materially affect us economically. While the ultimate economic impact brought by, and the duration of, the COVID-19 pandemic may be difficult to assess or predict, including new information which may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others, the pandemic has resulted significant disruptions in the general commercial activity and the global economy and caused financial market volatility and uncertainty in significant and unforeseen ways in the recent months. A continuation or worsening of the levels of market disruption and volatility seen in the recent past could have an adverse effect on our ability to access capital, which could in the future negatively affect our liquidity. In addition, a recession or market correction resulting from the spread of COVID-19 could materially affect our business and the value of our common stock.

Currently, the Phase 3 SIERRA trial for our lead program, Iomab-B, continues to remain active at a majority of our clinical trial sites, with investigators providing feedback that recruitment and enrollment will remain active because of the acute nature of the disease, the high unmet needs of patients with relapsed or refractory AML, the potentially curative nature of BMT and the differentiated profile of Iomab-B. Certain sites that had not been actively enrolling due to COVID-19 have resumed recruitment and enrollment, and we currently anticipate that other sites that have not been actively enrolling due to COVID-19 will likely resume recruitment and enrollment in the summer timeframe. We also believe our earlier stage clinical trials for our CD33 program will also continue to recruit and enroll patients given the acute nature of relapsed or refractory AML. The continuation of the pandemic could adversely affect our planned clinical trial operations, including our ability to conduct the trials on the expected timelines and recruit and retain patients and principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19 if their geography is impacted by the pandemic. Further, the continuation and/or resurgence of the COVID-19 pandemic could result in delays in our clinical trials due to prioritization of hospital resources toward the pandemic, restrictions in travel, potential unwillingness of patients to enroll in trials at this time, or the inability of patients to comply with clinical trial protocols if quarantines or travel restrictions impede patient movement or interrupt healthcare services. In addition, we rely on independent clinical investigators, contract research organizations and other third-party service providers to assist us in managing, monitoring and otherwise carrying out our preclinical studies and clinical trials, and the pandemic may affect their ability to devote sufficient time and resources to our programs or to travel to sites to perform work for us.

Additionally, COVID-19 may result in delays in receiving approvals from local and foreign regulatory authorities, delays in necessary interactions with IRB's or Institutional Review Boards, local and foreign regulators, ethics committees and other important agencies and contractors due to limitations in employee resources or forced furlough of government employees.

To date, COVID-19 has not had a financial impact on our company. However, COVID-19 has caused severe disruptions in transportation and limited access to our facility, resulting in limited support from our staff and professional advisors.

The ultimate impact from COVID-19 on our business operations and financial results during 2020 will depend on, among other things, the ultimate severity and scope of the pandemic, the pace at which governmental and private travel restrictions and public concerns about public gatherings will ease, the rate at which historically large increases in unemployment rates will decrease, if at all, and whether, and the speed with which the economy recovers. We are not able to fully quantify the impact that these factors will have on our financial results during 2020 and beyond, but developments related to COVID-19 may materially affect us in 2020.

Reverse Stock Split

On April 29, 2020, we received a deficiency letter from the NYSE American LLC, or the NYSE American, indicating that we are not in compliance with certain NYSE American continued listing standards. The deficiency letter stated that our shares of common stock have been selling for a low price per share for a substantial period of time. Pursuant to Section 1003(f)(v) of the Company Guide, the NYSE American staff determined that our continued listing is predicated on us effecting a reverse stock split of our common stock or otherwise demonstrating sustained price improvement within a reasonable period of time, which the staff determined to be until October 29, 2020.

The letter further stated that as a result of the foregoing, we have become subject to the procedures and requirements of Section 1009 of the NYSE American Company Guide, which could, among other things, result in the initiation of delisting proceedings, unless we cure the deficiency in a timely manner. Our common stock will continue to be listed on the NYSE American while we attempt to regain compliance with the listing standards, subject to our compliance with other continued listing requirements.

In addition, the NYSE American has advised us that its policy is to immediately suspend trading in shares of, and commence delisting procedures with respect to, a listed company if the market price of its shares falls below \$0.06 per share at any time during the trading day.

On October 18, 2019, our board of directors unanimously approved, subject to stockholder approval, an amendment to our certificate of incorporation to effect a reverse stock split of our outstanding common stock by combining outstanding shares of common stock into a lesser number of outstanding shares of common stock by a ratio of not more than 1-for-75 prior to December 18, 2020, with the exact ratio to be set within this range by our board of directors at its sole discretion. On December 18, 2019, at our 2019 Annual Meeting of Stockholders, our stockholders approved such proposed amendment to our certificate of incorporation. The primary intent of effecting the reverse stock split, would be to ensure that we are able to maintain compliance with the listing standards of the NYSE American.

On August 7, 2020, the Board unanimously approved a reverse stock split of its outstanding common stock by combining outstanding shares of common stock into a lesser number of outstanding shares of common stock by a ratio of 1-for-30, and on August 10, 2020, we filed with the Secretary of State of Delaware a certificate of amendment to its certificate of incorporation to effect the reverse stock split. The reverse stock split became effective as of 5:00 p.m. Eastern Time on August 10, 2020, and our common stock began trading on a split-adjusted basis when the market opened on August 11, 2020. Accordingly, all common share and per common share data in these consolidated financial statements and related notes hereto have been retroactively adjusted to account for the effect of this reverse stock split for all periods presented. In addition, at the effective time of the reverse stock split, the number of shares of our common stock reserved for issuance upon exercise of all options and warrants to acquire common stock have been proportionally decreased, and the exercise price of all options and warrants to acquire common stock have been proportionally increased. In addition, we adjusted and proportionately decreased the total number of shares of our common stock that may be the subject of the future grants under our stock plans.

Results of Operations – Three Months Ended June 30, 2020 Compared to Three Months Ended June 30, 2019

The following table sets forth, for the periods indicated, data derived from our statements of operations:

(in thousands)	For the Three Months Ended June 30,	
	2020	2019
Revenue	\$ -	\$ -
Operating expenses:		
Research and development, net of reimbursements	3,508	4,010
General and administrative	1,154	1,076
Total operating expenses	4,662	5,086
Other income:		
Interest income – net	37	59
Total other income	37	59
Net loss	\$ (4,625)	\$ (5,027)

Revenue

We recorded no commercial revenue for the three months ended June 30, 2020 and 2019.

Research and Development Expense

Research and development expenses decreased \$0.5 million to \$3.5 million for the three months ended June 30, 2020 compared to \$4.0 million for the three months ended June 30, 2019. The decrease in expenses was primarily due to manufacturing related to the antibody component of Iomab-B, as in prior periods we have manufactured sufficient antibody supply for the SIERRA trial and other planned trials.

General and Administrative Expenses

General and administrative expenses of \$1.2 million for the three months ended June 30, 2020 increased \$0.1 million from the \$1.1 million recorded for the three months ended June 30, 2019, primarily attributable to higher professional fees.

Other Income

Other income is comprised of net interest income in both reporting periods. The amount for the three months ended June 30, 2020 of \$37 thousand fell from \$59 thousand for the three months ended June 30, 2019, primarily due to lower interest rates.

Net Loss

Net loss of \$4.6 million for the three months ended June 30, 2020 decreased by \$0.4 million from the prior-year comparison period due to lower research and development expenses.

Results of Operations – Six Months Ended June 30, 2020 Compared to Six Months Ended June 30, 2019

The following table sets forth, for the periods indicated, data derived from our statements of operations:

(in thousands)	For the Six Months Ended June 30,	
	2020	2019
Revenue	\$ -	\$ -
Operating expenses:		
Research and development, net of reimbursements	7,659	8,345
General and administrative	2,686	2,440
Total operating expenses	10,345	10,785
Other income:		
Interest income – net	50	88
Total other income	50	88
Net loss	\$ (10,295)	\$ (10,697)

Revenue

We recorded no commercial revenue for the six months ended June 30, 2020 and 2019.

Research and Development Expense

Research and development expenses decreased \$0.6 million to \$7.7 million for the six months ended June 30, 2020 compared to \$8.3 million for the six months ended June 30, 2019. The decrease in expenses was primarily due to manufacturing related to the antibody component of Iomab-B, as in prior periods we have manufactured sufficient antibody supply for the SIERRA trial and other planned trials.

General and Administrative Expenses

General and administrative expenses of \$2.7 million for the six months ended June 30, 2020 increased \$0.3 million compared to \$2.4 million for the six months ended June 30, 2019, primarily attributable to higher professional fees.

Other Income

Other income is comprised of net interest income in both reporting periods. The amount for the six months ended June 30, 2020 of \$50 thousand fell from \$88 thousand for the six months ended June 30, 2019 primarily due to lower interest rates.

Net Loss

Net loss of \$10.3 million for the six months ended June 30, 2020 decreased \$0.4 million from \$10.7 million reported in the prior-year comparison period, primarily due to lower research and development expenses, slightly offset by higher general and administrative expenses.

Liquidity and Capital Resources

We have financed our operations primarily through sales of our common stock and warrants. The following tables sets forth selected cash flow information for the periods indicated:

(in thousands)	For the Six Months Ended	
	June 30,	
	2020	2019
Cash used in operating activities	\$ (10,365)	\$ (10,853)
Cash used in investing activities	-	(59)
Cash provided by financing activities	54,577	16,808
Net change in cash, cash equivalents and restricted cash	\$ 44,212	\$ 5,896

Net cash used in operating activities for the six months ended June 30, 2020 of \$10.4 million decreased by \$0.5 million from \$10.9 million in the prior-year period, reflecting the lower net loss due to lower research and development expenses, as well as the timing of payments to vendors.

Net cash provided by financing activities was \$54.6 million for the six months ended June 30, 2020, reflecting sales of common stock and pre-funded warrants. During the six months ended June 30, 2019, net cash provided by financing activities was \$16.8 million, reflecting \$15.5 million in proceeds from the sale of common stock, plus \$1.5 million in proceeds from the exercise of warrants.

On April 24, 2020, we issued and sold 4.3 million shares of common stock and pre-funded warrants to purchase 2.8 million shares of common stock. The price to the public for each share of common stock sold in the offering was \$4.50, and the price to the public for each pre-funded warrant sold in the offering was \$4.497. The pre-funded warrants are exercisable at an exercise price of \$0.003 per share and are subject to certain limitations on beneficial ownership. Gross proceeds from this offering were \$31.6 million, before deducting underwriting discounts and commissions and other offering expenses payable by us. Net proceeds from the offering were approximately \$29.1 million. In June 2020, holders of 1.2 million pre-funded April 2020 warrants exercised their warrants and received 1.2 million shares of common stock.

On June 19, 2020, we issued and sold 1.9 million shares of common stock and pre-funded warrants to purchase 0.7 million shares of common stock. The price to the public in this offering for each share of common stock was \$9.75 and for each pre-funded warrant was \$9.747. Each pre-funded warrant has an exercise price of \$0.003 per share and is exercisable immediately upon issuance. Gross proceeds from this offering to us were \$25.0 million, before deducting underwriting discounts and commissions and other offering expenses payable us. Net proceeds from this offering were approximately \$23.0 million.

In December 2018, we entered into the Amended and Restated At Market Issuance Sales Agreement with B. Riley FBR, Inc. and JonesTrading Institutional Services LLC, pursuant to which we conducted our at-the market program. During the six months ended June 30, 2020, we sold 0.3 million common shares through its at-the-market program, resulting in net proceeds of \$2.5 million.

In October 2018, we and Lincoln Park Capital Fund, LLC (“Lincoln Park”) entered into a purchase agreement and a registration rights agreement, pursuant to which we have the right to sell to Lincoln Park shares of our common stock having an aggregate value of up to \$32.5 million, subject to certain limitations and conditions set forth in the agreement. During the six months ended June 30, 2020, we elected to sell to Lincoln Park 27 thousand shares and received \$0.2 million.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that have, or are reasonably likely to have a current or future effect on our financial condition, changes in financial condition, revenue or expenses, results of operations, liquidity, capital expenditures or capital resources that is material to investors.

Critical Accounting Policies and Use of Estimates

Our management’s discussion and analysis of financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States, or GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities and expenses and the disclosure of contingent assets and liabilities in our consolidated financial statements during the reporting periods. These items are monitored and analyzed by us for changes in facts and circumstances, and material changes in these estimates could occur in the future. We base our estimates on historical experience, known trends and events, and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Changes in estimates are reflected in reported results for the period in which they become known. Actual results may differ materially from these estimates under different assumptions or conditions.

Our significant accounting policies are described in detail in the notes to our consolidated financial statements appearing in our Annual Report filed on Form 10-K for the year ended December 31, 2019.

Fair Value of Financial Instruments

Fair value is defined as the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants. A fair value hierarchy has been established for valuation inputs that gives the highest priority to quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs.

Research and Development Costs

Research and development costs are expensed as incurred. These costs include the costs of manufacturing drug components and final drug product, the costs of clinical trials, costs of employees and associated overhead, and depreciation and amortization costs related to facilities and equipment. Research and development reimbursements are recorded by us as a reduction of research and development costs.

Share-Based Payments

We estimate the fair value of each stock option award at the grant date by using the Black-Scholes option pricing model. The fair value determined represents the cost for the award and is recognized over the vesting period during which an employee is required to provide service in exchange for the award. We account for forfeitures of stock options as they occur.

Accounting Standards Recently Adopted -

In August 2018, FASB issued ASU 2018-13, *Fair Value Measurement - Disclosure Framework (Topic 820)*. The updated guidance improves the disclosure requirements on fair value measurements, primarily associated with Level 3 fair value measurements and 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 standard for disclosures modified or removed with a delay of adoption of the additional disclosures until their effective date. We adopted this standard effective January 1, 2020 and the standard did not have a significant impact to our financial statements.

In November 2018, FASB issued ASU 2018-18, *Collaborative Arrangements (Topic 808): Clarifying the Interaction Between Topic 808 and Topic 606*, which, among other things, provides guidance on how to assess whether certain collaborative arrangement transactions should be accounted for under Topic 606. The amendments in this ASU are effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019, with early adoption permitted. We adopted this standard effective January 1, 2020 and the standard did not have a significant impact to our financial statements.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Not applicable.

ITEM 4. CONTROLS AND PROCEDURES.

Evaluation of Disclosure Controls and Procedures. Under the supervision and with the participation of our management, including our chief executive officer and principal financial and accounting officer, we conducted an evaluation of the effectiveness, as of June 30, 2020, of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act. Based upon such evaluation, our chief executive officer and principal financial and accounting officer have concluded that, as of June 30, 2020, our disclosure controls and procedures were effective to provide reasonable assurance that the information we are required to disclose in our filings with the Securities and Exchange Commission, or SEC, under the Exchange Act (i) is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and (ii) accumulated and communicated to our management, including our chief executive officer and principal financial and accounting officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting. There were no changes in our system of internal controls over financial reporting during the period covered by this report that has 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

In analyzing our company, you should consider carefully the following risk factors, together with all of the other information included in this Quarterly Report on Form 10-Q. Factors that could cause or contribute to differences in our actual results include those discussed in the following subsection, as well as those discussed above in “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and in our Annual Report filed on Form 10-K for the year ended December 31, 2019. Each of the following risk factors, either alone or taken together, could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our company. The risks and uncertainties described below are not the only ones we face. Additional risks not currently 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

We are a clinical-stage company and have generated no revenue from commercial sales to date.

We are a clinical-stage biopharmaceutical company with a limited operating history. We have no products approved for commercial sale and have not generated any revenue from product sales to date. We will encounter risks and difficulties frequently experienced by early-stage companies in rapidly evolving fields. If we do not address these risks successfully, our business will suffer.

We have incurred net losses in every year since our inception and anticipate that we will continue to incur net losses in the future.

We are not profitable and have incurred losses in each period since our inception. As of June 30, 2020 and December 31, 2019, we had an accumulated deficit of \$219.1 million and \$208.8 million, respectively. We reported a net loss of \$10.3 million and \$10.7 million for the six months ended June 30, 2020 and June 30, 2019, respectively. We expect to continue to operate at a net loss as we continue our research and development efforts, continue to conduct clinical trials and develop manufacturing, sales, marketing and distribution capabilities. There can be no assurance that the products under development by us will be approved for sale in the United States or elsewhere. Furthermore, there can be no assurance that if such products are approved, they will be successfully commercialized, which would have an adverse effect on our business prospects, financial condition and results of operation.

If we fail to obtain additional financing, we will be unable to continue or complete our product development and you will likely lose your entire investment.

On April 24, 2020, we issued and sold 4.3 million shares of common stock and pre-funded warrants to purchase 2.8 million shares of common stock. Gross proceeds from this offering to us were \$31.6 million, before deducting underwriting discounts and commissions and other offering expenses payable by us. On June 19, 2020, we issued and sold 1.9 million shares of common stock and 0.7 million pre-funded warrants to purchase shares of common stock. Gross proceeds from this offering to us were \$25.0 million, before deducting underwriting discounts and commissions and other offering expenses payable us. As of the date of filing this report, we expect that our existing resources will be more than sufficient to fund our planned operations for more than 12 months following the date of this report.

Our business or operations may change in a manner that would consume available funds more rapidly than anticipated and substantial additional funding may be required to maintain operations, fund expansion, develop new or enhanced products, acquire complementary products, business or technologies or otherwise respond to competitive pressures and opportunities, such as a change in the regulatory environment or a change in preferred cancer treatment modalities. However, we may not be able to secure funding when we need it or on favorable terms or indeed on any terms. In addition, from time to time, we may not be able to secure enough capital in a timely enough manner which may cause the generation of a going-concern opinion from our auditors which can and may impair our stock market valuation and also our ability to finance on favorable terms or indeed on any terms.

To raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders.

If we cannot raise adequate funds to satisfy our capital requirements, we will have to delay, scale back or eliminate our research and development activities, clinical studies or future operations. We may also be required to obtain funds through arrangements with collaborators, which arrangements may require us to relinquish rights to certain technologies or products that we otherwise would not consider relinquishing, including rights to future product candidates or certain major geographic markets. We may further have to license our technology to others. This could result in sharing revenues which we might otherwise have retained for ourselves. Any of these actions may harm our business, financial condition and results of operations.

The amount of funding we will need depends on many factors, including the progress, timing and scope of our product development programs; the progress, timing and scope of our preclinical studies and clinical trials; the time and cost necessary to obtain regulatory approvals; the time and cost necessary to further develop manufacturing processes and arrange for contract manufacturing; our ability to enter into and maintain collaborative, licensing and other commercial relationships; and our partners' commitment of time and resources to the development and commercialization of our products.

We have limited access to the capital markets and even if we can raise additional funding, we may be required to do so on terms that are dilutive to you.

We have limited access to the capital markets to raise funds. The capital markets have been unpredictable in the recent past for radioisotope and other oncology companies and unprofitable companies such as ours. Furthermore, the COVID-19 pandemic has created significant economic uncertainty and volatility in the credit and capital markets. A continuation or worsening of the levels of market disruption and volatility seen in the recent past could have an adverse effect on our ability to access capital. In addition, it is generally difficult for development-stage companies to raise capital under current market conditions. The amount of capital that a company such as ours is able to raise often depends on variables that are beyond our control. As a result, we may not be able to secure financing on terms attractive to us, or at all. If we are able to consummate a financing arrangement, the amount raised may not be sufficient to meet our future needs. If adequate funds are not available on acceptable terms, or at all, our business, including our technology licenses, results of operations, financial condition and our continued viability will be materially adversely affected.

We are highly dependent on the success of Iomab-B and the SIERRA trial and we may not be able to complete the necessary clinical development or our development efforts may not result in the data necessary to receive regulatory approval.

Iomab-B, which we licensed from the Fred Hutchinson Cancer Research Center in June 2012 is our lead program to which we allocate a significant portion of our resources. We are currently enrolling patients in the pivotal Phase 3 SIERRA trial (Study of Iomab-B in Elderly Relapsed or Refractory AML), a 150-patient multi-center randomized trial that will compare outcomes of patients who receive Iomab-B and a BMT to those patients receiving physician's choice of salvage chemotherapy, defined as conventional care, as no standard of care exists for this patient population. The SIERRA trial may be unsuccessful and fail to demonstrate a safety and efficacy profile that is necessary to receive favorable regulatory approval. The trial's DMC or Data Monitoring Committee may recommend that the trial be stopped early for safety or efficacy concerns, which could prevent us from completing the SIERRA trial. Even if Iomab-B receives favorable regulatory approval, we may not be successful in securing adequate reimbursement or establishing successful commercial operations. Any or all of these factors could have a material adverse impact on our business and ability to continue operations.

We may be unable to establish sales, marketing and commercial supply capabilities.

We do not currently have, nor have we ever had, commercial sales and marketing capabilities. If any of our product candidates become approved, we would have to build and establish these capabilities in order to commercialize our approved product candidates. The process of establishing commercial capabilities will be expensive and time consuming. Even if we are successful in building sales and marketing capabilities, we may not be successful in commercializing any of our product candidates. Any delays in commercialization or failure to successfully commercialize any product candidate may have material adverse impacts on our business and ability to continue operations.

Our business could be adversely affected by the effects of health epidemics, including the global COVID-19 pandemic.

In December 2019, a novel strain of COVID-19 was reported in China. Since then, COVID-19 has spread globally. The spread of COVID-19 from China to other countries has resulted in the World Health Organization (WHO) declaring the outbreak of COVID-19 as a “pandemic,” or a worldwide spread of a new disease, on March 11, 2020. Many countries around the world have imposed quarantines and restrictions on travel and mass gatherings to slow the spread of the virus and have closed non-essential businesses, and many local jurisdictions continue to have such restrictions in place.

As many local jurisdictions continue to have such restrictions in place, our ability to continue to operate our business may also be limited. Such events may result in a period of business, supply and drug product manufacturing disruption, and in reduced operations, any of which could materially affect our business, financial condition and results of operations. In response to COVID-19, we implemented remote working and thus far have not experienced a significant disruption or delay in our operations as it relates to the clinical development of our drug candidates. Such government-imposed precautionary measures may have been relaxed in certain countries or states, but there is no assurance that more strict measures will be put in place again due to a resurgence in COVID-19 cases. Therefore, the COVID-19 pandemic may continue to affect our operation, may further divert the attention and efforts of the medical community to coping with COVID-19 and disrupt the marketplace in which we operate and may have a material adverse effect on our operations.

The spread of COVID-19, which has caused a broad impact globally, may materially affect us economically. While the ultimate economic impact brought by, and the duration of, the COVID-19 pandemic may be difficult to assess or predict, including new information which may emerge concerning the severity of COVID-19 and the actions to contain COVID-19 or treat its impact, among others, the pandemic has resulted in significant disruptions in the general commercial activity and the global economy and caused financial market volatility and uncertainty in significant and unforeseen ways in the recent months. A continuation or worsening of the levels of market disruption and volatility seen in the recent past could have an adverse effect on our ability to access capital, which could in the future negatively affect our liquidity. In addition, a recession or market correction resulting from the spread of COVID-19 could materially affect our business and the value of our common stock.

Currently, the Phase 3 SIERRA trial for our lead program, Iomab-B, continues to remain active at a majority of our clinical trial sites, with investigators providing feedback that recruitment and enrollment will remain active because of the acute nature of the disease, the high unmet needs of patients with relapsed or refractory AML, the potentially curative nature of BMT and the differentiated profile of Iomab-B. Certain sites that had not been actively enrolling due to COVID-19 have resumed recruitment and enrollment, and we currently anticipate that other sites that have not been actively enrolling due to COVID-19 will likely resume recruitment and enrollment in the summer timeframe. We also believe our earlier stage clinical trials for our CD33 program will also continue to recruit and enroll patients given the acute nature of relapsed or refractory AML. The continuation of the pandemic globally could adversely affect our planned clinical trial operations, including our ability to conduct the trials on the expected timelines and recruit and retain patients and principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19 if their geography is impacted by the pandemic. Further, the continuation and/or resurgence of the COVID-19 pandemic could result in delays in our clinical trials due to prioritization of hospital resources toward the pandemic, restrictions in travel, potential unwillingness of patients to enroll in trials at this time, or the inability of patients to comply with clinical trial protocols if quarantines or travel restrictions impede patient movement or interrupt healthcare services. In addition, we rely on independent clinical investigators, contract research organizations and other third-party service providers to assist us in managing, monitoring and otherwise carrying out our preclinical studies and clinical trials, and the pandemic may affect their ability to devote sufficient time and resources to our programs or to travel to sites to perform work for us.

