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

**FORM 8-K**

**CURRENT REPORT  
Pursuant to Section 13 or 15(d) of the  
Securities Exchange Act of 1934**

Date of Report (Date of earliest event reported): February 15, 2018

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

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**Delaware**

(State or other jurisdiction  
of incorporation)

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**000-52446**

(Commission File Number)

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**74-2963609**

(IRS Employer  
Identification No.)

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

(Address of principal executive offices)

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**10016**

(Zip Code)

Registrant's telephone number, including area code: **(646) 677-3870**

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**N/A**

(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company

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

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## **Item 1.01 Entry into a Material Agreement.**

On February 15, 2018, Actinium Pharmaceuticals, Inc. (the “Company”) announced that it is commencing a rights offering to its stockholders and certain participating warrant holders (“Rights Offering”). Pursuant to the Rights Offering, the Company has distributed, at no charge to holders of record of the Company’s common stock and certain participating warrants as of February 14, 2018 (the “Record Date”), non-transferable subscription rights to purchase up to an aggregate of 35,714,285 units at a subscription price per unit of \$0.70, all as set forth in a prospectus supplement filed on February 15, 2018 with the Securities and Exchange Commission (the “Prospectus Supplement”). As set forth in the Prospectus Supplement, the subscription rights will be exercisable for up to an aggregate of \$25.0 million of units, subject to increase at the discretion of the Company, with aggregate participation to be allocated among holders on a pro rata basis if in excess of that threshold.

Each unit will consist of one share of common stock, 0.25 series A warrants (“Series A Warrant”) and 0.75 series B warrants (“Series B Warrant”). Each whole Series A Warrant and each whole Series B Warrant will be exercisable for one share of common stock. The Series A Warrants will have a term of 12 months from the date of issuance and will be exercisable at a price of \$0.90. The Series B Warrants will have a term of 30 months from the date of issuance and will have an exercise price of \$1.10. The Series A Warrants and Series B Warrants will be issued in registered form under a warrant agent agreement with Action Stock Transfer Corporation as warrant agent (the “Warrant Agent Agreement”).

Holders who fully exercise their basic subscription rights will be entitled, if available, to subscribe for an additional amount of units that are not purchased by other holders, on a pro rata basis and subject to the \$25.0 million aggregate offering threshold and other ownership limitations. The subscription rights are non-transferable and may only be exercised during the anticipated subscription period of Thursday, February 15, 2018 through 5:00 PM ET on Friday, March 2, 2018, unless extended as set forth in the Prospectus Supplement. In connection with the Rights Offering, the Company entered into a Dealer-Manager Agreement (the “Agreement”) with Maxim Group LLC (“Maxim”).

In connection with the Rights Offering, the Company will be delivering to its stockholders and participating warrant holders of record certain subscription documents and instructions, including a non-transferable subscription rights certificate (“Subscription Rights Certificate”), instructions as to the use of subscription rights certificates (“Instructions”), a letter to stockholders who are record holders (“Stockholder Letter”), a letter to brokers, dealers, banks and other nominees (“Broker Letter”), a letter to clients who are beneficial owners (“Client Letter”), a beneficial owner election form (“Election Form”), a nominee holder certification (“Holder Certification”), and a notice of important tax information (“Tax Information”).

### *Dealer Manager Services*

Pursuant to the Agreement, the Company engaged Maxim as the exclusive dealer-manager in connection with the Rights Offering. Under the terms and subject to the conditions contained in the Agreement, Maxim will provide marketing assistance and advice in connection with Rights Offering, respond to requests for information and materials relating to the Rights Offering in coordination with the information agent and, in accordance with customary practice, solicit the exercise of the subscription rights and subscriptions for the Rights Offering and enter into selected dealer agreements with other registered broker-dealers in connection with the Rights Offering. As compensation for its dealer manager services, the Company will pay to Maxim a cash fee of 7.0% of the proceeds of the Rights Offering, plus \$85,000 for legal expenses.

The sale by the Company of the shares and warrants in the Rights Offering and the Agreement in general is subject to customary closing conditions, including the absence of any material adverse effect on the business, general affairs, management, financial position, stockholders’ equity or results of operations of the Company.