Additionally, COVID-19 may result in delays in receiving approvals from local and foreign regulatory authorities, delays in necessary interactions with IRB's or Institutional Review Boards, local and foreign regulators, ethics committees and other important agencies and contractors due to limitations in employee resources or forced furlough of government employees.

COVID-19 has caused severe disruptions in transportation and limited access to our facility, resulting in limited support from our staff and professional advisors. The small size of our accounting staff and the additional responsibilities emanating from COVID-19 presented difficulties to our ability to complete our Annual Report on Form 10-K and our Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, resulting in the delay of filing of each of those reports.

The ultimate impact from COVID-19 on our business operations and financial results during 2020 will depend on, among other things, the ultimate severity and scope of the pandemic, the pace at which governmental and private travel restrictions and public concerns about public gatherings will ease, the rate at which historically large increases in unemployment rates will decrease, if at all, and whether, and the speed with which the economy recovers. We are not able to fully quantify the impact that these factors will have on our financial results during 2020 and beyond, but developments related to COVID-19 may materially affect us in 2020.

Our business is subject to cybersecurity risks.

Our operations are increasingly dependent on information technologies and services. Threats to information technology systems associated with cybersecurity risks and cyber incidents or attacks continue to grow, and include, among other things, storms and natural disasters, terrorist attacks, utility outages, theft, viruses, phishing, malware, design defects, human error, and complications encountered as existing systems are maintained, repaired, replaced, or upgraded. Risks associated with these threats include, among other things:

- theft or misappropriation of funds;
- loss, corruption, or misappropriation of intellectual property, or other proprietary, confidential or personally identifiable information (including supplier, clinical data or employee data);
- disruption or impairment of our and our business operations and safety procedures;
- damage to our reputation with our potential partners, patients and the market;
- exposure to litigation;
- increased costs to prevent, respond to or mitigate cybersecurity events.

Although we utilize various procedures and controls to mitigate our exposure to such risk, cybersecurity attacks and other cyber events are evolving and unpredictable. Moreover, we have no control over the information technology systems of third parties conducting our clinical trials, our suppliers, and others with which our systems may connect and communicate. As a result, the occurrence of a cyber incident could go unnoticed for a period time.

We do not presently maintain insurance coverage to protect against cybersecurity risks. If we procure such coverage in the future, we cannot ensure that it will be sufficient to cover any particular losses we may experience as a result of such cyberattacks. Any cyber incident could have a material adverse effect on our business, financial condition and results of operations.

Risks Related to Regulation

The FDA or comparable foreign regulatory authorities may disagree with our regulatory plans and we may fail to obtain regulatory approval of our product candidates.

Our products are subject to rigorous regulation by the FDA and numerous other federal, state and foreign governmental authorities. The process of seeking regulatory approval to market an antibody radiation-conjugate product is expensive and time-consuming, and, notwithstanding the effort and expense incurred, approval is never guaranteed. If we are not successful in obtaining timely approval of our products from the FDA, we may never be able to generate significant revenue and may be forced to cease operations. In particular, the FDA permits commercial distribution of a new antibody radiation-conjugate product only after a BLA for the product has received FDA approval. The BLA process is costly, lengthy and inherently uncertain. Any BLA filed by us will have to be supported by extensive data, including, but not limited to, technical, preclinical, clinical trial, manufacturing and labeling data, to demonstrate to the FDA's satisfaction the safety and efficacy of the product for its intended use. The lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our product candidates, which would significantly harm our business, results of operations and prospects. In addition, even if we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may 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. Any of the foregoing scenarios could materially harm the commercial prospects for our product candidates.

The approval process in the United States and in other countries could result in unexpected and significant costs for us and consume management's time and other resources. The FDA and other foreign regulatory agencies could ask us to supplement our submissions, collect non-clinical data, conduct additional clinical trials or engage in other time-consuming actions, or it could simply deny our applications. In addition, even if we obtain approval to market our products in the United States or in other countries, the approval could be revoked, or other restrictions imposed if post-market data demonstrates safety issues or lack of effectiveness. We cannot predict with certainty how, or when, the FDA or other regulatory authorities will act. If we are unable to obtain the necessary regulatory approvals, our financial condition and cash flow may be materially adversely affected, and our ability to grow domestically and internationally may be limited. Additionally, even if we obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request. The Company's products may not be approved for the specific indications that are most necessary or desirable for successful commercialization or profitability.

We have not demonstrated that any of our products are safe and effective for any indication and will continue to expend substantial time and resources on clinical development before any of our current or future product candidates will be eligible for FDA approval, if ever.

We expect that a substantial portion of our efforts and expenditures over the next few years will be devoted to development of our existing and contemplated biological product candidates. Accordingly, our business currently depends heavily on the successful development, FDA approval, and commercialization of such candidates, which may never receive FDA approval or be successfully commercialized even if FDA approval is received. The research, testing, manufacturing, labeling, approval, sale, marketing, and distribution of our biological product candidates are, and will remain, subject to extensive regulation by the FDA and other regulatory authorities in the United States and other countries, as applicable. We are currently not permitted to market any of our current or future product candidates in the United States until we receive FDA approval (of each) via the BLA process. To date, we have two product candidates in clinical development and have not-yet submitted a BLA for any of our candidates and, for many such candidates, do not expect to be in a position to do so for the foreseeable future, as there are numerous developmental steps that must be completed before we can prepare and submit a BLA.

In the United States, the FDA regulates pharmaceutical and biological product candidates under the Federal Food, Drug and Cosmetic Act (“FDCA”) and the Public Health Service Act (“PHSA”), as well as their respective implementing regulations. Such products and product candidates are also subject to other federal, state, and local statutes and regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local, and foreign statutes and regulations requires the expenditure of substantial time and financial resources. The process required by the FDA before a drug or biological product may be marketed in the United States generally involves the following:

- completion of preclinical laboratory tests and animal studies in accordance with FDA’s good laboratory practices (“GLPs”) and applicable requirements for the humane use of laboratory animals or other applicable regulations;
- submission to the FDA of an IND, which must become effective before human clinical trials in the United States may begin;
- performance of adequate and well-controlled human clinical trials in accordance with FDA’s IND regulations, good clinical practices (“GCPs”), and any additional requirements for the protection of human research subjects and their health information, to establish the safety and efficacy of the proposed biological product for its intended use;
- submission to the FDA of a BLA for marketing approval that meets applicable requirements to ensure the continued safety, purity, and potency of the product that is the subject of the BLA based on results of preclinical testing and clinical trials;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities where the biological product is produced, to assess compliance with current good manufacturing processes (“cGMPs”) and assure that the facilities, methods and controls are adequate to preserve the biological product’s identity, strength, quality and purity;
- potential FDA audit of the nonclinical study and clinical trial sites that generated the data in support of the BLA; and
- FDA review and approval, or denial, of the BLA.

Before testing any biological product candidate in humans, the product candidate enters the preclinical testing stage. Preclinical tests include laboratory evaluations of product chemistry, toxicity and formulation, as well as animal studies to assess the potential safety and activity of the product candidate. The conduct of the preclinical tests must comply with federal regulations and requirements including GLPs. The clinical trial sponsor must submit the results of the preclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and a proposed clinical protocol, to the FDA as part of the IND. Some preclinical testing may continue even after the IND is submitted. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA raises concerns or questions regarding the proposed clinical trials and places the trial on a clinical hold within that 30-day time period. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. The FDA may also impose clinical holds on a biological product candidate at any time before or during clinical trials due to safety concerns or non-compliance. If the FDA imposes a clinical hold, trials may not recommence without FDA authorization and then only under terms authorized by the FDA. Accordingly, we cannot be sure that submission of an IND will result in the FDA allowing clinical trials to begin or that, for those that have already commenced under an active IND, that issues will not arise that suspend or terminate such trials.

Clinical trials involve the administration of the biological product candidate to healthy volunteers or patients under the supervision of qualified investigators, generally physicians not employed by or under the trial sponsor's control. Clinical trials are conducted under protocols detailing, among other things, the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria, and the parameters to be used to monitor subject safety, including stopping rules that assure a clinical trial will be stopped if certain adverse events should occur. Each protocol and any amendments to the protocol must be submitted to the FDA as part of the IND. Clinical trials must be conducted and monitored in accordance with the FDA's regulations composing the GCP requirements, including the requirement that all research subjects provide informed consent. Further, each clinical trial must be reviewed and approved by an independent institutional review board, or IRB, at or servicing each institution at which the clinical trial will be conducted. An IRB is charged with protecting the welfare and rights of trial participants and considers such items as whether the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the form and content of the informed consent that must be signed by each clinical trial subject or his or her legal representative and must monitor the clinical trial until completed. Human clinical trials are typically conducted in three sequential phases that may overlap or be combined:

- Phase 1. The biological product is initially introduced into healthy human subjects and tested for safety. In the case of some products for severe or life-threatening diseases, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in subjects.
- Phase 2. The biological product is evaluated in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance, optimal dosage and dosing schedule.
- Phase 3. Clinical trials are undertaken to further evaluate dosage, clinical efficacy, potency, and safety in an expanded patient population at geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk to benefit ratio of the product and provide an adequate basis for product labeling.

Post-approval clinical trials, sometimes referred to as Phase 4 clinical trials, may be conducted after initial marketing approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication, particularly for long-term safety follow-up.

After the completion of clinical trials of a biological product, FDA approval of a BLA must be obtained before commercial marketing of the biological product. The BLA must include results of product development, laboratory and animal studies, human trials, information on the manufacture and composition of the product, proposed labeling and other relevant information. The FDA may grant deferrals for submission of data, or full or partial waivers. The testing and approval processes require substantial time and effort and there can be no assurance that the FDA will accept the BLA for filing and, even if filed, that any approval will be granted on a timely basis, if at all. Before approving a BLA, the FDA will inspect the facilities at which the product is manufactured. The FDA will not approve the product unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. Additionally, before approving a BLA, the FDA will typically inspect one or more clinical sites to assure that the clinical trials were conducted in compliance with IND trial requirements and GCP requirements. To assure cGMP and GCP compliance, an applicant must incur significant expenditure of time, money and effort in the areas of training, record keeping, production, and quality control.

Notwithstanding the submission of relevant data and information, the FDA may ultimately decide that the BLA does not satisfy its regulatory criteria for approval and deny approval. Data obtained from clinical trials are not always conclusive and the FDA may interpret data differently than we interpret the same data. Our product candidates are in the earliest stages of clinical development and, therefore, a long way from BLA submission. We cannot predict with any certainty if or when we might submit a BLA for regulatory approval for our product candidates or whether any such BLA will be approved by the FDA. Human clinical trials are very expensive and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. For example, the FDA may not agree with our proposed endpoints for any clinical trial we propose, which may delay the commencement of our clinical trials. The clinical trial process is also lengthy and requires substantial time and effort.

In December 2015, the FDA cleared our IND filing for Iomab-B (for acute myeloid leukemia or AML), and we are currently enrolling patients in a randomized, controlled, pivotal Phase 3 clinical trial under such IND to study Iomab-B in patients 55 years of age or older with relapsed or refractory AML. Assuming the Phase 3 trial meets its endpoints and there are no unexpected issues or delays, it will form the basis for a BLA in the reasonably near future for Iomab-B for use in preparing and conditioning AML patients for bone marrow transplants (BMTs). Additionally, there are physician IND trials at the Fred Hutchinson Cancer Research Center (FHCRC) that have been conducted or are currently ongoing at FHCRC with Iomab-B (for other target indications) and the BC8 antibody we licensed. And, we have multiple Phase 1 and Phase 2 clinical trials ongoing and others that we have planned but not-yet commenced, for our other drug candidates under our own sponsorship and multiple investigator-initiated trials ongoing. Except for Iomab-B (for patients with AML), we expect that the clinical trials we need to conduct to be in a position to submit BLAs for our product candidates currently in-development will take, at least, several years to complete. Moreover, failure can occur at any stage of the trials, and we could encounter problems that cause us to abandon or repeat clinical trials. Also, the results of early preclinical and clinical testing may not be predictive of the results of subsequent clinical trials. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or adverse safety profiles, notwithstanding promising results in earlier studies. And, preclinical and clinical data are often susceptible to multiple interpretations and analyses. Many companies that have believed their product candidates performed satisfactorily in preclinical studies and clinical trials have, nonetheless, failed to obtain marketing approval of their products. Success in preclinical testing and early clinical trials does not ensure that later clinical trials, which involve many more subjects, and the results of later clinical trials may not replicate the results of prior clinical trials and preclinical testing. Any failure or substantial delay in our product development plans may have a material adverse effect on our business.

We may encounter substantial delays in our clinical trials or may not be able to conduct our trials on the timelines we expect.

We cannot predict whether we will encounter problems with any of our ongoing or planned clinical trials that will cause us or regulatory authorities to delay, suspend, or discontinue clinical trials or to delay the analysis of data from ongoing clinical trials. Any of the following could delay or disrupt the clinical development of our product candidates and potentially cause our product candidates to fail to receive regulatory approval:

- conditions imposed on us by the FDA or comparable foreign authorities regarding the scope or design of our clinical trials;
- delays in receiving, or the inability to obtain, required approvals from institutional review boards (IRBs) or other reviewing entities at clinical sites selected for participation in our clinical trials;
- delays in enrolling patients into clinical trials;
- a lower than anticipated retention rate of patients in clinical trials;
- the need to repeat or discontinue clinical trials as a result of inconclusive or negative results or unforeseen complications in testing or because the results of later trials may not confirm positive results from earlier preclinical studies or clinical trials;

- inadequate supply, delays in distribution, deficient quality of, or inability to purchase or manufacture drug product, comparator drugs or other materials necessary to conduct our clinical trials;
- unfavorable FDA or other foreign regulatory inspection and review of a clinical trial site or records of any clinical or preclinical investigation;
- serious and unexpected drug-related side effects experienced by participants in our clinical trials, which may occur even if they were not observed in earlier trials or only observed in a limited number of participants;
- a finding that the trial participants are being exposed to unacceptable health risks;
- the placement by the FDA or a foreign regulatory authority of a clinical hold on a trial; or
- delays in obtaining regulatory agency authorization for the conduct of our clinical trials.

We may suspend, or the FDA or other applicable regulatory authorities may require us to suspend, clinical trials of a product candidate at any time if we or they believe the patients participating in such clinical trials, or in independent third-party clinical trials for drugs based on similar technologies, are being exposed to unacceptable health risks or for other reasons.

Further, individuals involved with our clinical trials may serve as consultants to us from time to time and receive stock options or cash compensation in connection with such services. If these relationships and any related compensation to the clinical investigator carrying out the study result in perceived or actual conflicts of interest, or the FDA concludes that the financial relationship may have affected interpretation of the study, the integrity of the data generated at the applicable clinical trial site may be questioned and the utility of the clinical trial itself may be jeopardized. The delay, suspension or discontinuation of any of our clinical trials, or a delay in the analysis of clinical data for our product candidates, for any of the foregoing reasons, could adversely affect our efforts to obtain regulatory approval for and to commercialize our product candidates, increase our operating expenses and have a material adverse effect on our financial results.

Clinical trials may also be delayed or terminated as a result of ambiguous or negative interim results. In addition, a clinical trial may be suspended or terminated by us, the FDA, the IRBs at the sites where the IRBs are overseeing a trial, or a data safety monitoring board, or DSMB (Data Safety Monitoring Board)/DMC (Data Monitoring Committee), overseeing the clinical trial at issue, or other regulatory authorities due to a number of factors, including:

- failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols;
- inspection of the clinical trial operations or trial sites by the FDA or other regulatory authorities resulting in the imposition of a clinical hold;
- varying interpretation of data by the FDA or similar foreign regulatory authorities;
- failure to achieve primary or secondary endpoints or other failure to demonstrate efficacy;
- unforeseen safety issues; or
- lack of adequate funding to continue the clinical trial.

Modifications to our product candidates may require federal approvals.

The BLA application is the vehicle through which the company may formally propose that the FDA approve a new pharmaceutical for sale and marketing in the United States. Once a particular product candidate receives FDA approval, expanded uses or uses in new indications of our products may require additional human clinical trials and new regulatory approvals, including additional IND and BLA submissions and premarket approvals before we can begin clinical development, and/or prior to marketing and sales. If the FDA requires new approvals for a particular use or indication, we may be required to conduct additional clinical studies, which would require additional expenditures and harm our operating results. If the products are already being used for these new indications, we may also be subject to significant enforcement actions.

Conducting clinical trials and obtaining approvals is a time-consuming process, and delays in obtaining required future approvals could adversely affect our ability to introduce new or enhanced products in a timely manner, which in turn would have an adverse effect on our business prospects, financial condition and results of operation.

The FDA or comparable foreign regulatory authorities may disagree with our regulatory plans, and we may fail to obtain regulatory approval of our product candidates.

In June 2012, we acquired rights to BC8 (Iomab), a clinical stage monoclonal antibody with safety and efficacy data in more than 300 patients in need of a BMT. Iomab-B is our product candidate that links I-131 to the BC8 antibody that is being studied in an ongoing Phase 3 pivotal trial. Product candidates utilizing this antibody would require BLA approval before they can be marketed in the United States. We are also evaluating a lower dose of the BC8 antibody and I-131 for lymphodepletion prior to CAR-T or adoptive cell therapy. We are currently evaluating clinical trials that would use our construct for lymphodepletion. Our lintuzumab-Ac-225 product candidate is also being studied in several Phase 1 trials under our sponsorship and investigator-initiated trials in patients with AML, myelodysplastic syndrome and multiple myeloma. Product candidates utilizing the lintuzumab antibody would require BLA approval before they can be marketed in the United States. We are in the early stages of evaluating other product candidates consisting of conjugates of Ac-225 with human or humanized antibodies for pre-clinical and clinical development in other types of cancer. The FDA may not approve these products for the indications that are necessary or desirable for successful commercialization. The FDA may fail to approve any BLA we submit for new product candidates or for new intended uses or indications for approved products or future product candidates. Failure to obtain FDA approval for our products in the proposed indications would have a material adverse effect on our business prospects, financial condition and results of operations.

Clinical trials necessary to support approval of our product candidates are time-consuming and expensive.

Initiating and completing clinical trials necessary to support FDA approval of a BLA for Iomab-B, CD33 program candidates, and other product candidates, is a time-consuming and expensive process, and the outcome is inherently uncertain. Moreover, the results of early clinical trials are not necessarily predictive of future results, and any product candidate we advance into clinical trials may not have favorable results in later clinical trials. We have worked with the FDA to develop a clinical trial designed to test the safety and efficacy of Iomab-B in patients with relapsed or refractory AML who are age 55 and above prior to a BMT. This trial is designed to support a BLA filing for marketing approval by the FDA, pending results from the trial. We have also worked with the FDA to develop a regulatory pathway for our Actimab-MDS trial that consists of a dose-confirming Phase 1 trial that can be followed by a randomized, controlled pivotal trial that could support a BLA filing. There can be no assurance that the data generated during the trial will meet our chosen safety and effectiveness endpoints or otherwise produce results that will eventually support the filing or approval of a BLA. Even if the data from this trial are favorable, the data may not be predictive of the results of any future clinical trials.

Our clinical trials may fail to demonstrate adequately the efficacy and safety of our product candidates, which would prevent or delay regulatory approval and commercialization.

Even if our clinical trials are completed as planned, we cannot be certain that their results will support our product candidate claims or that the FDA or foreign authorities will agree with our conclusions regarding them. Success in pre-clinical studies and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be sure that the later trials will replicate the results of prior trials and pre-clinical studies. The clinical trial process may fail to demonstrate that our product candidates are safe and effective for the proposed indicated uses. If FDA concludes that the clinical trials for Iomab-B, lintuzumab-Ac-225, or any other product candidate for which we might seek approval, have failed to demonstrate safety and effectiveness, we would not receive FDA approval to market that product candidate in the United States for the indications sought. In addition, such an outcome could cause us to abandon the product candidate and might delay development of others. Any delay or termination of our clinical trials will delay or preclude the filing of any submissions with the FDA and, ultimately, our ability to commercialize our product candidates and generate revenues. It is also possible that patients enrolled in clinical trials will experience adverse side effects that are not currently part of a product candidate's profile.

The intellectual property related to antibodies we have licensed has expired or likely expired

The key patents related to the humanized antibody, lintuzumab, which we use in our CD33 program product candidates have expired. It is generally possible that others may be eventually able to use an antibody with the same sequence, and we will then need to rely on additional patent protection covering alpha particle drug products comprising Ac-225. Our final drug construct consists of the lintuzumab antibody labeled with the isotope Ac-225. We have licensed issued patents that relate to the linker technology we use to conjugate the isotope to the antibody. Further, we own issued and pending patents related to methods for drug conjugation and isotope labeling and for methods of isotope production. In addition, we possess trade secrets and know how related to the manufacturing and use of isotopes. Any competing product based on the lintuzumab antibody is likely to require several years of development before achieving our product candidate's current status and may be subject to significant regulatory hurdles but is nevertheless a possibility that could negatively impact our business in the future. We own an issued patent in the US relating to composition of the Iomab-B product candidate. Five related patents are also pending in the US and internationally. We have and may continue to file patents related to Iomab-B that can provide barriers to entry but there is no certainty that these patents will be granted or such granting thereof will adequately prevent others from seeking to replicate and use the BC8 antibody or the construct. We have pending patents related to radioimmunoconjugate composition, formulation administration, and methods of use in solid or liquid cancers. This matter includes composition, administration, and methods of treatment for our products Actimab-A and Iomab-B. Any competing product based on the antibody used in Iomab-B is likely to require several years of development before achieving our product candidate's current status and may be subject to significant regulatory hurdles but is nevertheless a possibility that could negatively impact our business in the future.

Our CD33 program clinical trials are testing the same drug construct

Our CD33 program is comprised of several clinical trials including several investigator-initiated trials including AML, MDS and Multiple Myeloma that are studying the same drug construct consisting of lintuzumab-Ac-225. Negative results from any of these trials could negatively impact our ability to enroll or complete our other trials studying lintuzumab-Ac-225. Additionally, negative outcomes including safety concerns, may result in the FDA discontinuing other trials utilizing lintuzumab-Ac-225.

We may be unable to obtain a sufficient supply of isotopes to support clinical development or at commercial scale.

Iodine-131 is a key component of our Iomab-B drug candidate. We currently source medical grade I-131 from three suppliers including two leading global manufacturers. Currently, there is sufficient supply of I-131 to advance our ongoing SIERRA clinical trial, support additional trials we may undertake utilizing I-131 and for commercialization of Iomab-B. We continually evaluate I-131 manufacturers and suppliers and intend to have multiple qualified suppliers prior to the commercial launch of Iomab-B. While we consider I-131 to be commoditized and obtainable through several suppliers, there can be no guarantee that we will be able to secure I-131 or obtain I-131 on terms that are acceptable to us.

Actinium-225 is a key component of our CD33 ARC program, AWE platform and other drug candidates that we might consider for development with the Ac-225 payload. There are adequate quantities of Ac-225 available today to meet our current needs via our present supplier, the Department of Energy, or DOE. The current Ac-225 currently supplied to Actinium's clinical trials from the DOE is derived from the natural decay of thorium-229 from so-called 'thorium-cows' and is able to produce sufficient quantities that are several multiples of the amount of Ac-225 we require to supply our clinical programs through to early commercialization phase. The DOE is also producing Ac-225 from a recently developed alternative route for Ac-225 production via a linear accelerator that is currently being evaluated by Actinium. Initial preclinical and modelling results have indicated that the linear accelerator sourced Ac-225 does not impact labelling efficiency and expected distribution. Per representations made by the Department of Energy, the capacity of Ac-225 from this route is expected to be sufficient to supply all of Actinium's pipeline and commercial Ac-225 needs and support new program expansion by not just Actinium but also other companies that are developing Ac-225 based products. Additional routes of Ac-225 production are being pursued by the DOE including the generation of new thorium cows and production via a cyclotron. The cyclotron production method for Ac-225 production leverages Actinium's proprietary technology and know-how and presents an additional path towards production of high-quality Ac-225 that would be able to satisfy commercial needs. In addition, we are aware of at least six other government and non-government entities globally including the U.S., Canada, Russia, Belgium, France and Japan that have, or expect to have ability to supply Ac-225 or equipment for its production within the timeframes relevant to first commercial approval of our Ac-225 ARC.

Our contract for supply of this isotope from the DOE must be renewed yearly, and the current contract extends through the end of 2020. While we expect this contract will be renewed at the end of its term as it has since 2009, there can be no assurance that the DOE will renew the contract or that change its policies that allow for the sale of isotope to us. Failure to acquire sufficient quantities of medical grade Ac-225 would make it impossible to effectively complete clinical trials and to commercialize any Ac-225 based drug candidates that we may develop and would materially harm our business.

Our ability to conduct clinical trials to advance our ARC drug candidates is dependent on our ability to obtain the radioisotopes I-131, Ac-225 and other isotopes we may choose to utilize in the future. Currently, we are dependent on third party manufacturers and suppliers for our isotopes. These suppliers may not perform their contracted services or may breach or terminate their agreements with us. Our suppliers are subject to regulations and standards that are overseen by regulatory and government agencies and we have no control over our suppliers' compliance to these standards. Failure to comply with regulations and standards may result in their inability to supply isotope could result in delays in our clinical trials, which could have a negative impact on our business. We have developed intellectual property, know-how and trade secrets related to the manufacturing process of Ac-225. While we have manufactured medical grade Ac-225 of a purity compared to the cyclotron sourced material in the past, this activity was terminated due to operating cost reasons and we currently do not have experience in manufacturing medical grade Ac-225 and may not obtain the resources necessary to establish our own manufacturing capabilities in future. Our inability to build out and establish our own manufacturing facilities would require us to continue to rely on third party suppliers as we currently do. However, based on our current third-party suppliers and potential future suppliers of Ac-225 we expect to have adequate isotope supply to support our current ongoing clinical trials, current AWE program activities and commercialization should our drug candidates receive approval.

If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.

The timely completion of clinical trials in accordance with their protocols depends on our ability to enroll a sufficient number of patients who remain in the trial until its conclusion. We may experience difficulties in patient enrollment in our clinical trials for a variety of reasons, including:

- the size and nature of the patient population;
- the patient eligibility criteria defined in the protocol;

- the size of the study population required for analysis of the trial’s primary endpoints;
- the proximity of patients to trial sites;
- the design of the trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and expertise;
- competing clinical trials for similar or alternate therapeutic treatments;
- clinician’s and patients’ perceptions as to the potential advantages and side effects of the product candidate being studied in relation to other available therapies;
- our ability to obtain and maintain patient consents; and
- the risk that patients enrolled in clinical trials will not complete a clinical trial.

In addition, refractory patients, which several of our trials are enrolling, participating in clinical trials are seriously and often terminally ill and therefore may not complete the clinical trial due to reasons including comorbid conditions or occurrence of adverse medical events related or unrelated to the investigational products, or death. Even if we are able to enroll a sufficient number of patients in our clinical trials, delays in patient enrollment will result in increased costs or affect the timing of our planned trials, which could adversely affect our ability to advance the development of our product candidates.

FDA may take actions that would prolong, delay, suspend, or terminate clinical trials of our product candidates, which may delay or prevent us from commercializing our product candidates on a timely basis.

There can be no assurance that the data generated in our clinical trials will be acceptable to FDA or that if future modifications during the trial are necessary, that any such modifications will be acceptable to FDA. Certain modifications to a clinical trial protocol made during the course of the clinical trial have to be submitted to the FDA. This could result in the delay or halt of a clinical trial while the modification is evaluated. In addition, depending on the quantity and nature of the changes made, FDA could take the position that some or all of the data generated by the clinical trial is not usable because the same protocol was not used throughout the trial. This might require the enrollment of additional subjects, which could result in the extension of the clinical trial and the FDA delaying approval of a product candidate. If the FDA believes that its prior approval is required for a particular modification, it can delay or halt a clinical trial while it evaluates additional information regarding the change.

Any delay or termination of our current or future clinical trials as a result of the risks summarized above, including delays in obtaining or maintaining required approvals from IRBs, delays in patient enrollment, the failure of patients to continue to participate in a clinical trial, and delays or termination of clinical trials as a result of protocol modifications or adverse events during the trials, may cause an increase in costs and delays in the filing of any submissions with the FDA, delay the approval and commercialization of our product candidates or result in the failure of the clinical trial, which could adversely affect our business, operating results and prospects. Lengthy delays in the completion of our Iomab-B clinical trials would adversely affect our business and prospects and could cause us to cease operations.

We have obtained orphan drug designation from FDA for two of our current product candidates and intend to pursue such designation for other candidates and indications in the future, but we may be unable to obtain such designations or to maintain the benefits associated with any orphan drug designations we have received or may receive in the future.

We have received orphan drug designation for Iomab-B and lintuzumab-CD33 ARC for treatment of AML in both the United States and the EU. Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, which is a disease or condition that affects fewer than 200,000 individuals in the United States, or if it affects more than 200,000 individuals in the United States, there is no reasonable expectation that the cost of developing and making available a drug or biologic for this type of disease or condition will be recovered from sales in the United States for that drug or biologic. Similarly, the EMA grants orphan drug designation to promote the development of products that are intended for the diagnosis, prevention, or treatment of a life-threatening or chronically debilitating condition affecting not more than five in 10,000 persons in the EU.

Orphan drug designation neither shortens the development time or regulatory review time of a drug or biologic nor gives the drug or biologic any advantage in the regulatory review or approval process. In the United States, orphan drug designation entitles a party to financial incentives, such as opportunities for grant funding towards clinical trial costs, tax advantages, and application fee waivers. In addition, if a product candidate receives the first FDA approval for the indication for which it has orphan designation, such product is entitled, upon approval, to seven years of orphan-drug exclusivity, during which the FDA may not approve any other application to market the same drug for the same indication, unless a subsequently approved product is clinically superior to orphan drug or where the manufacturer is unable to assure sufficient product quantity in the applicable patient population. In the EU, orphan drug designation entitles a party to financial incentives such as reduction of fees or fee waivers and ten years of market exclusivity following drug or biological product approval. This period may be reduced to six years if the orphan drug designation criteria are no longer met, including where it is shown that the product is sufficiently profitable not to justify maintenance of market exclusivity.

Even if we obtain (or have obtained) orphan drug designation for certain product candidates, we may not be the first to obtain marketing approval for such candidates for the applicable indications due to the uncertainties inherent in the development of novel biologic products. And, an orphan drug candidate may not receive orphan-drug exclusivity upon approval if such candidate is approved for a use that is broader than the indication for which it received orphan designation. In addition, exclusive marketing rights in the United States may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition.

Finally, even if we successfully obtain orphan-drug exclusivity for an orphan drug candidate upon approval, such exclusivity may not effectively protect the product from competition because (i) different drugs with different active moieties can be approved for the same condition; and (ii) the FDA or EMA can also subsequently approve a subsequent product with the same active moiety and for the same indication as the orphan drug if the later-approved drug is deemed clinically superior to the orphan drug.

Even if we receive regulatory approval of our product candidates, we will be subject to ongoing regulatory obligations and continued regulatory review.

Any regulatory approvals that we receive for our product candidates will require surveillance to monitor the safety and efficacy of the product candidate. The FDA may also require a risk evaluation and mitigation strategy in order to approve our product candidates, which could entail requirements for a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or a comparable foreign regulatory authority approves our product candidates, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion, import, export and recordkeeping for our product candidates will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMPs and GCPs for any clinical trials that we conduct post-approval. In addition, the FDA could require us to conduct another study to obtain additional safety or biomarker information. Later discovery of previously unknown problems with our product candidates, including adverse events of unanticipated severity or frequency, or with our third-party suppliers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- restrictions on the marketing or manufacturing of our product candidates, withdrawal of the product from the market, or voluntary or mandatory product recalls;
- fines, warning letters or holds on clinical trials;

- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of license approvals;
- product seizure or detention, or refusal to permit the import or export of our product candidates; and
- injunctions or the imposition of civil or criminal penalties.

The FDA's and other regulatory authorities' policies may change, and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, and we may not achieve or sustain profitability.

Coverage and reimbursement may be limited or unavailable in certain market segments for our product candidates which could limit our sales of our product candidates, if approved.

The commercial success of our product candidates in both domestic and international markets will be substantially dependent on whether third-party coverage and reimbursement is available for patients that use our products. However, the availability of insurance coverage and reimbursement for newly approved cancer therapies is uncertain, and therefore, third-party coverage may be particularly difficult to obtain even if our products are approved by the FDA as safe and efficacious. Patients using existing approved therapies are generally reimbursed all or part of the product cost by Medicare or other third-party payors. Medicare, Medicaid, health maintenance organizations and other third-party payors are increasingly attempting to contain healthcare costs by limiting both coverage and the level of reimbursement of new drugs, and, as a result, they may not cover or provide adequate payment for these products. Submission of applications for reimbursement approval generally does not occur prior to the filing of a BLA for that product and may not be granted until many months after BLA approval. In order to obtain coverage and reimbursement for these products, we or our commercialization partners may have to agree to a net sales price lower than the net sales price we might charge in other sales channels. The continuing efforts of government and third-party payors to contain or reduce the costs of healthcare may limit our revenue. Initial dependence on the commercial success of our products may make our revenues particularly susceptible to any cost containment or reduction efforts.

Healthcare legislative reform measures intended to increase pressure to reduce prices of pharmaceutical products paid for by Medicare or, otherwise, affect the federal regulation of the U.S. healthcare system could have a material adverse effect our business, future revenue, if any, and results of operations.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, also called the MMA, changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly and introduced a new reimbursement methodology based on average sales prices for physician-administered drugs. In addition, this legislation provided authority for limiting the number of drugs that will be covered in any therapeutic class. As a result of this legislation and the expansion of federal coverage of drug products, we expect that there will be additional pressure to reduce costs. These cost reduction initiatives and other provisions of this legislation could decrease the scope of coverage and the price that we receive for any approved products and could harm our business. While the MMA applies only to drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policies and payment limitations in setting their own reimbursement rates, and any reduction in reimbursement that results from the MMA may cause a similar reduction in payments from private payors. This legislation may pose an even greater risk to our drug candidates as a significant portion of the target patient population for our drug candidates would likely be over 65 years of age and, therefore, many such patients will be covered by Medicare.

On March 23, 2010, President Obama signed the “Patient Protection and Affordable Care Act” (P.L. 111-148) and on March 30, 2010, he signed the “Health Care and Education Reconciliation Act” (P.L. 111-152) (collectively, the “Healthcare Reform Law”). The Healthcare Reform Law included a number of new rules regarding health insurance, the provision of healthcare, conditions to reimbursement for healthcare services provided to Medicare and Medicaid patients, and other healthcare policy reforms. Through the law-making process, substantial changes have been and continue to be made to the current system for paying for healthcare in the U.S., including changes made to extend medical benefits to certain Americans who lacked insurance coverage and to contain or reduce healthcare costs (such as by reducing or conditioning reimbursement amounts for healthcare services and drugs, and imposing additional taxes, fees, and rebate obligations on pharmaceutical and medical device companies). This legislation was one of the most comprehensive and significant reforms ever experienced by the U.S. in the healthcare industry and has significantly changed the way healthcare is financed by both governmental and private insurers. This legislation has impacted the scope of healthcare insurance and incentives for consumers and insurance companies, among others. Additionally, the Healthcare Reform Law’s provisions were designed to encourage providers to find cost savings in their clinical operations. Pharmaceuticals represent a significant portion of the cost of providing care. This environment has caused changes in the purchasing habits of consumers and providers and resulted in specific attention to the pricing negotiation, product selection and utilization review surrounding pharmaceuticals. This attention may result in our current commercial products, products we may commercialize or promote in the future, and our therapeutic candidates, being chosen less frequently or the pricing being substantially lowered. At this stage, it is difficult to estimate the full extent of the direct or indirect impact of the Healthcare Reform Law on us.

These structural changes could entail further modifications to the existing system of private payors and government programs (such as Medicare, Medicaid, and the State Children’s Health Insurance Program), creation of government-sponsored healthcare insurance sources, or some combination of both, as well as other changes. Restructuring the coverage of medical care in the U.S. could impact the reimbursement for prescribed drugs and pharmaceuticals, including our current commercial products, those we and our development or commercialization partners are currently developing or those that we may commercialize or promote in the future. If reimbursement for the products we currently commercialize or promote, any product we may commercialize or promote, or approved therapeutic candidates is substantially reduced or otherwise adversely affected in the future, or rebate obligations associated with them are substantially increased, it could have a material adverse effect on our reputation, business, financial condition or results of operations.

Extending medical benefits to those who currently lack coverage will likely result in substantial costs to the U.S. federal government, which may force significant additional changes to the healthcare system in the U.S. Much of the funding for expanded healthcare coverage may be sought through cost savings. While some of these savings may come from realizing greater efficiencies in delivering care, improving the effectiveness of preventive care and enhancing the overall quality of care, much of the cost savings may come from reducing the cost of care and increased enforcement activities. Cost of care could be reduced further by decreasing the level of reimbursement for medical services or products (including our current commercial products, our development or commercialization partners or any product we may commercialize or promote, or those therapeutic candidates currently being developed by us), or by restricting coverage (and, thereby, utilization) of medical services or products. In either case, a reduction in the utilization of, or reimbursement for our current commercial products, any product we may commercialize or promote, or any therapeutic candidate, or for which we receive marketing approval in the future, could have a material adverse effect on our reputation, business, financial condition or results of operations.

Several states and private entities initially mounted legal challenges to the Healthcare Reform Law, and they continue to litigate various aspects of the legislation. On July 26, 2012, the U.S. Supreme Court generally upheld the provisions of the Healthcare Reform Law at issue as constitutional. However, the U.S. Supreme Court held that the legislation improperly required the states to expand their Medicaid programs to cover more individuals. As a result, the states have a choice as to whether they will expand the number of individuals covered by their respective state Medicaid programs. Some states have not expanded their Medicaid programs and have chosen to develop other cost-saving and coverage measures to provide care to currently uninsured individuals. Many of these efforts to date have included the institution of Medicaid-managed care programs. The manner in which these cost-saving and coverage measures are implemented could have a material adverse effect on our reputation, business, financial condition or results of operations.

Further, the healthcare regulatory environment has seen significant changes in recent years and is still in flux. Legislative initiatives to modify, limit, replace, or repeal the Healthcare Reform Law and judicial challenges continue, and may increase in light of the current administration and legislative environment. We cannot predict the impact on our business of future legislative and legal challenges to the Healthcare Reform Law or other changes to the current laws and regulations. The financial impact of U.S. healthcare reform legislation over the next few years will depend on a number of factors, including the policies reflected in implementing regulations and guidance and changes in sales volumes for therapeutics affected by the legislation. From time to time, legislation is drafted, introduced and passed in the U.S. Congress that could significantly change the statutory provisions governing coverage, reimbursement, and marketing of pharmaceutical products. In addition, third-party payor coverage and reimbursement policies are often revised or interpreted in ways that may significantly affect our business and our products.

Since taking office, President Trump has continued to support the repeal of all or portions of the Healthcare Reform Law. President Trump has also issued an executive order in which he stated that it is his administration's policy to seek the prompt repeal of the Healthcare Reform Law and in which he directed executive departments and federal agencies to waive, defer, grant exemptions from, or delay the implementation of the provisions of the Healthcare Reform Law to the maximum extent permitted by law. Congress has enacted legislation that repeals certain portions of the Healthcare Reform Law, including but not limited to the Tax Cuts and Jobs Act, passed in December 2017, which included a provision that eliminates the penalty under the Healthcare Reform Law's individual mandate, effective January 1, 2019, as well as the Bipartisan Budget Act of 2018, passed in February 2018, which, among other things, repealed the Independent Payment Advisory Board (which was established by the Healthcare Reform Law and was intended to reduce the rate of growth in Medicare spending).

Additionally, in December 2018, a district court in Texas held that the individual mandate is unconstitutional and that the rest of the Affordable Care Act is, therefore, invalid. On appeal, the Fifth Circuit Court of Appeals affirmed the holding on the individual mandate but remanded the case back to the lower court to reassess whether and how such holding affects the validity of the rest of the Affordable Care Act. Substantial uncertainty remains as to the future of the Affordable Care Act after the U.S. Supreme Court declined to expedite its review of the Fifth Circuit's holding on January 21, 2020. It is, thus, unlikely that these issues will be resolved before the next presidential election in November 2020. The current administration may seek to pass additional reform measures before the upcoming election. We cannot predict the outcome of the election, nor can we predict the healthcare-reform-related initiatives that the newly elected (or re-elected, as applicable) administration will put forth thereafter. There is no way to know whether, and to what extent, if any, the Affordable Care Act will remain in-effect in the future, and it is unclear how judicial decisions, subsequent appeals, election-related measures, or other efforts to repeal and replace or, possibly, to restore the Affordable Care Act will impact the U.S. healthcare industry or our business.

Risks Related to Third Parties

We rely on third parties to conduct our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines or comply with regulatory requirements, we may not be able to obtain regulatory approval for or commercialize our product candidates.

We do not have the ability to independently conduct our pre-clinical and clinical trials for our product candidates and we must rely on third parties, such as contract research organizations, medical institutions, clinical investigators and contract laboratories to conduct such trials. Our reliance on these third parties for clinical development activities results in reduced control over these activities. Moreover, the FDA requires us to comply with regulations and standards, commonly referred to as GCPs (good clinical practices), for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the trial participants are adequately protected. Our reliance on third parties does not relieve us of these responsibilities and requirements. If we or any of our third-party contractors 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 current good manufacturing practice, or cGMP, regulations. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process.

If our consultants, contract research organizations and other similar entities with which we are working do not successfully carry out their contractual duties, meet expected deadlines, or comply with applicable regulations, we may be required to replace them. Although we believe that there are a number of other third-party contractors, we could engage to continue these activities, we may not be able to enter into arrangements with alternative third-party contractors or to do so on commercially reasonable terms, which may result in a delay of our planned clinical trials and delayed development of our product candidates.

In addition, our third-party contractors are not our employees, and except for remedies available to us under our agreements with such third-party contractors, we cannot control whether or not they devote sufficient time and resources to our programs. If these third parties do not successfully carry out their contractual duties or regulatory obligations or meet expected deadlines, or if the quality or accuracy of the data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our pre-clinical development activities or clinical trials may be extended, delayed, suspended or terminated, and we may not be able to obtain regulatory approval for, or successfully commercialize, our product candidates on a timely basis, if at all, and our business, operating results and prospects would be adversely affected.

The antibodies we use in our antibody radiation-conjugate product candidates may be subject to generic competition.

We are not aware of any existing or pending regulations or legislation that pertains to generic radiopharmaceutical products such as our antibody radiation-conjugate product candidates. Our product candidates are regulated by the FDA as biologic products and we intend to seek approval for these products pursuant to the BLA pathway. The Biologics Price Competition and Innovation Act of 2009, or BPCIA, created an abbreviated pathway for the approval of biosimilar and interchangeable biologic products. The abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as “interchangeable” based on its similarity to an existing brand product. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product was approved under a BLA. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning are subject to uncertainty. Even if a biosimilar gets approved for one of the antibodies that we use, the final constructs of our drug candidates consist of an antibody, radioisotope and in some cases a linker. Therefore, we do not believe that the final drug product of our candidates can be subject to competition from a biosimilar as outlined in BPCIA.

Our product candidates may never achieve market acceptance.

Iomab-B, CD33 ARC program candidates and future product candidates that we may develop may never gain market acceptance among physicians, patients and the medical community. The degree of market acceptance of any of our products will depend on a number of factors, including the actual and perceived effectiveness and reliability of the product; the results of any long-term clinical trials relating to use of the product; the availability, relative cost and perceived advantages and disadvantages of alternative technologies; the degree to which treatments using the product are approved for reimbursement by public and private insurers; the strength of our marketing and distribution infrastructure; and the level of education and awareness among physicians and hospitals concerning the product.

We believe that oncologists and other physicians will not widely adopt a product candidate unless they determine, based on experience, clinical data, and published peer-reviewed journal articles, that the use of that product candidate provides an effective alternative to other means of treating specific cancers. Patient studies or clinical experience may indicate that treatment with our product candidates does not provide patients with sufficient benefits in extension of life or quality of life. We believe that recommendations and support for the use of each product candidate from influential physicians will be essential for widespread market acceptance. Our product candidates are still in the development stage and it is premature to attempt to gain support from physicians at this time. We can provide no assurance that such support will ever be obtained. If our product candidates do not receive such support from these physicians and from long-term data, physicians may not use or continue to use, and hospitals may not purchase or continue to purchase, them.

Failure of Iomab-B, CD33 ARC program candidates or any of our other product candidates to significantly penetrate current or new markets would negatively impact our business financial condition and results of operations.

We may be subject to claims that our third-party service providers, consultants or current or former employees have wrongfully used or disclosed confidential information of third parties.

We have received confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies. We may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise used or disclosed confidential information of these third parties or our employees' former employers. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial cost and be a distraction to our management and employees.

We currently depend on a single third-party manufacturer to produce our pre-clinical and clinical trial drug supplies. Any disruption in the operations of our current third-party manufacturer, or other third-party manufacturers we may engage in the future, could adversely affect our business and results of operations.

We do not currently operate manufacturing facilities for pre-clinical or clinical production of any of our product candidates. We rely on third-party manufacturers to supply, store, and distribute pre-clinical and clinical supply of the components of our drug product candidates including monoclonal antibodies, linkers and radioisotopes, as well as the final construct which comprises our drug product candidates. We expect to continue to depend on third-party manufacturers for the foreseeable future. Any performance failure on the part of our existing or future manufacturers could delay clinical development, cause us to suspend or terminate development or delay or prohibit regulatory approval of our product candidates or commercialization of any approved products. Further avenues of disruption to our clinical or eventual commercial supply may also occur due to the sale, acquisition, business reprioritization, bankruptcy or other unforeseen circumstances that might occur at any of our suppliers or contract manufacturing partners including an inability to come to terms on renewal of existing contracts or new contracts.

We currently rely on single manufacturers to manufacture our pre-clinical and clinical trial drug supplies. With a view to maintaining business continuity we are evaluating alternatives and second and even third sources of supply or manufacturing for our core suppliers and manufacturing partners, however there can be no assurances that we will be able to identify such suppliers or partners and assuming we did, that we would be able to enter into contracts that are on favorable terms or on terms that will enable sufficient supply to ensure business continuity and support our growth plans.

Our product candidates require precise, high-quality manufacturing. Failure by our current contract manufacturer or other third-party manufacturers we may engage in the future to achieve and maintain high manufacturing standards could result in patient injury or death, product recalls or withdrawals, delays or failures in testing or delivery, cost overruns, or other problems that could seriously hurt our business. Contract manufacturers may encounter difficulties involving production yields, quality control, and quality assurance. These manufacturers are subject to ongoing periodic and unannounced inspections by the FDA and corresponding state and foreign agencies to ensure strict compliance with cGMPs and other applicable government regulations and corresponding foreign standards; we do not have control over third-party manufacturers' compliance with these regulations and standards.

We depend on vendors with specialized operations, equipment and know-how to manufacture the respective components of our drug candidates. We have entered into manufacturing and supply agreements with these third-parties, and in some instances, we have agreed that such vendor be the exclusive manufacturer and supplier. If any of the third-parties we depend on encounter difficulties in their operations, fail to comply with required regulations or breach their contractual obligations it may be difficult, or we may be unable to identify suitable alternative third-party manufacturers. While we identify and evaluate third-party manufacturers from time to time, even if we do identify suitable alternative third-parties, we may fail to reach agreement on contractual terms, it may be prohibitively expensive and there can be no assurance that we can successfully complete technology transfer and development work necessary or complete the necessary work in a timely manner. Any of which could prevent us from commencing manufacturing with third-parties, which could cause delays or suspension of our clinical trials and pre-clinical work that may have a negative impact on our business.