Pursuant to the Agreement, the Company has also agreed to indemnify Maxim and its affiliates against certain liabilities arising under the Securities Act of 1933, as amended. Maxim will not underwrite and is not otherwise obligated to purchase any of the securities to be issued in the Rights Offering and does not make any recommendation with respect to such securities.

If all of the units are sold, the Company expects the net proceeds from the offering to be approximately \$23 million, after deducting dealer manager commissions, fees and estimated offering expenses.

A copy of the Agreement, and the forms of Warrant Agent Agreement, Series A Warrant, Series B Warrant, Subscription Rights Certificate, Instructions, Stockholder Letter, Broker Letter, Client Letter, Election Form, Holder Certification, and Tax Information are attached hereto as Exhibits 1.1, 4.1, 4.2, 4.3, 4.4, 99.1, 99.2, 99.3, 99.4, 99.5, 99.6, and 99.7, respectively, and are incorporated herein by reference. The foregoing descriptions of such documents are not complete and are qualified in their entirety by reference to such exhibits.

#### Item 9.01 Financial Statements and Exhibits

(d) Exhibits

<u>Exhibit No.</u>	<u>Description</u>
1.1	<a href="#"><u>Dealer-Manager Agreement, dated February 15, 2018, between Maxim Group LLC and Actinium Pharmaceuticals, Inc.</u></a>
4.1	<a href="#"><u>Form of Warrant Agency Agreement between Action Stock Transfer Corporation and Actinium Pharmaceuticals, Inc.</u></a>
4.2	<a href="#"><u>Form of Series A Warrant</u></a>
4.3	<a href="#"><u>Form of Series B Warrant</u></a>
4.4	<a href="#"><u>Form of Non-Transferable Subscription Rights Certificate</u></a>
5.1	<a href="#"><u>Legal Opinion of The Matt Law Firm, PLLC</u></a>
23.1	<a href="#"><u>Consent of The Matt Law Firm, PLLC (included in Exhibit 5.1)</u></a>
99.1	<a href="#"><u>Form of Instructions As To Use of Subscription Rights Certificates</u></a>
99.2	<a href="#"><u>Form of Letter To Stockholders Who Are Record Holders</u></a>
99.3	<a href="#"><u>Form of Letter To Brokers, Dealers, Banks and Other Nominees</u></a>
99.4	<a href="#"><u>Form of Letter to Clients Who Are Beneficial Owners</u></a>
99.5	<a href="#"><u>Form of Beneficial Owner Election Form</u></a>
99.6	<a href="#"><u>Form of Nominee Holder Certification</u></a>
99.7	<a href="#"><u>Form of Notice of Important Tax Information</u></a>

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 hereunto duly authorized.

Dated: February 15, 2018

**ACTINIUM PHARMACEUTICALS, INC.**

By: /s/ Sandesh Seth

Name: Sandesh Seth

Title: CEO & Chairman

## ACTINIUM PHARMACEUTICALS, INC.

## DEALER-MANAGER AGREEMENT

February 15, 2018

Maxim Group LLC  
405 Lexington Avenue  
New York, NY 10174  
*As Dealer-Manager*

Ladies and Gentlemen:

The following (this "**Agreement**") will confirm our agreement relating to the proposed rights offering (the "**Rights Offering**") to be undertaken by Actinium Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), pursuant to which the Company will distribute to holders of record of its common stock, par value \$0.001 per share (the "**Common Stock**") and to holders of certain of its outstanding warrants to purchase approximately 21,608,333 shares of Common Stock, issued on August 2, 2017 and February 11, 2015 (the "**Participating Warrants**"), who are entitled to participate in such offering pursuant to the terms of such warrants, subscription rights (the "**Rights**") to subscribe for up to an aggregate of 35,714,285 units (the "**Units**"), each Unit consisting of (i) one share of Common Stock (the "**Rights Shares**"), (ii) 0.25 Series A Warrants (the "**Series A Warrants**"), with each whole Series A Warrant representing the right to purchase one share of Common Stock at an exercise price of \$0.90 per share from the date of issuance through its expiration 12 months from the date of issuance and (iii) 0.75 Series B Warrants (the "**Series B Warrants**" and, together with the Series A Warrants, collectively, the "**Rights Warrants**"), with each whole Series B Warrant representing the right to purchase one share of Common Stock at an exercise price of \$1.10 per share from the date of issuance through its expiration 30 months from the date of issuance, at an aggregate subscription price per Unit of \$0.70 per Unit in cash (the "**Subscription Price**").