Furthermore, these third-party contractors, whether foreign or domestic, may experience regulatory compliance difficulty, mechanical shut downs, employee strikes, or any other unforeseeable acts that may delay or limit production. Our inability to adequately establish, supervise and conduct (either ourselves or through third parties) all aspects of the formulation and manufacturing processes, and the inability of third-party manufacturers to consistently supply quality product when required would have a material adverse effect on our ability to develop or commercialize our products. We have faced delays and risks associated with reliance on key third party manufacturers in the past and may be faced with such delays and risks in the future. Any future manufacturing interruptions or related supply issues could have an adverse effect on our company, including delays in clinical trials.

If we are successful in obtaining marketing approval from the FDA and/or other regulatory agencies for any of our product candidates, we anticipate continued reliance on third-party manufacturers.

To date, our product candidates have been manufactured in small quantities for preclinical and clinical testing by third-party manufacturers. If the FDA or other regulatory agencies approve any of our product candidates for commercial sale, we expect that we would continue to rely, at least initially, on third-party specialized manufacturers to produce commercial quantities of approved products. These manufacturers may not be able to successfully increase the manufacturing capacity for any approved product in a timely or economic manner, or at all. Significant scale-up of manufacturing may require additional validation studies, which the FDA must review and approve. If third party manufacturers are unable to successfully increase the manufacturing capacity for a product candidate, or we are unable to establish our own manufacturing capabilities, the commercial launch of any approved products may be delayed or there may be a shortage in supply, which in turn could have a material adverse effect on our business.

In addition, 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 a BLA to the FDA. We do not control the manufacturing process of, and are completely dependent on, our contract manufacturing partners for compliance with cGMPs. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or other regulatory authorities, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved.

We may have conflicts with our partners that could delay or prevent the development or commercialization of our product candidates.

We may have conflicts with our partners, such as conflicts concerning the interpretation of preclinical or clinical data, the achievement of milestones, the interpretation of contractual obligations, payments for services, development obligations or the ownership of intellectual property developed during our collaboration. If any conflicts arise with any of our partners, such partner may act in a manner that is averse to our best interests. Any such disagreement could result in one or more of the following, each of which could delay or prevent the development or commercialization of our product candidates, and in turn prevent us from generating revenues: unwillingness on the part of a partner to pay us milestone payments or royalties we believe are due under a collaboration; uncertainty regarding ownership of intellectual property rights arising from our collaborative activities, which could prevent us from entering into additional collaborations; unwillingness by the partner to cooperate in the development or manufacture of the product, including providing us with product data or materials; unwillingness on the part of a partner to keep us informed regarding the progress of its development and commercialization activities or to permit public disclosure of the results of those activities; initiating litigation or alternative dispute resolution options by either party to resolve the dispute; or attempts by either party to terminate the agreement.

We face significant competition from other biotechnology and pharmaceutical companies.

Our product candidates face, and will continue to face, intense competition from large pharmaceutical and biotechnology companies, as well as academic and research institutions. We compete in an industry that is characterized by (i) rapid technological change, (ii) evolving industry standards, (iii) emerging competition and (iv) new product introductions. Our competitors have existing products and technologies that will compete with our product candidates and technologies and may develop and commercialize additional products and technologies that will compete with our product candidates and technologies. Because several competing companies and institutions have greater financial resources than us, they may be able to (i) provide broader services and product lines, (ii) make greater investments in research and development, or R&D, and (iii) carry on broader R&D initiatives. Our competitors also have greater development capabilities than we do and have substantially greater experience in undertaking preclinical and clinical testing of product candidates, obtaining regulatory approvals, and manufacturing and marketing pharmaceutical products. They also have greater name recognition and better access to customers than us.

Our product candidates may cause undesirable side effects or have other properties that could halt their clinical development, prevent their regulatory approval, limit their commercial potential, or result in significant negative consequences

Undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign authorities. The drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly. Even if any of our product candidates receives marketing approval, as greater numbers of patients use a product following its approval, an increase in the incidence of side effects or the incidence of other post-approval problems that were not seen or anticipated during pre-approval clinical trials could result in a number of potentially significant negative consequences, including:

- regulatory authorities may withdraw their approval of the product;
- regulatory authorities may require the addition of labeling statements, such as warnings or contraindications;
- we may be required to change the way the product is administered, conduct additional clinical trials or change the labeling of the product;
- we may elect, or we may be required, to recall or withdraw product from the market;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could substantially increase the costs and expenses of developing, commercializing and marketing any such product candidates or could harm or prevent sales of any approved products.

Risks Related to Our Intellectual Property

We depend upon securing and protecting critical intellectual property.

We are dependent on obtaining and maintaining patents, trade secrets, copyright and trademark protection of our technologies in the United States and other jurisdictions, as well as successfully enforcing this intellectual property and defending this intellectual property against third-party challenges. The degree of future protection of our proprietary rights is uncertain for product candidates that are currently in the early stages of development because we cannot predict which of these product candidates will ultimately reach the commercial market or whether the commercial versions of these product candidates will incorporate proprietary technologies.

Our patent position is highly uncertain and involves complex legal and factual questions.

Accordingly, we cannot predict the breadth of claims that may be allowed or enforced under our patents or in third-party patents. For example, we or our licensors might not have been the first to make the inventions covered by each of our pending patent applications and issued patents; we or 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 any of our technologies; it is possible that none of our pending patent applications or the pending patent applications of our licensors will result in issued patents; our issued patents and issued patents of our licensors may not provide a basis for commercially viable technologies, or may not provide us with any competitive advantages, or may be challenged and invalidated by third parties; and, we may not develop additional proprietary technologies that are patentable.

As a result, our owned and licensed patents may not be valid, and we may not be able to obtain and enforce patents and to maintain trade secret protection for the full commercial extent of our technology. The extent to which we are unable to do so could materially harm our business.

We or our licensors have applied for and will continue to apply for patents for certain products. Such applications may not result in the issuance of any patents, and any patents now held or that may be issued may not provide us with adequate protection from competition. Furthermore, it is possible that patents issued or licensed to us may be challenged successfully. In that event, if we have a preferred competitive position because of such patents, such preferred position would be lost. If we are unable to secure or to continue to maintain a preferred position, we could become subject to competition from the sale of generic products. Failure to receive, inability to protect, or expiration of our patents for medical use, manufacture, conjugation and labeling of Ac-225, the antibodies that we license from third parties, or subsequent related filings, would adversely affect our business and operations.

Patents issued or licensed to us may be infringed by the products or processes of others. The cost of enforcing our patent rights against infringers, if such enforcement is required, could be significant, and we do not currently have the financial resources to fund such litigation. Further, such litigation can go on for years and the time demands could interfere with our normal operations. There has been substantial litigation and other proceedings regarding patent and other intellectual property rights in the pharmaceutical industry. We may become a party to patent litigation and other proceedings. The cost to us of any patent litigation, even if resolved in our favor, could be substantial. Some of our competitors may be able to sustain the costs of such litigation more effectively than we can because of their substantially greater financial resources. Litigation may also absorb significant management time.

Unpatented trade secrets, improvements, confidential know-how and continuing technological innovation are important to our scientific and commercial success. Although we attempt to and will continue to attempt to protect our proprietary information through reliance on trade secret laws and the use of confidentiality agreements with our partners, collaborators, employees and consultants and other appropriate means, these measures may not effectively prevent disclosure of our proprietary information, and, in any event, others may develop independently, or obtain access to, the same or similar information.

Certain of our patent rights are licensed to us by third parties. If we fail to comply with the terms of these license agreements, our rights to those patents may be terminated, and we will be unable to conduct our business.

If we are found to be infringing on patents or trade secrets owned by others, we may be forced to cease or alter our product development efforts, obtain a license to continue the development or sale of our products, and/or pay damages.

Our manufacturing processes and potential products may violate proprietary rights of patents that have been or may be granted to competitors, universities or others, or the trade secrets of those persons and entities. As the pharmaceutical industry expands and more patents are issued, the risk increases that our processes and potential products may give rise to claims that they infringe the patents or trade secrets of others. These other persons could bring legal actions against us claiming damages and seeking to enjoin clinical testing, manufacturing and marketing of the affected product or process. If any of these actions are successful, in addition to any potential liability for damages, we could be required to obtain a license in order to continue to conduct clinical tests, manufacture or market the affected product or use the affected process. Required licenses may not be available on acceptable terms, if at all, and the results of litigation or other proceedings are uncertain. If we become involved in litigation or other proceedings, it could consume a substantial portion of our financial resources and the efforts of our personnel.

Our ability to protect and enforce our patents does not guarantee that we will secure the right to commercialize our patents.

A patent is a limited monopoly right conferred upon an inventor, and his successors in title, in return for the making and disclosing of a new and non-obvious invention. This monopoly is of limited duration but, while in force, allows the patent holder to prevent others from making and/or using its invention. While a patent gives the holder this right to exclude others, it is not a license to commercialize the invention where other permissions may be required for commercialization to occur. For example, a drug cannot be marketed without the appropriate authorization from the FDA, regardless of the existence of a patent covering the product. Further, the invention, even if patented itself, cannot be commercialized if it infringes the valid patent rights of another party.

We rely on confidentiality agreements to protect our trade secrets. If these agreements are breached by our employees or other parties, our trade secrets may become known to our competitors.

We rely on trade secrets that we seek to protect through confidentiality agreements with our employees and other parties. If these agreements are breached, our competitors may obtain and use our trade secrets to gain a competitive advantage over us. We may not have any remedies against our competitors and any remedies that may be available to us may not be adequate to protect our business or compensate us for the damaging disclosure. In addition, we may have to expend resources to protect our interests from possible infringement by others.

The use of hazardous materials, including radioactive and biological materials, in our research and development efforts imposes certain compliance costs on us and may subject us to liability for claims arising from the use or misuse of these materials.

Our research, development and manufacturing activities involve the controlled use of hazardous materials, including chemicals, radioactive and biological materials, such as radioactive isotopes. We are subject to federal, state, local and foreign environmental laws and regulations governing, among other matters, the handling, storage, use and disposal of these materials and some waste products. We cannot completely eliminate the risk of contamination or injury from these materials and we could be held liable for any damages that result, which could exceed our financial resources. We currently maintain insurance coverage for injuries resulting from the hazardous materials we use; however, future claims may exceed the amount of our coverage. Also, we do not have insurance coverage for pollution cleanup and removal. Currently the costs of complying with such federal, state, local and foreign environmental regulations are not significant, and consist primarily of waste disposal expenses. However, they could become expensive, and current or future environmental laws or regulations may impair our research, development, production and commercialization efforts.

We may undertake international operations, which will subject us to risks inherent with operations outside of the United States.

Although we do not have any international operations at this time, we intend to seek market clearances in foreign markets that we believe will generate significant opportunities. However, even with the cooperating of a commercialization partner, conducting drug development in foreign countries involves inherent risks, including, but not limited to difficulties in staffing, funding and managing foreign operations; unexpected changes in regulatory requirements; export restrictions; tariffs and other trade barriers; difficulties in protecting, acquiring, enforcing and litigating intellectual property rights; fluctuations in currency exchange rates; and potentially adverse tax consequences.

If we were to experience any of the difficulties listed above, or any other difficulties, any international development activities and our overall financial condition may suffer and cause us to reduce or discontinue our international development and registration efforts.

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

Our future operations and successes depend in large part upon the continued service of key members of our senior management team whom we are highly dependent upon to manage our business. If any member of our current senior management terminates his employment with us and we are unable to find a suitable replacement quickly, the departure could have a material adverse effect on our business.

Our future success also depends on our ability to identify, attract, hire or engage, retain and motivate other well-qualified managerial, technical, clinical and regulatory personnel. There can be no assurance that such professionals will be available in the market, or that we will be able to retain existing professionals or meet or continue to meet their compensation requirements. Furthermore, the cost base in relation to such compensation, which may include equity compensation, may increase significantly, which could have a material adverse effect on us. Failure to establish and maintain an effective management team and workforce could adversely affect our ability to operate, grow and manage our business.

Managing our growth as we expand operations may strain our resources.

We expect to need to grow rapidly in order to support additional, larger, and potentially international, pivotal clinical trials of our product candidates, which will place a significant strain on our financial, managerial and operational resources. In order to achieve and manage growth effectively, we must continue to improve and expand our operational and financial management capabilities. Moreover, we will need to increase staffing and to train, motivate and manage our employees. All of these activities will increase our expenses and may require us to raise additional capital sooner than expected. Failure to manage growth effectively could materially harm our business, financial condition or results of operations.

We may expand our business through the acquisition of rights to new product candidates that could disrupt our business, harm our financial condition and may also dilute current stockholders' ownership interests in our company.

Our business strategy includes expanding our products and capabilities, and we may seek acquisitions of product candidates, antibodies or technologies to do so. Acquisitions involve numerous risks, including substantial cash expenditures; potentially dilutive issuance of equity securities; incurrence of debt and contingent liabilities, some of which may be difficult or impossible to identify at the time of acquisition; difficulties in assimilating acquired technologies or the operations of the acquired companies; diverting our management's attention away from other business concerns; risks of entering markets in which we have limited or no direct experience; and the potential loss of our key employees or key employees of the acquired companies.

We can make no assurances that any acquisition will result in short-term or long-term benefits to us. We may incorrectly judge the value or worth of an acquired product, company or business. In addition, our future success would depend in part on our ability to manage the rapid growth associated with some of these acquisitions. We cannot assure that we will be able to make the combination of our business with that of acquired products, businesses or companies work or be successful. Furthermore, the development or expansion of our business or any acquired products, business or companies may require a substantial capital investment by us. We may not have these necessary funds, or they might not be available to us on acceptable terms or at all. We may also seek to raise funds by selling shares of our preferred or common stock, which could dilute each current stockholder's ownership interest in the Company.

Risks Related to Ownership of Our Common Stock

The sale of securities by us in any equity or debt financing could result in dilution to our existing stockholders and have a material adverse effect on our earnings.

We have financed our operations primarily through sales of stock and warrants. It is likely that during the next twelve months we will seek to raise additional capital through the sales of stock and warrants in order to expand our level of operations to continue our research and development efforts.

Any sale of common stock by us in a future offering could result in dilution to our existing stockholders as a direct result of our issuance of additional shares of our capital stock. In addition, our business strategy may include expansion through internal growth or by establishing strategic relationships with targeted customers and vendors. In order to do so, or to finance the cost of our other activities, we may issue additional equity securities that could dilute our stockholders' stock ownership. We may also assume additional debt and incur impairment losses related to goodwill and other tangible assets if we acquire another company and this could negatively impact our earnings and results of operations.

Our common stock is subject to price volatility which could lead to losses by stockholders and potential costly security litigation.

The trading volume of our common stock has been and may continue to be extremely limited and sporadic. We expect the market price of our common stock to fluctuate substantially due to a variety of factors, including market perception of our ability to achieve our planned growth, quarterly operating results of other companies in the same industry, trading volume in our common stock, changes in general conditions in the economy and the financial markets or other developments affecting our competitors or us. This volatility has had a significant effect on the market price of securities issued by many companies for reasons unrelated to their operating performance and could have the same effect on our common stock.

The trading price of our Common Stock may be highly volatile and could fluctuate in response to factors such as:

- actual or anticipated variations in our operating results;
- announcements of developments by us or our competitors;
- the timing of IND and/or BLA approval, the completion and/or results of our clinical trials;
- regulatory actions regarding our products;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- adoption of new accounting standards affecting our industry;
- additions or departures of key personnel;
- introduction of new products by us or our competitors;
- sales of our Common Stock or other securities in the open market; and
- other events or factors, many of which are beyond our control.

The stock market is subject to significant price and volume fluctuations. Moreover, the COVID-19 pandemic has resulted in significant financial market volatility and uncertainty in recent months. In the past, following periods of volatility in the market price of a company's securities, securities class action litigation has often been initiated against such a company. Litigation initiated against us, whether or not successful, could result in substantial costs and diversion of our management's attention and our resources, which could harm our business and financial condition.

We do not intend to pay dividends on our common stock, so any returns will be determined by the value of our common stock.

We have never declared or paid any cash dividends on our common stock. For the foreseeable future, it is expected that earnings, if any, generated from our operations will be used to finance the growth of our business, and that no dividends will be paid to holders of our common stock. As a result, the success of an investment in our common stock will depend upon any future appreciation in its value. There is no guarantee that our common stock will appreciate in value.

Certain provisions of our Certificate of Incorporation and Bylaws and Delaware law make it more difficult for a third party to acquire us and make a takeover more difficult to complete, even if such a transaction were in our stockholders' interest.

Provisions of our certificate of incorporation and bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our stock. Among other things, the certificate of incorporation and bylaws:

- provide that the authorized number of directors may be changed by resolution of the board of directors;
- provide that all vacancies, including newly-created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide the board of directors into three classes;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and meet specific requirements as to the form and content of a stockholder's notice;

In addition, we are governed by Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a public Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. A "business combination" includes mergers, asset sales or other transactions resulting in a financial benefit to the stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns, or within three years, did own, 15% or more of the corporation's outstanding voting stock. These provisions may have the effect of delaying, deferring or preventing a change in our control.

Compliance with the reporting requirements of federal securities laws can be expensive.

We are subject to the information and reporting requirements of the Exchange Act and other federal securities laws, and the compliance obligations of the Sarbanes-Oxley Act. The costs of preparing and filing annual and quarterly reports and other information with the Securities and Exchange Commission and furnishing audited reports to stockholders are substantial. In addition, we will incur substantial expenses in connection with the preparation of registration statements and related documents with respect any offerings of our common stock.

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

Our ability to utilize our federal net operating loss and tax credit carryforwards may be limited under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code. The limitations apply if we experience an "ownership change", generally defined as a greater than 50 percentage point change in the ownership of our equity by certain stockholders over a rolling three-year period. Similar provisions of state tax law may also apply. We have not assessed whether such an ownership change has previously occurred. If we have experienced an ownership change at any time since our formation, we may already be subject to limitations on our ability to utilize our existing net operating losses and other tax attributes to offset taxable income. In addition, future changes in our stock ownership, which may be outside of our control, may trigger an ownership change and, consequently, the limitations under Sections 382 and 383 of the Code. As a result, if or when we earn net taxable income, our ability to use our pre-change net operating loss carryforwards and other tax attributes to offset such taxable income may be subject to limitations, which could adversely affect our future cash flows.

Failure to establish and maintain adequate finance infrastructure and accounting systems and controls could impair our ability to comply with the financial reporting and internal controls requirements for publicly traded companies.

As a public company, we operate in an increasingly demanding regulatory environment, including with respect to more complex accounting rules. Company responsibilities required by the Sarbanes-Oxley Act of 2002, as amended, or the Sarbanes-Oxley Act, include establishing and maintaining corporate oversight and adequate internal control over financial reporting and disclosure controls and procedures. Effective internal controls are necessary for us to produce reliable financial reports and are important to help prevent financial fraud.

Our compliance with Section 404 of the Sarbanes-Oxley Act requires that we incur substantial accounting expense and expend significant management efforts. We complied with Section 404 at December 31, 2019 and 2018 and while our testing did not reveal any material weaknesses in our internal controls, any material weaknesses in our internal controls in the future would be required us to remediate in a timely manner so as to be able to comply with the requirements of Section 404 each year. If we are not able to comply with the requirements of Section 404 in a timely manner each year, we could be subject to sanctions or investigations by the SEC, NYSE American or other regulatory authorities which would require additional financial and management resources and could adversely affect the market price of our common stock. Furthermore, if we cannot provide reliable financial reports or prevent fraud, our business and results of operations could be harmed, and investors could lose confidence in our reported financial information.

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, the price of our common stock and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business. Multiple securities and industry analysts currently cover us. If one or more of the analysts downgrade our common stock or publish inaccurate or unfavorable research about our business, the price of our common stock would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, demand for our common stock could decrease, which could cause the price of our common stock and trading volume to decline.

Our amended and restated bylaws, as amended, designate the U.S. federal district courts as the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act of 1933, as amended.

Our amended and restated bylaws, as amended, provide that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act of 1933, as amended. In addition, our amended and restated bylaws, as amended, state that any person purchasing or otherwise acquiring any interest in our security shall be deemed to have notice of and to have consented to such provision. Such choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits, if successful, might benefit our stockholders. Stockholders who do bring a claim in the federal district courts of the United States of America could face additional litigation costs in pursuing any such claim.

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.

Warrant Modification

On August 11, 2020, the Company entered into an amendment to its warrant (the “ Amendment”) to purchase an aggregate of 1,907 shares of common stock at an exercise price of \$15.61515 per share issued to Sandesh Seth, the Company’s Chairman and Chief Executive Officer, on March 14, 2017 (the “Warrants”). The Amendment modified Section 10 of the Warrant, removing the anti-dilution provision thereto. Accordingly, pursuant to the Amendment, the exercise price of the Warrant will no longer be subject to a proportional adjustment if and when the Company issues any shares of its common stock for a consideration less than the exercise price of the Warrant. The Amendment is effective as of August 11, 2020. All other terms of the Warrant remained the same.

Employment Agreements

Employment Agreement with Sandesh Seth

On August 12, 2020, the Company and Sandesh Seth, the Company’s Chairman and Chief Executive Officer, entered into an employment agreement, which replaces that certain Employment Agreement, dated as of August 8, 2018, between the Company and Mr. Seth. Pursuant to the employment agreement, Mr. Seth will serve as Chairman and Chief Executive Officer until February 24, 2020, unless terminated earlier as set forth in the employment agreement.

Under the terms of the employment agreement, Mr. Seth will be entitled to (i) a base salary, which will be determined by the Board and adjusted to be competitively aligned to a range between the 25th and 75th percentile of the relevant market data of chief executive officer positions of similarly situated publicly companies, (ii) a performance bonus with a target of 50% of his annual base salary as well as other multipliers as determined by the Board and (iii) options to purchase shares of common stock of the Company as the Board may grant. When and if granted, the options will have an exercise price equal to the closing price of the Company’s common stock on the date of the approval, and 2% of the grant will vest each month from the grant date until fully vested, in accordance with the Company’s Amended and Restated 2013 Stock Plan and 2019 Stock Plan. The options will expire 10 years from the grant date, subject to Mr. Seth’s continuing service with the Company. Mr. Seth will also receive the standard benefits available to other similarly situated employees.

If Mr. Seth’s employment as Chief Executive Officer or Chairman are terminated due to death or disability, Mr. Seth will be entitled to earned, but unpaid, salary, benefits and the Pro-Rated Bonus (as defined herein) for the year of termination. Upon termination of his employment for Cause (as defined in the employment agreement), or his resignation without Good Reason (as defined in the employment agreement), Mr. Seth will receive any accrued and unpaid base salary, the Pro-Rated Bonus and benefits through the date of termination.

If the Company terminates Mr. Seth's employment without Cause, or if Mr. Seth resigns for Good Reason, Mr. Seth will be entitled to (i) a single lump sum payment equal to the 24 months of his compensation, (ii) continued health benefits for 24 months, (iii) immediate vesting of all outstanding equity awards granted to Mr. Seth, and (iv) a single lump sum payment equal to his annual bonus subject to the achievement of the applicable goals, pro-rated based on the number of days in the Company's fiscal year through the date of termination (the "Pro-Rated Bonus").

In addition, if the Company terminates Mr. Seth's employment without Cause or if Mr. Seth resigns for Good Reason, or if the Company fails to renew his position as Chief Executive Officer and Chairman on February 21, 2024, in any case, within the 12-month period beginning on the date of a Change in Control (as defined in the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan), Mr. Seth will be entitled to (i) a single lump sum payment equal to 30 months of his compensation, (ii) continued health benefits for 30 months, (iii) immediate vesting of all outstanding equity awards granted to Mr. Seth.

A copy of the employment agreement is filed herewith as Exhibit 10.3 and is incorporated hereby reference. The above description is only a summary of the terms of the employment agreement and does not purport to be complete description of such document and are qualified in their entirety by reference to the employment agreement.