1. The Rights Offering.

(a) The Company proposes to undertake the Rights Offering pursuant to which each holder of Common Stock or a Participating Warrant shall receive one Right for each share of Common Stock (or, in the case of the Participating Warrants, each share of Common Stock underlying such Participating Warrant) held of record at the close of business on February 14, 2018 (the "**Record Date**"). Holders of Rights will be entitled to subscribe for and purchase, at the Subscription Price, one (1) Unit for each Right held (the "**Basic Subscription Right**"). The Rights Shares and Rights Warrants comprising the Units will separate at Closing and will be issued as separate securities. Rights holders will only be entitled to purchase a number of Units representing a whole number of Rights Shares, rounded down to the nearest whole number of Units a holder would otherwise be entitled to purchase.

(b) The Rights will not trade or be listed for quotation on any exchange or service, and shall be non-transferable.

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(c) Any holder of Rights who fully exercises all Basic Subscription Rights issued to such holder is entitled to subscribe for Units which were not otherwise subscribed for by others pursuant to their Basic Subscription Rights (the “**Over-Subscription Privilege**”). The Over-Subscription Privilege shall allow a holder of a Right to subscribe for an additional amount of Units above the amount which such holder was otherwise entitled to subscribe. Units acquired pursuant to the Over-Subscription Privilege are subject to allotment, as more fully discussed in the Prospectus (as defined herein).

(d) The Rights will expire at 5:00 p.m., New York City time, on March 2, 2018 (the “**Expiration Date**”). The Company shall have the right to extend the Expiration Date in its sole discretion. Any Rights not exercised on or before the Expiration Date will expire worthless without any payment to the holders of unexercised Rights.

(e) All funds from the exercise of Basic Subscription Rights and Over-Subscription Privilege will be deposited with Broadridge Corporate Issuer Solutions, Inc. (“**Broadridge**”), as subscription agent (in this context, the “**Subscription Agent**”), and held in a segregated account with the Subscription Agent pending a final determination of the number of Units, Rights Shares and Rights Warrants to be issued pursuant to the exercise of Basic Subscription Rights and Over-Subscription Privilege. The Company may conduct a closing of the Rights Offering (a “**Closing**”) at its sole discretion at any time following the Expiration Date.

## 2. Appointment as Dealer-Manager; Role of Dealer-Manager.

(a) On the terms and conditions set forth herein, the Company hereby appoints Maxim Group LLC (“**Maxim**”) as the dealer-manager (the “**Dealer-Manager**”) for the Rights Offering and authorizes the Dealer-Manager to act as such in connection with the Rights Offering.

(b) The services previously provided by the Dealer-Manager under that certain engagement letter, dated January 29, 2018, between the Company and the Dealer-Manager (as amended, the “**Engagement Letter**”), or to be provided thereunder or hereunder by the Dealer-Manager through the Closing, consist of the following:

(i) providing market assistance in connection with the conduct of the Rights Offering (which shall include assisting the Company in drafting a presentation that may be used to market the Rights Offering to investors and assistance in the coordination of the Rights Offering together with Broadridge);

(ii) providing financial advice to the Company in connection with the Rights Offering (including advice regarding the structure, pricing, timing and other terms and conditions of the Rights Offering);

(iii) responding to requests for information and materials in connection with the Rights Offering (it being agreed that Broadridge (in this capacity, as the “**Information Agent**”) will be the Company’s primary third party source of information regarding the Rights Offering and will be identified by the Company as such in the Registration Statement) (the services described in clauses (i), (ii) and (iii) being collectively referred to as the “**Advisory Services**”); and

(iv) in accordance with customary practice, using best efforts to solicit the exercise of the Rights and subscriptions for the Units pursuant to the Offer Documents (as defined herein) (the services described in this clause (iv) being referred to as the “**Solicitation Services**”);

(c) The services of the Dealer-Manager described in clauses (b)(iii) and (iv) above shall commence on the date of this Agreement. The Company hereby authorizes the Dealer-Manager, or one or more registered broker-dealers chosen exclusively by the Dealer-Manager, to act as the Company’s agent in making the Rights Offering to residents of such states as to which such agent designation may be necessary to comply with applicable law.

(d) The Company hereby acknowledges that Maxim is acting only as a dealer-manager in connection with the Rights Offering. The Dealer-Manager shall not (and shall not be obligated to) underwrite or place any Rights or any Units, Rights Shares or Rights Warrants, and the Company acknowledges and agrees that Maxim’s participation as Dealer-Manager does not ensure or guarantee that the Company will raise any funds through the Rights Offering.

(e) The Company further acknowledges that Maxim is acting as an independent contractor pursuant to a contractual relationship created solely by this Agreement entered into on an arm’s length basis and in no event do the parties intend that Maxim act or be responsible as a fiduciary to the Company, its management, shareholders, creditors or any other natural person, partnership, limited liability partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture, or other entity or organization (each, a “**Person**”) in connection with any activity that Maxim may undertake or has undertaken in furtherance of the Rights Offering, either before or after the date hereof. Maxim hereby expressly disclaims any fiduciary or similar obligations to the Company, either in connection with the transactions contemplated by this Agreement or any matters leading up to such transactions, and the Company hereby confirms its understanding and agreement to that effect. The Company and Maxim agree that they are each responsible for making their own independent judgments with respect to any such transactions, and that any opinions or views expressed by Maxim to the Company regarding such transactions, including but not limited to any opinions or views with respect to the price or market for the Company’s securities, do not constitute advice or recommendations to the Company. The Company hereby waives and releases, to the fullest extent permitted by law, any claims that the Company may have against Maxim with respect to any breach or alleged breach of any fiduciary or similar duty to the Company in connection with the transactions contemplated by this Agreement or any matters leading up to such transactions.

3. No Liability for Acts of Brokers, Dealers, Banks and Trust Companies. The Dealer-Manager shall not be subject to any liability to the Company (or any of the Company’s Subsidiaries (as defined below) or “Affiliates,” as such term is defined in Rule 405 under the Securities Act of 1933, as amended (the “**Securities Act**”), for any act or omission on the part of any broker or dealer in securities (other than the Dealer-Manager) or any bank or trust company or any other Person, and the Dealer-Manager shall not be liable for its own acts or omissions in performing its obligations as advisor or Dealer-Manager hereunder or otherwise in connection with the Rights Offering or the related transactions, except for any losses, claims, damages, liabilities and expenses determined in a final judgment by a court of competent jurisdiction to have resulted directly from any such acts or omissions undertaken or omitted to be taken by the Dealer-Manager through its gross negligence, intentional omission or willful misconduct. In soliciting or obtaining exercises of Rights, the Dealer-Manager shall not be deemed to be acting as the agent of the Company or as the agent of any broker, dealer, bank or trust company, and no broker, dealer, bank or trust company shall be deemed to be acting as the Dealer-Manager’s agent or as the agent of the Company. As used herein, the term “**Subsidiary**” means a significant subsidiary of the Company as defined as defined in Rule 1-02(w) of Regulation S-X of the Securities Exchange Act of 1934, as amended (the “**Exchange Act**”). Unless the context specifically requires otherwise, the term “Company” as used in this Agreement means the Company and its Subsidiaries collectively on a consolidated basis.

#### 4. The Offer Documents.

(a) There will be used in connection with the Rights Offering certain materials in addition to the Registration Statement, any Preliminary Prospectus or the Prospectus (each as defined herein), including: (i) all exhibits to the Registration Statement which pertain to the conduct of the Rights Offering; and (ii) any soliciting materials relating to the Rights Offering approved by the Company (collectively with the Registration Statement, any Preliminary Prospectus and the Prospectus, the “**Offer Documents**”). The Dealer-Manager shall be given such opportunity to review and comment upon the Offer Documents.