Employment Agreement with Steve O'Loughlin

On August 12, 2020, the Company and Steve O'Loughlin, the Company's Chief Financial Officer, entered into an employment agreement, pursuant to which Mr. O'Loughlin will serve as Chief Financial Officer of the Company. Under the terms of the employment agreement, Mr. O'Loughlin will be entitled to (i) a base salary, which shall be determined by the Board, (ii) a performance bonus, which may be up to 30% of the annual base salary based upon the achievement of certain objectives such as the Board shall determine and (iii) options to purchase shares of common stock of the Company as the Board may grant. When and if granted, the options will have an exercise price equal to the closing price of the Company's common stock on the date of the approval, and 2% of the grant will vest each month from the grant date until fully vested, in accordance with the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan. The options will expire 10 years from the grant date, subject to Mr. O'Loughlin's continuing service with the Company. Mr. Loughlin will also receive the standard benefits available to other similarly situated employees.

In addition, if the Company terminates Mr. O'Loughlin's employment without Cause (as defined in the employment agreement) or if Mr. O'Loughlin resigns for Good Reason (as defined in the employment agreement), in either case, within the 12-month period beginning on the date of a Change in Control, Mr. O'Loughlin will be entitled to (i) a single lump sum payment equal to his annual base salary, (ii) continued health benefits for 12 months, (iii) immediate vesting of all outstanding equity awards granted to Mr. O'Loughlin.

A copy of the employment agreement is filed herewith as Exhibit 10.2 and is incorporated hereby reference. The above description is only a summary of the terms of the employment agreement and does not purport to be complete description of such document and are qualified in their entirety by reference to the employment agreement.

Employment Agreement with Dale Ludwig

On August 12, 2020, the Company and Dale Ludwig, the Company's Chief Scientific and Technology Officer, entered into an employment agreement, pursuant to which Dr. Ludwig will serve as Chief Scientific and Technology Officer of the Company. Under the terms of the employment agreement, Dr. Ludwig will be entitled to (i) a base salary, which shall be determined by the Board, (ii) a performance bonus, which may be up to 30% of the annual base salary based upon the achievement of certain objectives such as the Board shall determine and (iii) options to purchase shares of common stock of the Company as the Board may grant. When and if granted, the options will have an exercise price equal to the closing price of the Company's common stock on the date of the approval, and 2% of the grant will vest each month from the grant date until fully vested, in accordance with the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan. The options will expire 10 years from the grant date, subject to Mr. Ludwig's continuing service with the Company. Dr. Ludwig will also receive the standard benefits available to other similarly situated employees.

In addition, if the Company terminates Dr. Ludwig's employment without Cause (as defined in the employment agreement) within the 12-month period beginning on the date of a Change in Control, Dr. Ludwig will be entitled to (i) a single lump sum payment equal to his annual base salary, (ii) continued health benefits for 12 months, (iii) immediate vesting of all outstanding equity awards granted to Mr. Ludwig.

A copy of the employment agreement is filed herewith as Exhibit 10.3 and is incorporated hereby reference. The above description is only a summary of the terms of the employment agreement and does not purport to be complete description of such document and are qualified in their entirety by reference to the employment agreement.

Employment Agreement with Mark Berger

On August 12, 2020, the Company and Mark Berger, the Company's Chief Medical Officer, entered into an employment agreement, pursuant to which Dr. Berger will serve as Chief Medical Officer of the Company. Under the terms of the employment agreement, Dr. Berger will be entitled to (i) a base salary, which shall be determined by the Board, (ii) a performance bonus, which may be up to 30% of the annual base salary based upon the achievement of certain objectives such as the Board shall determine and (iii) options to purchase shares of common stock of the Company as the Board may grant. When and if granted, the options will have an exercise price equal to the closing price of the Company's common stock on the date of the approval, and 2% of the grant will vest each month from the grant date until fully vested, in accordance with the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan. The options will expire 10 years from the grant date, subject to Dr. Berger's continuing service with the Company. Mr. Berger will also receive the standard benefits available to other similarly situated employees.

In addition, if the Company terminates Dr. Berger's employment without Cause (as defined in the employment agreement) within the 12-month period beginning on the date of a Change in Control, Dr. Berger will be entitled to (i) a single lump sum payment equal to his annual base salary, (ii) continued health benefits for 12 months, (iii) immediate vesting of all outstanding equity awards granted to Dr. Berger.

A copy of the employment agreement is filed herewith as Exhibit 10.4 and is incorporated hereby reference. The above description is only a summary of the terms of the employment agreement and does not purport to be complete description of such document and are qualified in their entirety by reference to the employment agreement.

ITEM 6. EXHIBITS

Copies of the following documents are included as exhibits to this report pursuant to Item 601 of Regulation S-K.

Exhibit No.	Title of Document	Location
3.1	Certificate of Incorporation of Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 3.1 of the Company's Form 8-K filed with the SEC on April 17, 2013).	
3.2	Certificate of Amendment to Certificate of Incorporation filed January 7, 2014 (incorporated by reference to Exhibit 3.5 to Form S-1 filed on January 31, 2014).	
3.3	Certificate of Amendment to Certificate of Incorporation filed February 3, 2014. (incorporated by reference to Exhibit 3.1 to Form 8-K filed on February 7, 2014).	
3.4	Certificate of Amendment to Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to Form 8-K filed on March 4, 2015).	
3.5	Certificate of Amendment to Certificate of Incorporation, as amended, filed on February 26, 2018 (incorporated by reference to Exhibit 3.1 to Form 8-K filed on February 26, 2018).	
3.6	Certificate of Amendment to Certificate of Incorporation, as amended, filed on March 6, 2019 (incorporated by reference to Exhibit 3.7 to Form 10-K filed on March 15, 2019).	
3.7	Certificate of Amendment to Certificate of Incorporation, as amended, filed on June 16, 2020 (incorporated by reference to Exhibit 4.1 to Form 8-K filed on June 16, 2020).	
3.8	Amended and Restated Bylaws, dated August 8, 2018 (incorporated by reference to Exhibit 3.1 to Form 10-Q filed on August 9, 2018).	
3.9	Amendment to the Amended and Restated Bylaws, dated May 7, 2020 (incorporated by reference to Exhibit 3.1 to Form 8-K filed on May 5, 2020).	
4.1	Form of Pre-Funded Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.1 to Form 8-K filed on April 24, 2020).	
4.2	Form of Pre-Funded Common Stock Warrant (incorporated by reference to Exhibit 4.1 to Form 8-K filed on June 18, 2020).	
10.1	Form of Securities Purchase Agreement (incorporated by reference to Exhibit 10.1 to Form 8-K filed on June 18, 2020).	
10.2	Amendment to Warrant to Purchase Common Stock of Actinium Pharmaceuticals, Inc., dated March 14, 2017, issued to Sandesh Seth	Attached
10.3**	Employment Agreement, dated August 12, 2020, by and between Actinium Pharmaceuticals, Inc. and Sandesh Seth.	Attached
10.4**	Employment Agreement, dated August 12, 2020, by and between Actinium Pharmaceuticals, Inc. and Steve O'Loughlin.	Attached
10.5**	Employment Agreement, dated August 12, 2020, by and between Actinium Pharmaceuticals, Inc. and Dale Ludwig.	Attached
10.6**	Employment Agreement, dated August 12, 2020, by and between Actinium Pharmaceuticals, Inc. and Mark Berger.	Attached

31.1	Certification of the Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Attached
31.2	Certification of the Principal Financial and Accounting Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Attached
32.1	Certification of the Chief Executive Officer pursuant to U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*	Attached
32.2	Certification of the Principal Financial and Accounting Officer pursuant to U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*	Attached
101.INS	XBRL Instance Document	Attached
101.SCH	XBRL Taxonomy Extension Schema Document	Attached
101.CAL	XBRL Taxonomy Calculation Linkbase Document	Attached
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	Attached
101.LAB	XBRL Taxonomy Label Linkbase Document	Attached
101.PRE	XBRL Taxonomy Presentation Linkbase Document	Attached

* The Exhibit attached to this Form 10-Q shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934 (the “Exchange Act”) or otherwise subject to liability under that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such filing.

** Indicates a management contract or compensatory plan.

SIGNATURES

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

Date: August 14, 2020

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Sandesh Seth
Sandesh Seth
Chairman and Chief Executive Officer
(Duly Authorized Officer and
Principal Executive Officer)

By: /s/ Steve O'Loughlin
Steve O'Loughlin
Chief Financial Officer
(Duly Authorized Officer and
Principal Financial and Accounting Officer)

**AMENDMENT TO WARRANT TO PURCHASE COMMON STOCK OF
ACTINIUM PHARMACEUTICALS, INC.**

This **AMENDMENT TO WARRANT TO PURCHASE COMMON STOCK OF ACTINIUM PHARMACEUTICALS, INC.** (this "**Amendment**") is effective as of August 12, 2020 (the "**Effective Date**"), and is entered into by and between Sandesh Seth (the "**Holder**") and Actinium Pharmaceuticals, Inc. (the "**Company**"). Capitalized terms not otherwise defined herein shall have the meaning given to such terms in that certain Warrant to Purchase Common Stock of Actinium Pharmaceuticals, Inc., dated March 14, 2017, by and between the Holder and the Company (the "**Warrant**").

WHEREAS, pursuant to the Warrant, the Company previously granted the Holder the opportunity to acquire up to 57,212 shares (the "**Covered Shares**") of the Company's common stock, par value \$0.001 per share ("**Common Stock**") pursuant to the Warrant;

WHEREAS, Section 9 of the Warrant provides that the Warrant may only be amended by a writing signed by the parties thereto; and

WHEREAS, the Company and the Holder mutually desire and agree to amend the Warrant to remove its anti-dilution provisions.

NOW, THEREFORE, in accordance with Section 9 of the Warrant and in consideration of the mutual promises, conditions, and covenants contained herein and in the Warrant, and other good and valuable consideration, the adequacy of which is hereby acknowledged, the parties hereby agree to amend the Warrant, effective as of the Effective Date, as follows:

1. The Warrant is amended by deleting Section 10(c) in its entirety.
2. Except as expressly amended by this Amendment, the Warrant shall continue in full force and effect in accordance with the provisions thereof.
3. This Amendment may be executed in two or more counterparts (including by facsimile or portable document format ("**pdf**") counterparts), all of which taken together shall constitute one instrument. The exchange of copies of this Amendment and of signature pages by facsimile or .pdf transmission shall constitute effective execution and delivery of this Amendment as to the parties and may be used in lieu of the original document for all purposes. Signatures of the parties transmitted by facsimile or .pdf shall be deemed to be their original signatures for any purpose whatsoever.

*[Remainder of Page Intentionally Left Blank;
Signature Page Follows]*

IN WITNESS WHEREOF, the Company and the Holder have executed, or caused to be executed, this Amendment, to be effective as of the Effective Date.

THE COMPANY

Actinium Pharmaceuticals, Inc.

By: /s/ Steve O'Loughlin

Name: Steve O'Loughlin

Title: Chief Financial Officer

THE HOLDER

/s/ Sandesh Seth

Sandesh Seth



August 12, 2020

Sandesh Seth
275 Madison Avenue, Suite 702
New York, NY 10016

Dear Mr. Seth:

On behalf of Actinium Pharmaceuticals, Inc. (the "Company"), I am pleased to provide you with this contract (the "Agreement") related to your position as Chief Executive Officer and Chairman of the Board of the Company. This Agreement replaces your employment agreement with the Company dated August 8, 2018 ("Prior Agreement"). This Agreement sets forth the terms related to your position as Chief Executive Officer and Chairman of the Board of the Company.

1. Position. The terms of your position with the Company are as set forth below:

(a) You shall serve as Chief Executive Officer and Chairman of the Board of the Company with such responsibilities, duties and authority as are assigned to you by the Board of Directors (the "Board"), or its designee. These responsibilities shall include implementation of the overall direction of the Company as agreed to with the Board, including, strategic planning, corporate policies, research and development, staffing, finance, commercial, business development and all aspects of company operations. You shall perform such other duties and shall have authority consistent with your position.

(b) You agree to devote your best efforts to advance the interests of the Company and to discharge adequately your duties hereunder. Nothing herein shall prohibit you from being an investor in another company such as a member of a limited liability company, a general or limited partner of a limited partnership or a stockholder of a corporation, or accepting or continuing in any advisory, or board position with any other for-profit or non-profit entity, so long as such activities are not in direct competition with the Company's business nor interfere with the duties of your position with the Company.

2. Compensation. The Board shall review the amount of your base salary and performance bonus, and shall determine the appropriate adjustments to each component of your compensation each calendar year as specified below. As has been customary, the services of an independent compensation consultant shall be utilized to determine the relevant benchmark companies and provide the market data which the Board shall use as reference materials in setting compensation in addition to other parameters including overall company performance.

(a) Base Salary. Each calendar year the Board will review your base salary and make appropriate adjustments as needed and make its best efforts to accomplish such review within the first calendar quarter. In doing so, the Board will seek to adjust your base fee is to be competitively aligned to a range between the 25th (twenty-fifth) and 75th (seventy-fifth) percentile of the relevant market data of Chief Executive Officer positions of similarly situated publicly traded Biotech companies provided however, that such adjustment does not represent a reduction in base salary.

(b) Performance Bonus. You shall be entitled to participate in a Company annual bonus program for each calendar year of your employment period, which shall be established by the Board pursuant to which the Board shall award bonuses to you, based upon the achievement of written individual and corporate objectives such as the Board shall determine in consultation and agreement with you. Upon the attainment of such performance objectives, in addition to your salary, you shall be entitled to a cash bonus in an amount to be determined by the Board with a target of fifty percent (50%) of your annual base salary as well as any multiplier that may be deemed appropriate taking into consideration individual contributions, overall company performance and other industry related benchmarks based on relevant benchmark companies and market data. The Board shall make its best efforts to determine, award and have the Company pay out such bonus, if applicable, in the first calendar quarter of the annual period for which the bonus is awarded.

(c) Stock Option Grant. From time to time the Board may grant you an option to purchase common shares of the Company (the "Grant"). Unless specified otherwise, the Grant shall be subject to the vesting schedule below.

(i) Stock Options. Such option will have an exercise price equal to the closing price of the Company's common stock on the date of Board approval of the Grant, which is equal to fair market value as determined by the Board on the date of the grant (the "Grant Date").

(ii) Vesting Schedule of the Grant. Two percent (2%) of the Grant shall vest each month from the Grant Date until fully vested in accordance with the provisions of the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan. The term of all option granted under this Agreement will be for 10 years from the Grant Date, subject to your continuing service with the Company. The option will be incentive stock options to the maximum extent allowed by the tax code and will be subject to the terms of the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan and corresponding Stock Option Agreement between you and the Company.

3. Benefits.

(a) Benefit Plans. The Company will provide you with the opportunity to participate in the standard benefits plans currently available to other senior executives, including health, disability and life insurance plans. The Company reserves the right to cancel and/or change the benefits plans it offers to its participants at any time, subject to applicable law.

(b) Vacation; Sick Leave. You will be entitled to 20 days paid vacation per year. Vacation may not be taken before it is accrued. You will be entitled to 5 days paid sick leave per year. You may carry over a maximum of 5 days of paid vacation days and 5 days of paid sick leave time vacation and sick leave policy.

(c) Reimbursement of Expenses. You shall be reimbursed for all normal items of travel and entertainment and miscellaneous expenses reasonably incurred by you on behalf of the Company provided such expenses are documented and submitted in accordance with the reimbursement policies in effect from time to time.

4. Confidential Information and Invention Assignment Agreement. You have already executed the Company's Confidential Information and Invention Assignment Agreement, (the "Confidentiality Agreement"), which remains in effect.

5. Term and Severance. The term of your Chief Executive Officer and Chairman of the Board positions shall be until February 21, 2024, unless terminated earlier as provided herein. If your employment as Chief Executive Officer or Chairman positions are terminated because of your death or Disability, the Company's only obligation to you shall be to pay your earned, but unpaid, salary (as of the date of termination), benefits and the Pro-Rated Bonus for the year of termination (as defined below) and provide you, if eligible, with the option to elect health coverage under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"); provided that upon termination of your employment due to death, your estate also shall be entitled to receive a single lump sum payment equal to three (3) months of your compensation at the rate in effect as of the date of termination, payable within 30 days of your death. Upon termination of your employment for Cause (as defined below), or your resignation without Good Reason (as defined below), you shall be paid any accrued and unpaid base salary, the Pro-Rated Bonus and benefits through the date of termination and shall have no further rights to any compensation or any other benefits under the Agreement or otherwise.

(a) Termination of Service Other Than for Cause or Resignation for Good Reason (Not in Connection with a Change in Control) If the Company terminates your employment or Chairman position other than for Cause or Disability or death, or if you resign for Good Reason, in any case in circumstances other than those described in Section 5(b), you shall be entitled to the following:

(i) Subject to Section 6 hereof, a single lump sum payment equal to twenty-four (24) months of your compensation (at the rate in effect as of the date of termination), payable on the first payroll date following the date the Release (as defined in Section 6 hereof) becomes effective and irrevocable in accordance with its terms.

(ii) Subject to Section 6 hereof, continued health benefits for the 24-month period beginning on the date of termination, with such period to run concurrently with any period for which you are eligible to elect health coverage under COBRA. During this continuation period, the Company will subsidize your premiums in an amount equal to what it would have paid toward health insurance premiums for an active employee with similar coverage. Notwithstanding the foregoing, you shall be required to pay any and all service provider premiums associated with COBRA coverage and, if you begin providing services to another service recipient and become covered by such service recipient's health benefits plan or program, the continued health benefits and Company subsidy provided hereunder shall cease.

(iii) All outstanding equity awards granted to you under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination, the performance goals with respect to such outstanding performance awards, if any, will be deemed satisfied at "target", and all outstanding and vested Company stock options (including those that vest pursuant to the operation of this paragraph) will remain exercisable for the full duration of their term.

(iv) Subject to Section 6 hereof, a single lump sum payment equal to your annual bonus for the year of termination, assuming that the applicable goals were satisfied at the "target" level, pro-rated based on the number of days in the Company's fiscal year through (and including) the date of termination (the "Pro-Rated Bonus"), payable on the first payroll date following the date the Release (as defined in Section 6 hereof) becomes effective and irrevocable in accordance with its terms.

(b) Change in Control. If the Company terminates your employment or Chairman position other than for Cause or Disability or death, or if you resign for Good Reason, or if the Company fails to renew your position as Chief Executive Officer and Chairman of the Board on February 21, 2024 under this Agreement and your employment with the Company terminates, in any case during the 12-month period beginning on the date of a Change in Control (as defined in the Company's 2013 Amended and Restated Stock Plan and 2019 Stock Plan), you shall be entitled to the following:

(i) Subject to Section 6 hereof, a single lump sum payment equal to thirty (30) months of your compensation (at the rate in effect as of the date of termination), payable on the first payroll date following the date the Release (as defined in Section 6 hereof) becomes effective and irrevocable in accordance with its terms.

(ii) Subject to Section 6 hereof, continued health benefits for the 30-month period beginning on the date of termination, with such period to run concurrently with any period for which you are eligible to elect health coverage under COBRA. During this continuation period, the Company will subsidize your premiums in an amount equal to what it would have paid toward health insurance premiums for an active employee with similar coverage. Notwithstanding the foregoing, you shall be required to pay any and all service provider premiums associated with COBRA coverage and, if you begin providing services to another service recipient and become covered by such service recipient's health benefits plan or program, the continued health benefits and Company subsidy provided hereunder shall cease.

(iii) All outstanding equity awards granted to you under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination, the performance goals with respect to such outstanding performance awards, if any, will be deemed satisfied at "target", and all outstanding and vested Company stock options (including those that vest pursuant to the operation of this paragraph) will remain exercisable for the full duration of their term.

(iv) Subject to Section 6 hereof, a single lump sum payment equal to Pro-Rated Bonus, payable on the first payroll date following the date the Release (as defined in Section 6 hereof) becomes effective and irrevocable in accordance with its terms.

(c) "Cause" means: (i) your gross negligence and/or willful misconduct (as such terms are generally understood and applied to the performance of an executive) in the performance of your material duties with respect to the Company as determined, in each case, by a court of competent jurisdiction not subject to further appeal or a final arbitration award, as provided hereunder; (ii) the conviction by you of a crime constituting a felony, or (iii) you shall have committed any material act of malfeasance, dishonesty or breach of fiduciary duty against the Company, for which you shall have a thirty (30) day cure period following notice thereof from the Company (except for a conviction pursuant to subsection (ii), for which there shall be no cure period).

(d) "Good Reason" means: (i) the Company's material breach any of its obligations under this Agreement; (ii) a material reduction of your base salary or target bonus opportunity; (iii) a material change to the title, scope of your work; (iv) an abandonment of, or fundamental change in, the primary business or primary products of the Company; (v) the termination, elimination of your duties as Chief Executive Officer or director or Chairman of the Board of the Company, other than for Cause or voluntary resignation; (vi) the appointment of a new Chief Executive Officer or Chairman of the Board, or person performing similar duties; or (vii) the Company's regular requirement that you perform services in or relocate to a location that is outside New York City. A termination will not be deemed to be for Good Reason unless the Company does not cure within 30 days after receipt of written notice from you specifying the Good Reason and referring to your right to resign for Good Reason. Any resignation for Good Reason will be effective immediately upon your giving notice of your resignation for Good Reason to the Company, conditioned upon your having provided proper notice of Good Reason and time to cure in accordance with this provision.

(e) "Disability" means that (i) you have been unable, for a period of 180 consecutive business days, to perform your duties under this Agreement, as a result of physical or mental illness or injury, and (ii) a physician selected or approved by the Company has determined that it is either not possible to determine when such inability to perform will cease or that it appears probable that such inability will be permanent during the remainder of your life.

(f) Mitigation. In the event that you are entitled to severance pursuant to this Agreement, you have no duty to mitigate and your severance will not be reduced for any reason.

6. Release. Notwithstanding anything contained herein to the contrary, the Company shall not be obligated to provide any severance payment or benefit under Sections 5(a)(i), 5(a)(ii), 5(a)(iv), 5(b)(i), 5(b)(ii), or 5(b)(iv) hereof unless: (a) you or your legal representative first executes within 50 calendar days after the date of presentment a release of claims agreement in the form as to be provided by the Company (the "Release") and substantially similar to the form of Release attached hereto as Exhibit A, (b) you do not revoke the Release, and (c) the Release becomes effective and irrevocable in accordance with its terms. The Company shall provide the Release to you for your review within ten (10) days of the date of termination.

7. Non-Solicitation. You agree that during the term of your employment with the Company, and for a period of 24 months following the cessation of employment with the Company for any reason or no reason, you shall not directly or indirectly solicit, induce, recruit or encourage any of the Company's employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for yourself or any other person or entity. For a period of 24 months following cessation of your employment with the Company for any reason or no reason, you shall not attempt to negatively influence any of the Company's clients or customers from purchasing Company products or services or to solicit or influence or attempt to influence any client, customer or other person either directly or indirectly, to direct his or its purchase of products and/or services to any person, firm, corporation, institution or other entity in competition with the business of the Company.

8. Arbitration. Any dispute or claim arising out of or in connection with your employment with the Company (except with regard to enforcement of the Confidentiality Agreement) will be finally settled by arbitration in New York, New York in accordance with the Commercial Arbitration Rules of the American Arbitration Association by one arbitrator appointed in accordance with said rules. Judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The parties agree that this Agreement evidences a transaction involving interstate commerce and that the operation, interpretation and enforcement of this arbitration provision, the procedures to be used in conducting an arbitration pursuant to this arbitration provision, and the confirmation of any award issued to either party by reason of such arbitration, is governed exclusively by the Federal Arbitration Act, 9 U.S.C. § 21 et seq. Notwithstanding the foregoing, the parties may apply to any court of competent jurisdiction for preliminary or interim equitable relief, or to compel arbitration in accordance with this paragraph, without breach of this arbitration provision. The Company shall pay all fees and expenses for the arbitration itself; provided that the cost of the arbitrator will be equally divided between the parties. The Company will pay your legal fees, provided that, if you substantially do not prevail, the Company shall be reimbursed for your reasonable legal fees.