(b) The Company agrees to furnish the Dealer-Manager with as many copies as it may reasonably request of the final forms of the Offer Documents and the Dealer-Manager is authorized to use copies of the Offer Documents in connection with its acting as Dealer-Manager. The Dealer-Manager hereby agrees that it will not disseminate any written material for or in connection with the solicitation of exercises of Rights pursuant to the Rights Offering other than the Offer Documents.

(c) The Company represents and agrees that no solicitation material, other than the Offer Documents and the documents to be filed therewith as exhibits thereto (each in the form of which has been approved by the Dealer-Manager), will be used in connection with the Rights Offering by or on behalf of the Company without the prior approval of the Dealer-Manager, which approval will not be unreasonably withheld. In the event that the Company uses or permits the use of any such solicitation material in connection with the Rights Offering, then the Dealer-Manager shall be entitled to withdraw as Dealer-Manager in connection with the Rights Offering and the related transactions without any liability or penalty to the Dealer-Manager or any other Person identified in Section 11 hereof as an “indemnified party,” and the Dealer-Manager shall be entitled to receive the payment of all fees and expenses payable under this Agreement or the Engagement Letter which have accrued to the date of such withdrawal.

5. Representations and Warranties. The Company represents and warrants to the Dealer-Manager that:

(a) The Company has prepared and filed with the Securities and Exchange Commission (the “**Commission**”) a registration statement on Form S-3 (File No. 333-216748) under the Securities Act of 1933, as amended (the “**Securities Act**”), and the rules and regulations (the “**Rules and Regulations**”) of the Commission thereunder relating to the Rights, the Units, the Rights Shares, the Rights Warrants and the shares of Common Stock issuable upon exercise of the Rights Warrants (the “**Underlying Shares**” and, collectively with the Rights, the Units, the Rights Shares and the Rights Warrants, the “**Offering Securities**”) and such amendments to such registration statement (including post effective amendments) as may have been required to the date of this Agreement. Such registration statement, as amended (including any post effective amendments), has been declared effective by the Commission. The registration statement, together with the amendments prior to the date of this Agreement, including the information (if any) deemed to be a part of, or incorporated by reference into, the registration statement at the time of effectiveness pursuant to Rule 430A or Rule 430B under the Securities Act, or at such time as the case may be, is hereinafter referred to as the “**Registration Statement**” and the related prospectus, dated October 24, 2018, is hereinafter called the “**Base Prospectus**.” If the Company has filed or files an abbreviated registration statement pursuant to Rule 462(b) under the Securities Act (the “**Rule 462 Registration Statement**”), then any reference herein to the term Registration Statement shall include such Rule 462 Registration Statement. The Company is filing with the Commission pursuant to Rule 424 under the Securities Act a final prospectus supplement to the Base Prospectus relating to the Offering Securities. The final prospectus supplement as filed, together with any amendments or supplements filed thereto, along with the Base Prospectus, is hereinafter called the “**Final Prospectus**.” The term “**Preliminary Prospectus**” means the Base Prospectus, together with any preliminary prospectus supplement used or filed with the Commission pursuant to Rule 424 of the Rules and Regulations, in the form provided to the Dealer-Manager by the Company for use in connection with the offering of the Offering Securities. Such Final Prospectus and any Preliminary Prospectus in the form in which they shall be filed with the Commission pursuant to Rule 424(b) under the Securities Act (including the Base Prospectus as so supplemented) is hereinafter called a “**Prospectus**.” Unless the context otherwise requires, references herein to “the Prospectus” shall refer to the Final Prospectus. Reference made herein to the Base Prospectus, any Preliminary Prospectus or to the Prospectus shall be deemed to refer to and include any documents incorporated by reference therein and any reference to any amendment or supplement to the Base Prospectus, any Preliminary Prospectus or the Prospectus shall be deemed to refer to and include any document filed under the Exchange Act, and the rules and regulations of the Commission thereunder, incorporated by reference in such Preliminary Prospectus or the Prospectus, as the case may be. The term “**Effective Date**” shall mean each date that the Registration Statement and any post-effective amendment or amendments thereto became or become effective. The Commission has not notified the Company of any objection to the use of form of Registration Statement or any post-effective amendment thereto. All references in this Agreement to the Registration Statement, a Preliminary Prospectus and the Prospectus, or any amendments or supplements to any of the foregoing shall be deemed to include any copy thereof filed with the Commission pursuant to its Electronic Data Gathering Analysis and Retrieval System (“**EDGAR**”). The Prospectus delivered to the Dealer-Manager for use in connection with the Rights Offering will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T promulgated by the Commission.