9. Indemnification. Effective August 7, 2015, you have entered into an Indemnification Agreement with the Company. This agreement shall still remain in effect.

10. Section 280G. In the event it shall be determined that any payment or distribution by the Company to or for your benefit (whether paid or payable or distributed or distributable pursuant to the terms of this Agreement or otherwise) (the "Total Payments"), is or will be subject to the excise tax (the "Excise Tax") imposed by Section 4999 of the Internal Revenue Code of 1986, as amended (the "Code"), then the Total Payments shall be reduced to the maximum amount that could be paid to you without giving rise to the Excise Tax (the "Safe Harbor Cap"), if the net after-tax benefit to you after reducing your Total Payments to the Safe Harbor Cap is greater than the net after-tax (including the Excise Tax) benefit to you without such reduction. The reduction of the amounts payable hereunder, if applicable, shall be made by reducing such payment that trigger the Excise Tax in the following order: (i) reduction of cash payments, (ii) cancellation of accelerated vesting of performance-based equity awards (based on the reverse order of the date of grant), (iii) cancellation of accelerated vesting of other equity awards (based on the reverse order of the date of grant), and (iv) reduction of any other payments due to you (with benefits or payments in any group having different payment terms being reduced on a pro-rata basis). All mathematical determinations, and all determinations as to whether any of the Total Payments are "parachute payments" (within the meaning of Section 280G of the Code), that are required to be made under this paragraph, including determinations as to whether the Total Payments to you shall be reduced to the Safe Harbor Cap and the assumptions to be utilized in arriving at such determinations, shall be made at the Company's expense by the Company's then current independent auditors, or such other nationally recognized accounting firm selected by the Committee prior to the relevant change in control transaction.

11. Section 409A.

(a) In General. It is the Company's intent that this Agreement be exempt from the application of, or otherwise comply with, the requirements of Section 409A of the Code ("Section 409A"). Specifically, any taxable benefits or payments provided under this Agreement are intended to be separate payments that qualify for the "short-term deferral" exception to Section 409A to the maximum extent possible, and to the extent they do not so qualify, are intended to qualify for the involuntary separation pay exceptions to Section 409A, to the maximum extent possible. If neither of these exceptions applies, and if you are a "specified employee" within the meaning of Section 409A, then notwithstanding any provision in this Agreement to the contrary and to the extent required to comply with Section 409A, all amounts that would otherwise be paid or provided to you during the first six (6) months following your date of termination shall instead be accumulated through and paid or provided (without interest) on the first business day following the six-month anniversary of the date of termination. If the period during which the Release must become effective and irrevocable in accordance with its terms spans two calendar years, then, to the extent required to comply with Section 409A, any payment to be made under this Agreement will commence on the first payroll date that occurs in the second calendar year and after the Release has become effective and irrevocable in accordance with its terms. Further, to the extent required to comply with Section 409A: (i) the amount of any expense reimbursement to which you may be entitled hereunder during a calendar year will not affect the amount of reimbursements to be provided in any other calendar year; (ii) your right to receive reimbursement of an eligible expense hereunder is not subject to liquidation or exchange for another benefit; and (iii) provided that the requisite documentation is submitted, the Company will reimburse your eligible expenses on or before the last day of the calendar year following the calendar year in which the expense was incurred.

(b) Separation from Service. A termination of service shall not be deemed to have occurred for purposes of any provision of this Agreement providing for the payment of any amounts or benefits subject to Section 409A upon or following a termination of service unless such termination is also a "separation from service" within the meaning of Section 409A and you are no longer providing services (at a level that would preclude the occurrence of a "separation from service" within the meaning of Section 409A) to the Company or its affiliates as an employee or consultant, and for purposes of any such provision of this Plan, references to a "termination," "termination of employment" or like terms shall mean "separation from service" within the meaning of Section 409A.

12. Attorneys' Fees. Should either party hereto, or any heir, personal representative, successor or assign of either party hereto, resort to legal proceedings in connection with this Agreement, the party or parties prevailing in such legal proceedings shall be entitled, in addition to such other relief as may be granted, to recover its or their reasonable attorneys' fees and costs in such legal proceedings from the non-prevailing party or parties.

13. Assistance in Litigation. You shall, during and after termination of employment, upon reasonable notice, furnish such information and proper assistance to the Company as may reasonably be required by the Company in connection with any litigation in which it or any of its subsidiaries or affiliates is, or may become a party; provided, however, that such assistance following termination shall be furnished at mutually agreeable times and for mutually agreeable compensation.

14. Miscellaneous. This Agreement, together with the Confidentiality Agreement, and Indemnification Agreement sets forth the terms of your employment with the Company and supersedes any prior representations or agreements, whether written or oral. This Agreement may not be modified or amended except by a written agreement, signed by the Company and by you. Whenever possible, each provision of this Agreement will be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be invalid, illegal or unenforceable in any respect under any applicable law or rule in any jurisdiction, such invalidity, illegality or unenforceability will be lessened or reduced to the extent possible or will be severed and will not affect any other provision and this Agreement will be reformed, construed and enforced in such jurisdiction as if such invalid, illegal or unenforceable provision had never been contained herein. This Agreement will be governed by New York law without reference to rules of conflicts of law. All notices, requests, demands and other communications called for hereunder shall be in writing and shall be deemed given (i) on the date of delivery if delivered personally, (ii) one (1) day after being sent by a well established commercial overnight service, (iii) three (3) days after being mailed by registered or certified mail, return receipt requested, prepaid and addressed to the parties or their successors at the following addresses, or at such other addresses as the parties may later designate in writing, (iv) upon confirmation of facsimile transfer, if sent by facsimile or (v) upon confirmation of delivery when directed to the electronic mail address set forth below, if sent by electronic mail:

If to the Company: 275 Madison Avenue, Suite 702
New York, NY 10016

If to you: Sandesh Seth
275 Madison Avenue, Suite 702
New York, NY 10016

15. Withholding of Taxes. The Company may withhold from any amounts payable under this Agreement all federal, state, city or other taxes as the Company may be required to withhold pursuant to any law or government regulation or ruling.

To indicate your acceptance of the Company's offer, please sign and date this letter in the space provided below.

Very truly yours,

ACTINIUM PHARMACEUTICALS, INC.

By: _____

David Nicholson
Chairman Compensation Committee

Dated: August 12, 2020

ACCEPTED AND AGREED:

SANDESH SETH

Dated: August 12, 2020

EXHIBIT A

RELEASE OF CLAIMS

FOR AND IN CONSIDERATION OF the payments and benefits (the "Separation Benefits") to be provided to me in connection with the separation of my relationship with the Company, in accordance with the Agreement between Actinium Pharmaceuticals, Inc. (the "Company") and me dated as August 12, 2020 (the "Agreement"), which Separation Benefits are conditioned on my signing this Release of Claims ("Release") and which I will forfeit unless I execute and do not revoke this Release of Claims, I, on my own behalf and on behalf of my heirs and estate, voluntarily, knowingly and willingly release and forever discharge the Company, its subsidiaries, affiliates, parents, and stockholders, together with each of those entities' respective officers, directors, stockholders, employees, agents, fiduciaries and administrators (collectively, the "Releasees") from any and all claims and rights of any nature whatsoever which I now have against them up to the date I execute this Release, whether known or unknown, suspected or unsuspected. This Release includes, but is not limited to, any rights or claims relating in any way to my employment or consulting relationship with the Company or any of the other Releasees or the termination thereof, any contract claims (express or implied, written or oral), including, but not limited to, the Agreement, or any rights or claims under any statute, including, without limitation, the Americans with Disabilities Act, the Age Discrimination in Employment Act, the Older Workers' Benefit Protection Act, the Rehabilitation Act of 1973 (including Section 504 thereof), Title VII of the 1964 Civil Rights Act, the Civil Rights Act of 1866 (42 U.S.C. § 1981), the Civil Rights Act of 1991, the Equal Pay Act, the National Labor Relations Act, the Worker Adjustment and Retraining Notification Act, the Family Medical Leave Act, the Lilly Ledbetter Fair Pay Act, the Genetic Information Non-Discrimination Act, the New York State Human Rights Law, the New York City Human Rights Law, and the Employee Retirement Income Security Act of 1974, all as amended, and any other federal, state or local law. This Release specifically includes, but is not limited to, any claims based upon the right to the payment of wages, incentive and performance compensation, bonuses, equity grants, vacation, pension benefits, 401(k) Plan benefits, stock benefits or any other employee benefits, or any other rights arising under federal, state or local laws prohibiting discrimination and/or harassment on the basis of race, color, age, religion, sexual orientation, religious creed, sex, national origin, ancestry, alienage, citizenship, nationality, mental or physical disability, denial of family and medical care leave, medical condition (including cancer and genetic characteristics), marital status, military status, gender identity, harassment or any other basis prohibited by law.

As a condition of the Company entering into this Release, I further represent that I have not filed against the Company or any of the other Releasees, any complaints, claims or lawsuits with any arbitral tribunal, administrative agency, or court prior to the date hereof, and that I have not transferred to any other person any such complaints, claims or lawsuits. I understand that by signing this Release, I waive my right to any monetary recovery in connection with a local, state or federal governmental agency proceeding and I waive my right to file a claim seeking monetary damages in any arbitral tribunal, administrative agency, or court. This Release does not: (i) prohibit or restrict me from communicating, providing relevant information to or otherwise cooperating with the U.S. Equal Employment Opportunity Commission or any other governmental authority with responsibility for the administration of fair employment practices laws regarding a possible violation of such laws or responding to any inquiry from such authority, including an inquiry about the existence of this Release or its underlying facts, or (ii) require me to notify the Company of such communications or inquiry. Furthermore, notwithstanding the foregoing, this Release does not include and will not preclude: (a) rights or claims to vested benefits under any applicable retirement and/or pension plans; (b) rights under the Consolidated Omnibus Budget Reconciliation Act of 1985 ("COBRA"); (c) claims for unemployment compensation; (d) rights to defense and indemnification, if any, from the Company for actions or inactions taken by me in the course and scope of my employment with the Company and its parents, subsidiaries and/or affiliates; (e) any rights I may have to obtain contribution as permitted by law in the event of entry of judgment against the Company as a result of any act or failure to act for which I and the Company are held jointly liable; (f) the right to any equity awards that vested prior to or because of the termination of my employment, and/or (g) any actions to enforce the Agreement.

Nothing herein shall be construed to limit my right to (1) respond accurately and fully to any question, inquiry or request for information when required by legal process; or (2) disclose information to regulatory bodies. I understand that I am not required to contact the Company before engaging in such communications.

I acknowledge that, in signing this Release, I have not relied on any promises or representations, express or implied, other than those that are set forth expressly herein or in the Agreement and that are intended to survive separation from employment, in accordance with the terms of the Agreement.

I further acknowledge that:

1. I first received this Release on the date of the Agreement to which it is attached as Exhibit A;

2. I understand that, in order for this Release to be effective, I may not sign it prior to the date of my separation of employment with the Company but that if I wish to receive the Separation Benefits, I must sign and return this Release within [21/45] days of its presentation to me after my termination of employment;

3. I have carefully read and understand this Release;

4. The Company advised me to consult with an attorney and/or any other advisors of my choice before signing this Release;

5. I understand that this Release is **LEGALLY BINDING** and by signing it I give up certain rights;

6. I have voluntarily chosen to enter into this Release and have not been forced or pressured in any way to sign it;

7. I acknowledge and agree that the Separation Benefits are contingent on execution of this Release, which releases all of my claims against the Company and the Releasees, and **I KNOWINGLY AND VOLUNTARILY AGREE TO RELEASE** the Company and the Releasees from any and all claims I may have, known or unknown, in exchange for the benefits I have obtained by signing, and that these benefits are in addition to any benefit I would have otherwise received if I did not sign this Release;

8. I have seven (7) days after I sign this Release to revoke it by notifying the Company in writing. The Release will not become effective or enforceable until the seven (7) day revocation period has expired;

9. This Release includes a **WAIVER OF ALL RIGHTS AND CLAIMS** I may have under the Age Discrimination in Employment Act of 1967 (29 U.S.C. §621 et seq.); and

10. This Release does not waive any rights or claims that may arise after this Release becomes effective, which is seven (7) days after I sign it, provided that I do not exercise my right to revoke this Agreement.

Intending to be legally bound, I have signed this Release as of the date written below.

Signature: _____

Date Signed: _____



August 12, 2020

Steve O'Loughlin
275 Madison Avenue, Suite 702
New York, NY 10016

Dear Mr. O'Loughlin,

On behalf of Actinium Pharmaceuticals, Inc. (the "Company"), I am pleased to provide you with this contract (the "Agreement") related to your position as Chief Financial Officer of the Company. This Agreement replaces and supersedes the employment agreement between you and the Company dated August 8, 2018.

1. Position. The terms of your position with the Company are as set forth below:

(a) You shall serve as Chief Financial Officer. You shall report to the Chief Executive Officer or appropriate company officer, as designated by the CEO, the Board of Directors of the Company (the "Board") or its representative, and shall perform your duties for the Company at the Company's offices in New York City or at another location as directed by the Company in accordance with its policies that may be in place from time to time, except for travel that may be necessary or appropriate in connection with the performance of your duties hereunder. The offices of the Company are currently located in New York City at 275 Madison Avenue, 7th Floor, New York, NY 10016.

(b) You agree to devote your best efforts and substantially all of your business time to advance the interests of the Company and to discharge adequately your duties hereunder. You may perform certain consulting projects that do not interfere with your Company duties and maintain whatever licenses required for performance of such consulting activities. Consulting activities must be non-competitive with the Company's plans, disclosed and approved on a case by case basis by your direct supervisor or an authorized Company representative.

2. Compensation.

(a) Base Salary. The Board shall review the amount of your base salary and performance bonus, and shall determine the appropriate adjustments to each component of your compensation each calendar year.

(b) Performance Bonus. You shall be entitled to participate in an executive bonus program, which shall be established by the Board pursuant to which the Board may award bonuses to you of up to 30% of your annual base salary, based upon the achievement of written individual and corporate objectives such as the Board shall determine.

(c) Stock Option Grant. From time to time the Board may grant you an option to purchase common shares of the Company (the "Grant"). Unless specified otherwise, the Grant shall be subject to the vesting schedule below.

(i) Stock Options. Such option will have an exercise price equal to the closing price of the Company's common stock on the date of Board approval of the Grant, which is equal to fair market value as determined by the Board on the date of the grant (the "Grant Date").

(ii) Vesting Schedule of the Grant. Two percent (2%) of the Grant shall vest each month from the Grant Date until fully vested in accordance with the provisions of the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan. The term of all option granted under this Agreement will be for 10 years from the Grant Date, subject to your continuing service with the Company. The option will be incentive stock options to the maximum extent allowed by the tax code and will be subject to the terms of the Company's Amended and Restated 2013 Stock Plan or 2019 Stock Plan and corresponding Stock Option Agreement between you and the Company.

3. Benefits.

(a) Benefit Plans. The Company will provide you with the opportunity to participate in the standard benefit plans currently available to other similarly situated employees, including health, disability and life insurance plans. The Company reserves the right to cancel and/or change the benefits plans it offers to its employees at any time, subject to applicable law.

(b) Vacation; Sick Leave. You will be entitled to 20 days paid vacation per year. Vacation may not be taken before it is accrued. You will be entitled to 5 days paid sick leave per year. You may carry over a maximum of 5 days of paid vacation days and 5 days of paid sick leave time in accordance with the Company's vacation and sick leave policy.

(c) Reimbursement of Expenses. You shall be reimbursed for all normal items of travel and entertainment and miscellaneous expenses reasonably incurred by you on behalf of the Company provided such expenses are documented and submitted in accordance with the reimbursement policies in effect from time to time.

4. Change in Control. If the Company terminates your employment other than for death, Disability or Cause, or if you resign for Good Reason, in any case during the 12-month period beginning on the date of a Change in Control (as defined in the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan), you shall be entitled to the following, subject to Section 5 hereof:

(a) A single lump sum payment equal to twelve (12) months of your annual base salary (at the rate in effect as of the date of termination), payable within thirty (30) business days following the date the Release (as defined in Section 5 hereof) becomes effective and irrevocable in accordance with its terms.

(b) Continued health benefits for the 12-month period beginning on the date of termination, with such period to run concurrently with any period for which you are eligible to elect health coverage under COBRA. During this 12-month continuation period, the Company will subsidize your COBRA premiums in an amount equal to what it would have paid toward health insurance premiums for an active employee with similar coverage. Notwithstanding the foregoing, you shall be required to pay any and all service provider premiums associated with COBRA coverage and, if you begin providing services to another service recipient and become covered by such service recipient's health benefits plan or program, the continued health benefits and Company subsidy provided hereunder shall cease.

(c) All outstanding equity awards granted to you under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination, the performance goals with respect to such outstanding performance awards, if any, will be deemed satisfied at "target", and all outstanding and vested Company stock options (including those that vest pursuant to the operation of this paragraph) will remain exercisable for the full duration of their term.

(d) "Cause" means: (i) your gross negligence and/or willful misconduct (as such terms are generally understood and applied to the performance of an executive) in the performance of your material duties with respect to the Company as determined, in each case, by a court of competent jurisdiction not subject to further appeal or a final arbitration award, as provided hereunder; (ii) the conviction by you of a crime constituting a felony, or (iii) you shall have committed any material act of malfeasance, dishonesty or breach of fiduciary duty against the Company, for which you shall have a thirty (30) day cure period following notice thereof from the Company (except for a conviction pursuant to subsection (ii), for which there shall be no cure period).

(e) “Good Reason” means, during the 12-month period beginning on the date of a Change in Control: (i) the Company’s material breach of any of its obligations under this Agreement; (ii) a material reduction of your base salary or target bonus opportunity; (iii) a material change to the scope of your work; or (iv) the Company’s regular requirement that you perform services in or relocate to a location that is more than twenty-five (25) miles from New York City. A termination will not be deemed to be for Good Reason unless the Company does not cure within 30 days after receipt of written notice from you specifying the Good Reason and referring to your right to resign for Good Reason. Any resignation for Good Reason will be effective immediately upon your giving notice of your resignation for Good Reason to the Company, conditioned upon your having provided proper notice of Good Reason and time to cure in accordance with this provision.

(f) “Disability” means that (i) you have been unable, for a period of 180 consecutive business days, to perform your duties under this Agreement, as a result of physical or mental illness or injury, and (ii) a physician selected or approved by the Company has determined that it is either not possible to determine when such inability to perform will cease or that it appears probable that such inability will be permanent during the remainder of your life.

(g) Mitigation. In the event that you are entitled to severance pursuant to this Agreement, you have no duty to mitigate and your severance will not be reduced for any reason.

5. Release. Notwithstanding anything contained herein to the contrary, the Company shall not be obligated to provide any severance payment or benefit under Section 4(a), (b) or (c) hereof unless: (a) you or your legal representative first executes within fifty (50) calendar days after the date of presentment a release of claims agreement in the form as to be provided by the Company (the “Release”) and substantially similar to the form of Release attached hereto as Exhibit A, (b) you do not revoke the Release, and (c) the Release becomes effective and irrevocable in accordance with its terms. The Company shall provide the Release to you for your review within ten (10) days of the date of termination.

6. Confidential Information and Invention Assignment Agreement. You have already executed the Company’s Confidential Information and Invention Assignment Agreement (the “Confidentiality Agreement”), which remains in effect.

7. At-Will Employment. Your employment with the Company will be on an “at will” basis, meaning that either you or the Company may terminate your employment at any time for any reason or no reason, without further obligation or liability.

8. Non-Competition. During the term and for a period of three (3) years thereafter, you shall not, either directly or indirectly, engage (as principal, partner, employee, consultant, owner, independent contractor, advisor or otherwise, with or without compensation) in any business that directly or indirectly competes with the Company (the “Competing Business”). Notwithstanding the foregoing, this does not prevent you from being engaged or employed with a business that has a Competing Business as part of its business, so long as you are not engaged or involved in any way in the Competing Business at such business or enterprise.

9. Non-Solicitation. You agree that during the term of your employment with the Company, and for a period of 24 months following the cessation of employment with the Company for any reason or no reason, you shall not directly or indirectly solicit, induce, recruit or encourage any of the Company’s employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for yourself or any other person or entity. For a period of 24 months following cessation of employment with the Company for any reason or no reason, you shall not attempt to negatively influence any of the Company’s clients or customers from purchasing Company products or services or to solicit or influence or attempt to influence any client, customer or other person either directly or indirectly, to direct his or its purchase of products and/or services to any person, firm, corporation, institution or other entity in competition with the business of the Company.

10. Arbitration. Any dispute or claim arising out of or in connection with your employment with the Company (except with regard to enforcement of the Confidentiality Agreement) will be finally settled by arbitration in New York, New York in accordance with the Commercial Arbitration Rules of the American Arbitration Association by one arbitrator appointed in accordance with said rules. Judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The parties agree that this Agreement evidences a transaction involving interstate commerce and that the operation, interpretation and enforcement of this arbitration provision, the procedures to be used in conducting an arbitration pursuant to this arbitration provision, and the confirmation of any award issued to either party by reason of such arbitration, is governed exclusively by the Federal Arbitration Act, 9 U.S.C. § 21 et seq. Notwithstanding the foregoing, the parties may apply to any court of competent jurisdiction for preliminary or interim equitable relief, or to compel arbitration in accordance with this paragraph, without breach of this arbitration provision.

11. Section 280G. In the event it shall be determined that any payment or distribution by the Company to or for your benefit (whether paid or payable or distributed or distributable pursuant to the terms of this Agreement or otherwise) (the "Total Payments"), is or will be subject to the excise tax (the "Excise Tax") imposed by Section 4999 of the Internal Revenue Code of 1986, as amended (the "Code"), then the Total Payments shall be reduced to the maximum amount that could be paid to you without giving rise to the Excise Tax (the "Safe Harbor Cap"), if the net after-tax benefit to you after reducing your Total Payments to the Safe Harbor Cap is greater than the net after-tax (including the Excise Tax) benefit to you without such reduction. The reduction of the amounts payable hereunder, if applicable, shall be made by reducing such payment that trigger the Excise Tax in the following order: (i) reduction of cash payments, (ii) cancellation of accelerated vesting of performance-based equity awards (based on the reverse order of the date of grant), (iii) cancellation of accelerated vesting of other equity awards (based on the reverse order of the date of grant), and (iv) reduction of any other payments due to you (with benefits or payments in any group having different payment terms being reduced on a pro-rata basis). All mathematical determinations, and all determinations as to whether any of the Total Payments are "parachute payments" (within the meaning of Section 280G of the Code), that are required to be made under this paragraph, including determinations as to whether the Total Payments to you shall be reduced to the Safe Harbor Cap and the assumptions to be utilized in arriving at such determinations, shall be made at the Company's expense by the Company's then current independent auditors, or such other nationally recognized accounting firm selected by the Committee prior to the relevant change in control transaction.

12. Section 409A.

(a) In General. It is the Company's intent that this Agreement be exempt from the application of, or otherwise comply with, the requirements of Section 409A of the Code ("Section 409A"). Specifically, any taxable benefits or payments provided under this Agreement are intended to be separate payments that qualify for the "short-term deferral" exception to Section 409A to the maximum extent possible, and to the extent they do not so qualify, are intended to qualify for the involuntary separation pay exceptions to Section 409A, to the maximum extent possible. If neither of these exceptions applies, and if you are a "specified employee" within the meaning of Section 409A, then notwithstanding any provision in this Agreement to the contrary and to the extent required to comply with Section 409A, all amounts that would otherwise be paid or provided to you during the first six (6) months following your date of termination shall instead be accumulated through and paid or provided (without interest) on the first business day following the six-month anniversary of the date of termination. If the period during which the Release must become effective and irrevocable in accordance with its terms spans two calendar years, then, to the extent required to comply with Section 409A, any payment to be made under this Agreement will commence on the first payroll date that occurs in the second calendar year and after the Release has become effective and irrevocable in accordance with its terms. Further, to the extent required to comply with Section 409A: (i) the amount of any expense reimbursement to which you may be entitled hereunder during a calendar year will not affect the amount of reimbursements to be provided in any other calendar year; (ii) your right to receive reimbursement of an eligible expense hereunder is not subject to liquidation or exchange for another benefit; and (iii) provided that the requisite documentation is submitted, the Company will reimburse your eligible expenses on or before the last day of the calendar year following the calendar year in which the expense was incurred.

(b) Separation from Service. A termination of service shall not be deemed to have occurred for purposes of any provision of this Agreement providing for the payment of any amounts or benefits subject to Section 409A upon or following a termination of service unless such termination is also a "separation from service" within the meaning of Section 409A and you are no longer providing services (at a level that would preclude the occurrence of a "separation from service" within the meaning of Section 409A) to the Company or its affiliates as an employee or consultant, and for purposes of any such provision of this Plan, references to a "termination," "termination of employment" or like terms shall mean "separation from service" within the meaning of Section 409A.

13. Miscellaneous. This Agreement, together with the Confidentiality Agreement, sets forth the terms of your employment with the Company and supersedes any prior representations or agreements, whether written or oral. This Agreement may not be modified or amended except by a written agreement, signed by the Company and by you. Whenever possible, each provision of this Agreement will be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be invalid, illegal or unenforceable in any respect under any applicable law or rule in any jurisdiction, such invalidity, illegality or unenforceability will be lessened or reduced to the extent possible or will be severed and will not affect any other provision and this Agreement will be reformed, construed and enforced in such jurisdiction as if such invalid, illegal or unenforceable provision had never been contained herein. This Agreement will be governed by New York law without reference to rules of conflicts of law. All notices, requests, demands and other communications called for hereunder shall be in writing and shall be deemed given (i) on the date of delivery if delivered personally, (ii) one (1) day after being sent by a well established commercial overnight service, (iii) three (3) days after being mailed by registered or certified mail, return receipt requested, prepaid and addressed to the parties or their successors at the following addresses, or at such other addresses as the parties may later designate in writing, (iv) upon confirmation of facsimile transfer, if sent by facsimile or (v) upon confirmation of delivery when directed to the electronic mail address set forth below, if sent by electronic mail:

If to the Company: 275 Madison Avenue, Suite 702
New York, NY 10016

If to you: Steve O'Loughlin
275 Madison Avenue, Suite 702
New York, NY 10016

14. Withholding of Taxes. The Company may withhold from any amounts payable under this Agreement all federal, state, city or other taxes as the Company may be required to withhold pursuant to any law or government regulation or ruling.

To indicate your acceptance of the Company's offer, please sign and date this letter in the space provided below and return it to me.

Very truly yours,

ACTINIUM PHARMACEUTICALS, INC.

By: _____
Sandesh Seth

Title: Chief Executive Officer

Accepted and Agreed:

By: _____
Name: Steve O'Loughlin

EXHIBIT A

RELEASE OF CLAIMS

FOR AND IN CONSIDERATION OF the payments and benefits (the "Separation Benefits") to be provided to me in connection with the separation of my relationship with the Company, in accordance with the Agreement between Actinium Pharmaceuticals, Inc. (the "Company") and me dated as August 12, 2020 (the "Agreement"), which Separation Benefits are conditioned on my signing this Release of Claims ("Release") and which I will forfeit unless I execute and do not revoke this Release of Claims, I, on my own behalf and on behalf of my heirs and estate, voluntarily, knowingly and willingly release and forever discharge the Company, its subsidiaries, affiliates, parents, and stockholders, together with each of those entities' respective officers, directors, stockholders, employees, agents, fiduciaries and administrators (collectively, the "Releasees") from any and all claims and rights of any nature whatsoever which I now have against them up to the date I execute this Release, whether known or unknown, suspected or unsuspected. This Release includes, but is not limited to, any rights or claims relating in any way to my employment or consulting relationship with the Company or any of the other Releasees or the termination thereof, any contract claims (express or implied, written or oral), including, but not limited to, the Agreement, or any rights or claims under any statute, including, without limitation, the Americans with Disabilities Act, the Age Discrimination in Employment Act, the Older Workers' Benefit Protection Act, the Rehabilitation Act of 1973 (including Section 504 thereof), Title VII of the 1964 Civil Rights Act, the Civil Rights Act of 1866 (42 U.S.C. § 1981), the Civil Rights Act of 1991, the Equal Pay Act, the National Labor Relations Act, the Worker Adjustment and Retraining Notification Act, the Family Medical Leave Act, the Lilly Ledbetter Fair Pay Act, the Genetic Information Non-Discrimination Act, the New York State Human Rights Law, the New York City Human Rights Law, and the Employee Retirement Income Security Act of 1974, all as amended, and any other federal, state or local law. This Release specifically includes, but is not limited to, any claims based upon the right to the payment of wages, incentive and performance compensation, bonuses, equity grants, vacation, pension benefits, 401(k) Plan benefits, stock benefits or any other employee benefits, or any other rights arising under federal, state or local laws prohibiting discrimination and/or harassment on the basis of race, color, age, religion, sexual orientation, religious creed, sex, national origin, ancestry, alienage, citizenship, nationality, mental or physical disability, denial of family and medical care leave, medical condition (including cancer and genetic characteristics), marital status, military status, gender identity, harassment or any other basis prohibited by law.

As a condition of the Company entering into this Release, I further represent that I have not filed against the Company or any of the other Releasees, any complaints, claims or lawsuits with any arbitral tribunal, administrative agency, or court prior to the date hereof, and that I have not transferred to any other person any such complaints, claims or lawsuits. I understand that by signing this Release, I waive my right to any monetary recovery in connection with a local, state or federal governmental agency proceeding and I waive my right to file a claim seeking monetary damages in any arbitral tribunal, administrative agency, or court. This Release does not: (i) prohibit or restrict me from communicating, providing relevant information to or otherwise cooperating with the U.S. Equal Employment Opportunity Commission or any other governmental authority with responsibility for the administration of fair employment practices laws regarding a possible violation of such laws or responding to any inquiry from such authority, including an inquiry about the existence of this Release or its underlying facts, or (ii) require me to notify the Company of such communications or inquiry. Furthermore, notwithstanding the foregoing, this Release does not include and will not preclude: (a) rights or claims to vested benefits under any applicable retirement and/or pension plans; (b) rights under the Consolidated Omnibus Budget Reconciliation Act of 1985 ("COBRA"); (c) claims for unemployment compensation; (d) rights to defense and indemnification, if any, from the Company for actions or inactions taken by me in the course and scope of my employment with the Company and its parents, subsidiaries and/or affiliates; (e) any rights I may have to obtain contribution as permitted by law in the event of entry of judgment against the Company as a result of any act or failure to act for which I and the Company are held jointly liable; (f) the right to any equity awards that vested prior to or because of the termination of my employment, and/or (g) any actions to enforce the Agreement.

Nothing herein shall be construed to limit my right to (1) respond accurately and fully to any question, inquiry or request for information when required by legal process; or (2) disclose information to regulatory bodies. I understand that I am not required to contact the Company before engaging in such communications.

I acknowledge that, in signing this Release, I have not relied on any promises or representations, express or implied, other than those that are set forth expressly herein or in the Agreement and that are intended to survive separation from employment, in accordance with the terms of the Agreement.

I further acknowledge that:

1. I first received this Release on the date of the Agreement to which it is attached as Exhibit A;

2. I understand that, in order for this Release to be effective, I may not sign it prior to the date of my separation of employment with the Company but that if I wish to receive the Separation Benefits, I must sign and return this Release within [21/45] days of its presentation to me after my termination of employment;

3. I have carefully read and understand this Release;

4. The Company advised me to consult with an attorney and/or any other advisors of my choice before signing this Release;

5. I understand that this Release is **LEGALLY BINDING** and by signing it I give up certain rights;

6. I have voluntarily chosen to enter into this Release and have not been forced or pressured in any way to sign it;

7. I acknowledge and agree that the Separation Benefits are contingent on execution of this Release, which releases all of my claims against the Company and the Releasees, and **I KNOWINGLY AND VOLUNTARILY AGREE TO RELEASE** the Company and the Releasees from any and all claims I may have, known or unknown, in exchange for the benefits I have obtained by signing, and that these benefits are in addition to any benefit I would have otherwise received if I did not sign this Release;

8. I have seven (7) days after I sign this Release to revoke it by notifying the Company in writing. The Release will not become effective or enforceable until the seven (7) day revocation period has expired;

9. This Release includes a **WAIVER OF ALL RIGHTS AND CLAIMS** I may have under the Age Discrimination in Employment Act of 1967 (29 U.S.C. §621 et seq.); and

10. This Release does not waive any rights or claims that may arise after this Release becomes effective, which is seven (7) days after I sign it, provided that I do not exercise my right to revoke this Agreement.

Intending to be legally bound, I have signed this Release as of the date written below.

Signature: _____

Date Signed: _____



August 12, 2020

Dr. Dale Ludwig
275 Madison Avenue, Suite 702
New York, NY 10016

Dear Dr. Ludwig,

On behalf of Actinium Pharmaceuticals, Inc. (the "Company"), I am pleased to provide you with this contract (the "Agreement") related to your position as Chief Scientific and Technology Officer of the Company. This Agreement replaces and supersedes the employment agreement between you and the Company dated October 16, 2017.

1. Position. The terms of your position with the Company are as set forth below:

(a) You shall serve as Chief Scientific and Technology Officer. You shall report to the Chief Executive Officer or appropriate company officer, as designated by the CEO, the Board of Directors of the Company (the "Board") or its representative, and shall perform your duties for the Company at the Company's offices in New York City, or at another location as directed by the Company in accordance with its policies that may be in place from time to time, except for travel that may be necessary or appropriate in connection with the performance of your duties hereunder. The offices of the Company are currently located in New York City at 275 Madison Avenue, 7th Floor, New York, NY 10016.

(b) You agree to devote your best efforts and substantially all of your business time to advance the interests of the Company and to discharge adequately your duties hereunder.

2. Compensation.

(a) Base Salary. The Board shall review the amount of your base salary and performance bonus, and shall determine the appropriate adjustments to each component of your compensation each calendar year.

(b) Performance Bonus. You shall be entitled to participate in an executive bonus program, which shall be established by the Board pursuant to which the Board may award bonuses to you of up to 30% of your annual base salary, based upon the achievement of written individual and corporate objectives such as the Board shall determine.

(c) Stock Option Grant. From time to time the Board may grant you an option to purchase common shares of the Company (the "Grant"). Unless specified otherwise, the Grant shall be subject to the vesting schedule below.

(i) Stock Options. Such option will have an exercise price equal to the closing price of the Company's common stock on the date of Board approval of the Grant, which is equal to fair market value as determined by the Board on the date of the grant (the "Grant Date").

(ii) Vesting Schedule of the Grant. Two percent (2%) of the Grant shall vest each month from the Grant Date until fully vested in accordance with the provisions of the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan. The term of all option granted under this Agreement will be for 10 years from the Grant Date, subject to your continuing service with the Company. The option will be incentive stock options to the maximum extent allowed by the tax code and will be subject to the terms of the Company's Amended and Restated 2013 Stock Plan or 2019 Stock Plan and corresponding Stock Option Agreement between you and the Company.

3. Benefits.

(a) Benefit Plans. The Company will provide you with the opportunity to participate in the standard benefit plans currently available to other similarly situated employees, including health, disability and life insurance plans. The Company reserves the right to cancel and/or change the benefits plans it offers to its employees at any time, subject to applicable law.

(b) Vacation; Sick Leave. You will be entitled to 20 days paid vacation per year. Vacation may not be taken before it is accrued. You will be entitled to 5 days paid sick leave per year. You may carry over a maximum of 5 days of paid vacation days and 5 days of paid sick leave time in accordance with the Company's vacation and sick leave policy.

(c) Reimbursement of Expenses. You shall be reimbursed for all normal items of travel and entertainment and miscellaneous expenses reasonably incurred by you on behalf of the Company provided such expenses are documented and submitted in accordance with the reimbursement policies in effect from time to time.

4. Change in Control. If the Company terminates your employment other than for death, Disability or Cause during the 12-month period beginning on the date of a Change in Control (as defined in the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan), you shall be entitled to the following, subject to Section 5 hereof:

(a) A single lump sum payment equal to twelve (12) months of your annual base salary (at the rate in effect as of the date of termination), payable within thirty (30) business days following the date the Release (as defined in Section 5 hereof) becomes effective and irrevocable in accordance with its terms.

(b) Continued health benefits for the 12-month period beginning on the date of termination, with such period to run concurrently with any period for which you are eligible to elect health coverage under COBRA. During this 12-month continuation period, the Company will subsidize your COBRA premiums in an amount equal to what it would have paid toward health insurance premiums for an active employee with similar coverage. Notwithstanding the foregoing, you shall be required to pay any and all service provider premiums associated with COBRA coverage and, if you begin providing services to another service recipient and become covered by such service recipient's health benefits plan or program, the continued health benefits and Company subsidy provided hereunder shall cease.

(c) All outstanding equity awards granted to you under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination, the performance goals with respect to such outstanding performance awards, if any, will be deemed satisfied at "target", and all outstanding and vested Company stock options (including those that vest pursuant to the operation of this paragraph) will remain exercisable for the full duration of their term.

(d) "Cause" means: (i) your gross negligence and/or willful misconduct (as such terms are generally understood and applied to the performance of an executive) in the performance of your material duties with respect to the Company as determined, in each case, by a court of competent jurisdiction not subject to further appeal or a final arbitration award, as provided hereunder; (ii) the conviction by you of a crime constituting a felony, or (iii) you shall have committed any material act of malfeasance, dishonesty or breach of fiduciary duty against the Company, for which you shall have a thirty (30) day cure period following notice thereof from the Company (except for a conviction pursuant to subsection (ii), for which there shall be no cure period).

(e) “Disability” means that (i) you have been unable, for a period of 180 consecutive business days, to perform your duties under this Agreement, as a result of physical or mental illness or injury, and (ii) a physician selected or approved by the Company has determined that it is either not possible to determine when such inability to perform will cease or that it appears probable that such inability will be permanent during the remainder of your life.

(f) Mitigation. In the event that you are entitled to severance pursuant to this Agreement, you have no duty to mitigate and your severance will not be reduced for any reason.

5. Release. Notwithstanding anything contained herein to the contrary, the Company shall not be obligated to provide any severance payment or benefit under Section 4(a), (b) or (c) hereof unless: (a) you or your legal representative first executes within fifty (50) calendar days after the date of presentment a release of claims agreement in the form as to be provided by the Company (the “Release”) and substantially similar to the form of Release attached hereto as Exhibit A, (b) you do not revoke the Release, and (c) the Release becomes effective and irrevocable in accordance with its terms. The Company shall provide the Release to you for your review within ten (10) days of the date of termination.

6. Confidential Information and Invention Assignment Agreement. By signing this Agreement, you hereby acknowledge and reaffirm your obligations under the Company’s Confidential Information and Invention Assignment Agreement, a copy of which you previously signed (the “Confidentiality Agreement”).

7. At-Will Employment. Your employment with the Company will be on an “at will” basis, meaning that either you or the Company may terminate your employment at any time for any reason or no reason, without further obligation or liability.

8. Non-Competition. During the term and for a period of three (3) years thereafter, you shall not, either directly or indirectly, engage (as principal, partner, employee, consultant, owner, independent contractor, advisor or otherwise, with or without compensation) in any business that directly or indirectly competes with the Company (the “Competing Business”). Notwithstanding the foregoing, this does not prevent you from being engaged or employed with a business that has a Competing Business as part of its business, so long as you are not engaged or involved in any way in the Competing Business at such business or enterprise.

9. Non-Solicitation. You agree that during the term of your employment with the Company, and for a period of 24 months following the cessation of employment with the Company for any reason or no reason, you shall not directly or indirectly solicit, induce, recruit or encourage any of the Company’s employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for yourself or any other person or entity. For a period of 24 months following cessation of employment with the Company for any reason or no reason, you shall not attempt to negatively influence any of the Company’s clients or customers from purchasing Company products or services or to solicit or influence or attempt to influence any client, customer or other person either directly or indirectly, to direct his or its purchase of products and/or services to any person, firm, corporation, institution or other entity in competition with the business of the Company.

10. Arbitration. Any dispute or claim arising out of or in connection with your employment with the Company (except with regard to enforcement of the Confidentiality Agreement) will be finally settled by arbitration in New York, New York in accordance with the Commercial Arbitration Rules of the American Arbitration Association by one arbitrator appointed in accordance with said rules. Judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The parties agree that this Agreement evidences a transaction involving interstate commerce and that the operation, interpretation and enforcement of this arbitration provision, the procedures to be used in conducting an arbitration pursuant to this arbitration provision, and the confirmation of any award issued to either party by reason of such arbitration, is governed exclusively by the Federal Arbitration Act, 9 U.S.C. § 21 et seq. Notwithstanding the foregoing, the parties may apply to any court of competent jurisdiction for preliminary or interim equitable relief, or to compel arbitration in accordance with this paragraph, without breach of this arbitration provision.

11. Section 280G. In the event it shall be determined that any payment or distribution by the Company to or for your benefit (whether paid or payable or distributed or distributable pursuant to the terms of this Agreement or otherwise) (the "Total Payments"), is or will be subject to the excise tax (the "Excise Tax") imposed by Section 4999 of the Internal Revenue Code of 1986, as amended (the "Code"), then the Total Payments shall be reduced to the maximum amount that could be paid to you without giving rise to the Excise Tax (the "Safe Harbor Cap"), if the net after-tax benefit to you after reducing your Total Payments to the Safe Harbor Cap is greater than the net after-tax (including the Excise Tax) benefit to you without such reduction. The reduction of the amounts payable hereunder, if applicable, shall be made by reducing such payment that trigger the Excise Tax in the following order: (i) reduction of cash payments, (ii) cancellation of accelerated vesting of performance-based equity awards (based on the reverse order of the date of grant), (iii) cancellation of accelerated vesting of other equity awards (based on the reverse order of the date of grant), and (iv) reduction of any other payments due to you (with benefits or payments in any group having different payment terms being reduced on a pro-rata basis). All mathematical determinations, and all determinations as to whether any of the Total Payments are "parachute payments" (within the meaning of Section 280G of the Code), that are required to be made under this paragraph, including determinations as to whether the Total Payments to you shall be reduced to the Safe Harbor Cap and the assumptions to be utilized in arriving at such determinations, shall be made at the Company's expense by the Company's then current independent auditors, or such other nationally recognized accounting firm selected by the Committee prior to the relevant change in control transaction.

12. Section 409A.

(a) In General. It is the Company's intent that this Agreement be exempt from the application of, or otherwise comply with, the requirements of Section 409A of the Code ("Section 409A"). Specifically, any taxable benefits or payments provided under this Agreement are intended to be separate payments that qualify for the "short-term deferral" exception to Section 409A to the maximum extent possible, and to the extent they do not so qualify, are intended to qualify for the involuntary separation pay exceptions to Section 409A, to the maximum extent possible. If neither of these exceptions applies, and if you are a "specified employee" within the meaning of Section 409A, then notwithstanding any provision in this Agreement to the contrary and to the extent required to comply with Section 409A, all amounts that would otherwise be paid or provided to you during the first six (6) months following your date of termination shall instead be accumulated through and paid or provided (without interest) on the first business day following the six-month anniversary of the date of termination. If the period during which the Release must become effective and irrevocable in accordance with its terms spans two calendar years, then, to the extent required to comply with Section 409A, any payment to be made under this Agreement will commence on the first payroll date that occurs in the second calendar year and after the Release has become effective and irrevocable in accordance with its terms. Further, to the extent required to comply with Section 409A: (i) the amount of any expense reimbursement to which you may be entitled hereunder during a calendar year will not affect the amount of reimbursements to be provided in any other calendar year; (ii) your right to receive reimbursement of an eligible expense hereunder is not subject to liquidation or exchange for another benefit; and (iii) provided that the requisite documentation is submitted, the Company will reimburse your eligible expenses on or before the last day of the calendar year following the calendar year in which the expense was incurred.

(b) Separation from Service. A termination of service shall not be deemed to have occurred for purposes of any provision of this Agreement providing for the payment of any amounts or benefits subject to Section 409A upon or following a termination of service unless such termination is also a "separation from service" within the meaning of Section 409A and you are no longer providing services (at a level that would preclude the occurrence of a "separation from service" within the meaning of Section 409A) to the Company or its affiliates as an employee or consultant, and for purposes of any such provision of this Plan, references to a "termination," "termination of employment" or like terms shall mean "separation from service" within the meaning of Section 409A.

13. Miscellaneous. This Agreement, together with the Confidentiality Agreement, sets forth the terms of your employment with the Company and supersedes any prior representations or agreements, whether written or oral. This Agreement may not be modified or amended except by a written agreement, signed by the Company and by you. Whenever possible, each provision of this Agreement will be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be invalid, illegal or unenforceable in any respect under any applicable law or rule in any jurisdiction, such invalidity, illegality or unenforceability will be lessened or reduced to the extent possible or will be severed and will not affect any other provision and this Agreement will be reformed, construed and enforced in such jurisdiction as if such invalid, illegal or unenforceable provision had never been contained herein. This Agreement will be governed by New York law without reference to rules of conflicts of law. All notices, requests, demands and other communications called for hereunder shall be in writing and shall be deemed given (i) on the date of delivery if delivered personally, (ii) one (1) day after being sent by a well established commercial overnight service, (iii) three (3) days after being mailed by registered or certified mail, return receipt requested, prepaid and addressed to the parties or their successors at the following addresses, or at such other addresses as the parties may later designate in writing, (iv) upon confirmation of facsimile transfer, if sent by facsimile or (v) upon confirmation of delivery when directed to the electronic mail address set forth below, if sent by electronic mail:

If to the Company: 275 Madison Avenue, Suite 702
New York, NY 10016

If to you: Dale L. Ludwig, Ph.D.
275 Madison Avenue, Suite 702
New York, NY 10016

14. Withholding of Taxes. The Company may withhold from any amounts payable under this Agreement all federal, state, city or other taxes as the Company may be required to withhold pursuant to any law or government regulation or ruling.

To indicate your acceptance of the Company's offer, please sign and date this letter in the space provided below and return it to me.

Very truly yours,

ACTINIUM PHARMACEUTICALS, INC.

By: _____
Sandesh Seth

Title: Chief Executive Officer

Accepted and Agreed:

By: _____
Name: Dale Ludwig

EXHIBIT A

RELEASE OF CLAIMS

FOR AND IN CONSIDERATION OF the payments and benefits (the "Separation Benefits") to be provided to me in connection with the separation of my relationship with the Company, in accordance with the Agreement between Actinium Pharmaceuticals, Inc. (the "Company") and me dated as August 12, 2020 (the "Agreement"), which Separation Benefits are conditioned on my signing this Release of Claims ("Release") and which I will forfeit unless I execute and do not revoke this Release of Claims, I, on my own behalf and on behalf of my heirs and estate, voluntarily, knowingly and willingly release and forever discharge the Company, its subsidiaries, affiliates, parents, and stockholders, together with each of those entities' respective officers, directors, stockholders, employees, agents, fiduciaries and administrators (collectively, the "Releasees") from any and all claims and rights of any nature whatsoever which I now have against them up to the date I execute this Release, whether known or unknown, suspected or unsuspected. This Release includes, but is not limited to, any rights or claims relating in any way to my employment or consulting relationship with the Company or any of the other Releasees or the termination thereof, any contract claims (express or implied, written or oral), including, but not limited to, the Agreement, or any rights or claims under any statute, including, without limitation, the Americans with Disabilities Act, the Age Discrimination in Employment Act, the Older Workers' Benefit Protection Act, the Rehabilitation Act of 1973 (including Section 504 thereof), Title VII of the 1964 Civil Rights Act, the Civil Rights Act of 1866 (42 U.S.C. § 1981), the Civil Rights Act of 1991, the Equal Pay Act, the National Labor Relations Act, the Worker Adjustment and Retraining Notification Act, the Family Medical Leave Act, the Lilly Ledbetter Fair Pay Act, the Genetic Information Non-Discrimination Act, the New York State Human Rights Law, the New York City Human Rights Law, and the Employee Retirement Income Security Act of 1974, all as amended, and any other federal, state or local law. This Release specifically includes, but is not limited to, any claims based upon the right to the payment of wages, incentive and performance compensation, bonuses, equity grants, vacation, pension benefits, 401(k) Plan benefits, stock benefits or any other employee benefits, or any other rights arising under federal, state or local laws prohibiting discrimination and/or harassment on the basis of race, color, age, religion, sexual orientation, religious creed, sex, national origin, ancestry, alienage, citizenship, nationality, mental or physical disability, denial of family and medical care leave, medical condition (including cancer and genetic characteristics), marital status, military status, gender identity, harassment or any other basis prohibited by law.

As a condition of the Company entering into this Release, I further represent that I have not filed against the Company or any of the other Releasees, any complaints, claims or lawsuits with any arbitral tribunal, administrative agency, or court prior to the date hereof, and that I have not transferred to any other person any such complaints, claims or lawsuits. I understand that by signing this Release, I waive my right to any monetary recovery in connection with a local, state or federal governmental agency proceeding and I waive my right to file a claim seeking monetary damages in any arbitral tribunal, administrative agency, or court. This Release does not: (i) prohibit or restrict me from communicating, providing relevant information to or otherwise cooperating with the U.S. Equal Employment Opportunity Commission or any other governmental authority with responsibility for the administration of fair employment practices laws regarding a possible violation of such laws or responding to any inquiry from such authority, including an inquiry about the existence of this Release or its underlying facts, or (ii) require me to notify the Company of such communications or inquiry. Furthermore, notwithstanding the foregoing, this Release does not include and will not preclude: (a) rights or claims to vested benefits under any applicable retirement and/or pension plans; (b) rights under the Consolidated Omnibus Budget Reconciliation Act of 1985 ("COBRA"); (c) claims for unemployment compensation; (d) rights to defense and indemnification, if any, from the Company for actions or inactions taken by me in the course and scope of my employment with the Company and its parents, subsidiaries and/or affiliates; (e) any rights I may have to obtain contribution as permitted by law in the event of entry of judgment against the Company as a result of any act or failure to act for which I and the Company are held jointly liable; (f) the right to any equity awards that vested prior to or because of the termination of my employment, and/or (g) any actions to enforce the Agreement.

Nothing herein shall be construed to limit my right to (1) respond accurately and fully to any question, inquiry or request for information when required by legal process; or (2) disclose information to regulatory bodies. I understand that I am not required to contact the Company before engaging in such communications.

I acknowledge that, in signing this Release, I have not relied on any promises or representations, express or implied, other than those that are set forth expressly herein or in the Agreement and that are intended to survive separation from employment, in accordance with the terms of the Agreement.

I further acknowledge that:

1. I first received this Release on the date of the Agreement to which it is attached as Exhibit A;

2. I understand that, in order for this Release to be effective, I may not sign it prior to the date of my separation of employment with the Company but that if I wish to receive the Separation Benefits, I must sign and return this Release within [21/45] days of its presentation to me after my termination of employment;

3. I have carefully read and understand this Release;

4. The Company advised me to consult with an attorney and/or any other advisors of my choice before signing this Release;

5. I understand that this Release is **LEGALLY BINDING** and by signing it I give up certain rights;

6. I have voluntarily chosen to enter into this Release and have not been forced or pressured in any way to sign it;

7. I acknowledge and agree that the Separation Benefits are contingent on execution of this Release, which releases all of my claims against the Company and the Releasees, and **I KNOWINGLY AND VOLUNTARILY AGREE TO RELEASE** the Company and the Releasees from any and all claims I may have, known or unknown, in exchange for the benefits I have obtained by signing, and that these benefits are in addition to any benefit I would have otherwise received if I did not sign this Release;

8. I have seven (7) days after I sign this Release to revoke it by notifying the Company in writing. The Release will not become effective or enforceable until the seven (7) day revocation period has expired;

9. This Release includes a **WAIVER OF ALL RIGHTS AND CLAIMS** I may have under the Age Discrimination in Employment Act of 1967 (29 U.S.C. §621 et seq.); and

10. This Release does not waive any rights or claims that may arise after this Release becomes effective, which is seven (7) days after I sign it, provided that I do not exercise my right to revoke this Agreement.

Intending to be legally bound, I have signed this Release as of the date written below.

Signature: _____

Date Signed: _____



August 12, 2020

Mark S. Berger, M.D.
275 Madison Avenue, Suite 702
New York, NY 10016

Dear Dr. Berger,

On behalf of Actinium Pharmaceuticals, Inc. (the "Company"), I am pleased to provide you with this contract (the "Agreement") related to your position as Chief Medical Officer of the Company. This Agreement replaces and supersedes the employment agreement between you and the Company dated December 27, 2016.

1. Position. The terms of your position with the Company are as set forth below:

(a) You shall continue to serve as Chief Medical Officer. You shall report to the Chief Executive Officer or appropriate company officer, as designated by the CEO, the Board of Directors of the Company (the "Board") or its representative, and shall perform your duties for the Company at the Company's offices in New York City, or at another location as directed by the Company in accordance with its policies that may be in place from time to time, except for travel that may be necessary or appropriate in connection with the performance of your duties hereunder. The offices of the Company are currently located in New York City at 275 Madison Avenue, 7th Floor, New York, NY 10016.

(b) You agree to devote your best efforts and substantially all of your business time to advance the interests of the Company and to discharge adequately your duties hereunder.

2. Compensation.

(a) Base Salary. The Board shall review the amount of your base salary and performance bonus, and shall determine the appropriate adjustments to each component of your compensation each calendar year.

(b) Performance Bonus. You shall be entitled to participate in an executive bonus program, which shall be established by the Board pursuant to which the Board may award bonuses to you of up to 30% of your annual base salary, based upon the achievement of written individual and corporate objectives such as the Board shall determine.

(c) Stock Option Grant. From time to time the Board may grant you an option to purchase common shares of the Company (the "Grant"). Unless specified otherwise, the Grant shall be subject to the vesting schedule below.

(i) Stock Options. Such option will have an exercise price equal to the closing price of the Company's common stock on the date of Board approval of the Grant, which is equal to fair market value as determined by the Board on the date of the grant (the "Grant Date").

(ii) Vesting Schedule of the Grant. Two percent (2%) of the Grant shall vest each month from the Grant Date until fully vested in accordance with the provisions of the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan. The term of all option granted under this Agreement will be for 10 years from the Grant Date, subject to your continuing service with the Company. The option will be incentive stock options to the maximum extent allowed by the tax code and will be subject to the terms of the Company's Amended and Restated 2013 Stock Plan or 2019 Stock Plan and corresponding Stock Option Agreement between you and the Company.

3. Benefits.

(a) Benefit Plans. The Company will provide you with the opportunity to participate in the standard benefit plans currently available to other similarly situated employees, including health, disability and life insurance plans. The Company reserves the right to cancel and/or change the benefits plans it offers to its employees at any time, subject to applicable law.

(b) Vacation; Sick Leave. You will be entitled to 20 days paid vacation per year. Vacation may not be taken before it is accrued. You will be entitled to 5 days paid sick leave per year. You may carry over a maximum of 5 days of paid vacation days and 5 days of paid sick leave time in accordance with the Company's vacation and sick leave policy.

(c) Reimbursement of Expenses. You shall be reimbursed for all normal items of travel and entertainment and miscellaneous expenses reasonably incurred by you on behalf of the Company provided such expenses are documented and submitted in accordance with the reimbursement policies in effect from time to time.

4. Change in Control. If the Company terminates your employment other than for death, Disability or Cause during the 12-month period beginning on the date of a Change in Control (as defined in the Company's Amended and Restated 2013 Stock Plan and 2019 Stock Plan), you shall be entitled to the following, subject to Section 5 hereof:

(a) A single lump sum payment equal to twelve (12) months of your annual base salary (at the rate in effect as of the date of termination), payable within thirty (30) business days following the date the Release (as defined in Section 5 hereof) becomes effective and irrevocable in accordance with its terms.

(b) Continued health benefits for the 12-month period beginning on the date of termination, with such period to run concurrently with any period for which you are eligible to elect health coverage under COBRA. During this 12-month continuation period, the Company will subsidize your COBRA premiums in an amount equal to what it would have paid toward health insurance premiums for an active employee with similar coverage. Notwithstanding the foregoing, you shall be required to pay any and all service provider premiums associated with COBRA coverage and, if you begin providing services to another service recipient and become covered by such service recipient's health benefits plan or program, the continued health benefits and Company subsidy provided hereunder shall cease.

(c) All outstanding equity awards granted to you under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination, the performance goals with respect to such outstanding performance awards, if any, will be deemed satisfied at "target", and all outstanding and vested Company stock options (including those that vest pursuant to the operation of this paragraph) will remain exercisable for the full duration of their term.

(d) "Cause" means: (i) your gross negligence and/or willful misconduct (as such terms are generally understood and applied to the performance of an executive) in the performance of your material duties with respect to the Company as determined, in each case, by a court of competent jurisdiction not subject to further appeal or a final arbitration award, as provided hereunder; (ii) the conviction by you of a crime constituting a felony, or (iii) you shall have committed any material act of malfeasance, dishonesty or breach of fiduciary duty against the Company, for which you shall have a thirty (30) day cure period following notice thereof from the Company (except for a conviction pursuant to subsection (ii), for which there shall be no cure period).

(e) "Disability" means that (i) you have been unable, for a period of 180 consecutive business days, to perform your duties under this Agreement, as a result of physical or mental illness or injury, and (ii) a physician selected or approved by the Company has determined that it is either not possible to determine when such inability to perform will cease or that it appears probable that such inability will be permanent during the remainder of your life.

(f) Mitigation. In the event that you are entitled to severance pursuant to this Agreement, you have no duty to mitigate and your severance will not be reduced for any reason.

5. Release. Notwithstanding anything contained herein to the contrary, the Company shall not be obligated to provide any severance payment or benefit under Section 4(a), (b) or (c) hereof unless: (a) you or your legal representative first executes within fifty (50) calendar days after the date of presentment a release of claims agreement in the form as to be provided by the Company (the "Release") and substantially similar to the form of Release attached hereto as Exhibit A, (b) you do not revoke the Release, and (c) the Release becomes effective and irrevocable in accordance with its terms. The Company shall provide the Release to you for your review within ten (10) days of the date of termination.

6. Confidential Information and Invention Assignment Agreement. By signing this Agreement, you hereby acknowledge and reaffirm your obligations under the Company's Confidential Information and Invention Assignment Agreement, a copy of which you previously signed (the "Confidentiality Agreement").

7. At-Will Employment. Your employment with the Company will be on an "at will" basis, meaning that either you or the Company may terminate your employment at any time for any reason or no reason, without further obligation or liability.

8. Non-Competition. During the term and for a period of three (3) years thereafter, you shall not, either directly or indirectly, engage (as principal, partner, employee, consultant, owner, independent contractor, advisor or otherwise, with or without compensation) in any business that directly or indirectly is developing, or plans to develop, radioimmunotherapy for cancer or any therapy related to bone marrow transplant (the "Competing Business"). Notwithstanding the foregoing, this does not prevent you from being engaged or employed with a business that has a Competing Business as part of its business, so long as you are not engaged or involved in any way in the Competing Business at such business or enterprise.

9. Non-Solicitation. You agree that during the term of your employment with the Company, and for a period of 24 months following the cessation of employment with the Company for any reason or no reason, you shall not directly or indirectly solicit, induce, recruit or encourage any of the Company's employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for yourself or any other person or entity. For a period of 24 months following cessation of employment with the Company for any reason or no reason, you shall not attempt to negatively influence any of the Company's clients or customers from purchasing Company products or services or to solicit or influence or attempt to influence any client, customer or other person either directly or indirectly, to direct his or its purchase of products and/or services to any person, firm, corporation, institution or other entity in competition with the business of the Company.

10. Arbitration. Any dispute or claim arising out of or in connection with your employment with the Company (except with regard to enforcement of the Confidentiality Agreement) will be finally settled by arbitration in New York, New York in accordance with the Commercial Arbitration Rules of the American Arbitration Association by one arbitrator appointed in accordance with said rules. Judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The parties agree that this Agreement evidences a transaction involving interstate commerce and that the operation, interpretation and enforcement of this arbitration provision, the procedures to be used in conducting an arbitration pursuant to this arbitration provision, and the confirmation of any award issued to either party by reason of such arbitration, is governed exclusively by the Federal Arbitration Act, 9 U.S.C. § 21 et seq. Notwithstanding the foregoing, the parties may apply to any court of competent jurisdiction for preliminary or interim equitable relief, or to compel arbitration in accordance with this paragraph, without breach of this arbitration provision.

11. Section 409A.

(a) In General. It is the Company's intent that this Agreement be exempt from the application of, or otherwise comply with, the requirements of Section 409A of the Code ("Section 409A"). Specifically, any taxable benefits or payments provided under this Agreement are intended to be separate payments that qualify for the "short-term deferral" exception to Section 409A to the maximum extent possible, and to the extent they do not so qualify, are intended to qualify for the involuntary separation pay exceptions to Section 409A, to the maximum extent possible. If neither of these exceptions applies, and if you are a "specified employee" within the meaning of Section 409A, then notwithstanding any provision in this Agreement to the contrary and to the extent required to comply with Section 409A, all amounts that would otherwise be paid or provided to you during the first six (6) months following your date of termination shall instead be accumulated through and paid or provided (without interest) on the first business day following the six-month anniversary of the date of termination. If the period during which the Release must become effective and irrevocable in accordance with its terms spans two calendar years, then, to the extent required to comply with Section 409A, any payment to be made under this Agreement will commence on the first payroll date that occurs in the second calendar year and after the Release has become effective and irrevocable in accordance with its terms. Further, to the extent required to comply with Section 409A: (i) the amount of any expense reimbursement to which you may be entitled hereunder during a calendar year will not affect the amount of reimbursements to be provided in any other calendar year; (ii) your right to receive reimbursement of an eligible expense hereunder is not subject to liquidation or exchange for another benefit; and (iii) provided that the requisite documentation is submitted, the Company will reimburse your eligible expenses on or before the last day of the calendar year following the calendar year in which the expense was incurred.

(b) Separation from Service. A termination of service shall not be deemed to have occurred for purposes of any provision of this Agreement providing for the payment of any amounts or benefits subject to Section 409A upon or following a termination of service unless such termination is also a "separation from service" within the meaning of Section 409A and you are no longer providing services (at a level that would preclude the occurrence of a "separation from service" within the meaning of Section 409A) to the Company or its affiliates as an employee or consultant, and for purposes of any such provision of this Plan, references to a "termination," "termination of employment" or like terms shall mean "separation from service" within the meaning of Section 409A.

12. Miscellaneous. This Agreement, together with the Confidentiality Agreement, sets forth the terms of your employment with the Company and supersedes any prior representations or agreements, whether written or oral. This Agreement may not be modified or amended except by a written agreement, signed by the Company and by you. Whenever possible, each provision of this Agreement will be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be invalid, illegal or unenforceable in any respect under any applicable law or rule in any jurisdiction, such invalidity, illegality or unenforceability will be lessened or reduced to the extent possible or will be severed and will not affect any other provision and this Agreement will be reformed, construed and enforced in such jurisdiction as if such invalid, illegal or unenforceable provision had never been contained herein. This Agreement will be governed by New York law without reference to rules of conflicts of law. All notices, requests, demands and other communications called for hereunder shall be in writing and shall be deemed given (i) on the date of delivery if delivered personally, (ii) one (1) day after being sent by a well established commercial overnight service, (iii) three (3) days after being mailed by registered or certified mail, return receipt requested, prepaid and addressed to the parties or their successors at the following addresses, or at such other addresses as the parties may later designate in writing, (iv) upon confirmation of facsimile transfer, if sent by facsimile or (v) upon confirmation of delivery when directed to the electronic mail address set forth below, if sent by electronic mail:

If to the Company: 275 Madison Avenue, Suite 702
New York, NY 10016

If to you: Mark S. Berger, M.D.
275 Madison Avenue, Suite 702
New York, NY 10016

13. Withholding of Taxes. The Company may withhold from any amounts payable under this Agreement all federal, state, city or other taxes as the Company may be required to withhold pursuant to any law or government regulation or ruling.

To indicate your acceptance of the Company's offer, please sign and date this letter in the space provided below and return it to me.

Very truly yours,

ACTINIUM PHARMACEUTICALS, INC.

By: _____
Sandesh Seth

Title: Chief Executive Officer

Accepted and Agreed:

By: _____
Name: Mark S. Berger

EXHIBIT A

RELEASE OF CLAIMS

FOR AND IN CONSIDERATION OF the payments and benefits (the "Separation Benefits") to be provided to me in connection with the separation of my relationship with the Company, in accordance with the Agreement between Actinium Pharmaceuticals, Inc. (the "Company") and me dated as August 12, 2020 (the "Agreement"), which Separation Benefits are conditioned on my signing this Release of Claims ("Release") and which I will forfeit unless I execute and do not revoke this Release of Claims, I, on my own behalf and on behalf of my heirs and estate, voluntarily, knowingly and willingly release and forever discharge the Company, its subsidiaries, affiliates, parents, and stockholders, together with each of those entities' respective officers, directors, stockholders, employees, agents, fiduciaries and administrators (collectively, the "Releasees") from any and all claims and rights of any nature whatsoever which I now have against them up to the date I execute this Release, whether known or unknown, suspected or unsuspected. This Release includes, but is not limited to, any rights or claims relating in any way to my employment or consulting relationship with the Company or any of the other Releasees or the termination thereof, any contract claims (express or implied, written or oral), including, but not limited to, the Agreement, or any rights or claims under any statute, including, without limitation, the Americans with Disabilities Act, the Age Discrimination in Employment Act, the Older Workers' Benefit Protection Act, the Rehabilitation Act of 1973 (including Section 504 thereof), Title VII of the 1964 Civil Rights Act, the Civil Rights Act of 1866 (42 U.S.C. § 1981), the Civil Rights Act of 1991, the Equal Pay Act, the National Labor Relations Act, the Worker Adjustment and Retraining Notification Act, the Family Medical Leave Act, the Lilly Ledbetter Fair Pay Act, the Genetic Information Non-Discrimination Act, the New York State Human Rights Law, the New York City Human Rights Law, and the Employee Retirement Income Security Act of 1974, all as amended, and any other federal, state or local law. This Release specifically includes, but is not limited to, any claims based upon the right to the payment of wages, incentive and performance compensation, bonuses, equity grants, vacation, pension benefits, 401(k) Plan benefits, stock benefits or any other employee benefits, or any other rights arising under federal, state or local laws prohibiting discrimination and/or harassment on the basis of race, color, age, religion, sexual orientation, religious creed, sex, national origin, ancestry, alienage, citizenship, nationality, mental or physical disability, denial of family and medical care leave, medical condition (including cancer and genetic characteristics), marital status, military status, gender identity, harassment or any other basis prohibited by law.

As a condition of the Company entering into this Release, I further represent that I have not filed against the Company or any of the other Releasees, any complaints, claims or lawsuits with any arbitral tribunal, administrative agency, or court prior to the date hereof, and that I have not transferred to any other person any such complaints, claims or lawsuits. I understand that by signing this Release, I waive my right to any monetary recovery in connection with a local, state or federal governmental agency proceeding and I waive my right to file a claim seeking monetary damages in any arbitral tribunal, administrative agency, or court. This Release does not: (i) prohibit or restrict me from communicating, providing relevant information to or otherwise cooperating with the U.S. Equal Employment Opportunity Commission or any other governmental authority with responsibility for the administration of fair employment practices laws regarding a possible violation of such laws or responding to any inquiry from such authority, including an inquiry about the existence of this Release or its underlying facts, or (ii) require me to notify the Company of such communications or inquiry. Furthermore, notwithstanding the foregoing, this Release does not include and will not preclude: (a) rights or claims to vested benefits under any applicable retirement and/or pension plans; (b) rights under the Consolidated Omnibus Budget Reconciliation Act of 1985 ("COBRA"); (c) claims for unemployment compensation; (d) rights to defense and indemnification, if any, from the Company for actions or inactions taken by me in the course and scope of my employment with the Company and its parents, subsidiaries and/or affiliates; (e) any rights I may have to obtain contribution as permitted by law in the event of entry of judgment against the Company as a result of any act or failure to act for which I and the Company are held jointly liable; (f) the right to any equity awards that vested prior to or because of the termination of my employment, and/or (g) any actions to enforce the Agreement.

Nothing herein shall be construed to limit my right to (1) respond accurately and fully to any question, inquiry or request for information when required by legal process; or (2) disclose information to regulatory bodies. I understand that I am not required to contact the Company before engaging in such communications.

I acknowledge that, in signing this Release, I have not relied on any promises or representations, express or implied, other than those that are set forth expressly herein or in the Agreement and that are intended to survive separation from employment, in accordance with the terms of the Agreement.

I further acknowledge that:

1. I first received this Release on the date of the Agreement to which it is attached as Exhibit A;

2. I understand that, in order for this Release to be effective, I may not sign it prior to the date of my separation of employment with the Company but that if I wish to receive the Separation Benefits, I must sign and return this Release within [21/45] days of its presentation to me after my termination of employment;

3. I have carefully read and understand this Release;

4. The Company advised me to consult with an attorney and/or any other advisors of my choice before signing this Release;

5. I understand that this Release is **LEGALLY BINDING** and by signing it I give up certain rights;

6. I have voluntarily chosen to enter into this Release and have not been forced or pressured in any way to sign it;

7. I acknowledge and agree that the Separation Benefits are contingent on execution of this Release, which releases all of my claims against the Company and the Releasees, and **I KNOWINGLY AND VOLUNTARILY AGREE TO RELEASE** the Company and the Releasees from any and all claims I may have, known or unknown, in exchange for the benefits I have obtained by signing, and that these benefits are in addition to any benefit I would have otherwise received if I did not sign this Release;

8. I have seven (7) days after I sign this Release to revoke it by notifying the Company in writing. The Release will not become effective or enforceable until the seven (7) day revocation period has expired;

9. This Release includes a **WAIVER OF ALL RIGHTS AND CLAIMS** I may have under the Age Discrimination in Employment Act of 1967 (29 U.S.C. §621 et seq.); and

10. This Release does not waive any rights or claims that may arise after this Release becomes effective, which is seven (7) days after I sign it, provided that I do not exercise my right to revoke this Agreement.

Intending to be legally bound, I have signed this Release as of the date written below.

Signature: _____

Date Signed: _____

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002**

I, Sandesh Seth, certify that:

1. I have reviewed this Form 10-Q of Actinium Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods present in this report;
4. I am responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financing reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. 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 involved management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 14, 2020

By: /s/ Sandesh Seth
Sandesh Seth
Chairman & CEO
(Duly Authorized Officer and
Principal Executive Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL AND ACCOUNTING OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002**

I, Steve O'Loughlin, certify that:

1. I have reviewed this Form 10-Q of Actinium Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods present in this report;
4. I am 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 13-a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financing reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. 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 involved management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 14, 2020

By: /s/ Steve O'Loughlin
Steve O'Loughlin
Chief Financial Officer
(Duly Authorized Officer and
Principal Financial and Accounting Officer)

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

In connection with the Quarterly Report of Actinium Pharmaceuticals, Inc. (the "Company") on Form 10-Q for the period ended June 30, 2020 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Sandesh Seth, Chairman & CEO of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

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

Date: August 14, 2020

By: /s/ Sandesh Seth
Sandesh Seth
Chairman & CEO
(Duly Authorized Officer and
Principal Executive Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL AND ACCOUNTING OFFICER
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 Actinium Pharmaceuticals, Inc. (the "Company") on Form 10-Q for the period ended June 30, 2020 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Steve O'Loughlin, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

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

Date: August 14, 2020

By: /s/ Steve O'Loughlin
Steve O'Loughlin
Chief Financial Officer
(Duly Authorized Officer and
Principal Financial and Accounting Officer)