(b) The Registration Statement (together with all exhibits filed as part of the Registration Statement) conforms, and any Preliminary Prospectus and the Prospectus and any further amendments or supplements to the Registration Statement conforms or will conform, when they are filed with or become effective by the Commission, as the case may be, in each case, in all material respects, to the requirements of the Securities Act and the Rules and Regulations and collectively do not and will not, as of the applicable effective date (as to the Registration Statement and any amendment thereto) and as of the applicable filing date (as to the Prospectus and any amendment or supplement thereto) contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein (with respect to the Prospectus, in the light of the circumstances under which they were made) not misleading; provided that no representation or warranty is made by the Company as to information contained in or omitted from the Registration Statement or the Prospectus in reliance upon and in conformity with written information furnished to the Company by or on behalf of the Dealer-Manager specifically for inclusion therein, it being acknowledged and agreed that such information provided by or on behalf of the Dealer-Manager consists solely and exclusively of the following disclosure contained in the Prospectus (collectively, the “**Dealer-Manager Information**”): (i) the name of Maxim acting in its capacity as dealer-manager for the Rights Offering and (ii) “The Rights Offering - Distribution Arrangements.”

(c) Neither: (i) any Issuer-Represented General Free Writing Prospectus(es) (as defined below) issued at or prior to the Closing and the Prospectus, all considered together (as of the time immediately prior to any sale of Offering Securities pursuant to the Rights Offering (such time, the “**Applicable Time**”) and such materials, collectively, the “**General Disclosure Package**”), nor (ii) any individual Issuer-Represented Limited-Use Free Writing Prospectus(es) (as defined below), when considered together with the General Disclosure Package, includes or will include as of the Closing any untrue statement of a material fact or omits or will omit as of the Closing to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The preceding sentence does not apply to statements in or omissions from any Prospectus included in the Registration Statement, the General Disclosure Package or any Issuer-Represented Limited-Use Free Writing Prospectus (as defined below) in conformity with the Dealer-Manager Information.

(d) Each Issuer-Represented Free Writing Prospectus, if any, as of its issue date and at all subsequent times until the Closing or until any earlier date that the Company notified or notifies the Dealer-Manager as described in the next sentence, did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the then-current Registration Statement or Prospectus. If at any time following issuance of an Issuer-Represented Free Writing Prospectus there occurred or occurs an event or development as a result of which such Issuer-Represented Free Writing Prospectus conflicted or would conflict with the information contained in the then-current Registration Statement or Prospectus relating to the Offering Securities or included or would include an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances prevailing at that subsequent time, not misleading, the Company has notified or will notify promptly the Dealer-Manager so that any use of such Issuer-Represented Free Writing Prospectus may cease until it is promptly amended or supplemented by the Company, at its own expense, to eliminate or correct such conflict, untrue statement or omission.

(e) The Company has not distributed and will not distribute any prospectus or other offering material in connection with the Rights or the offering and sale of the Units, Rights Shares, Rights Warrants and Underlying Shares other than the General Disclosure Package, any Issuer-Represented Limited-Use Free Writing Prospectus or the Prospectus or other materials permitted by the Securities Act to be distributed by the Company. Unless the Company obtains the prior consent of the Dealer-Manager, the Company has not made and will not make any offer relating to the Offering Securities that would constitute an “issuer free writing prospectus,” as defined in Rule 433 under the Securities Act, or that would otherwise constitute a “free writing prospectus,” as defined in Rule 405 under the Securities Act, required to be filed with the Commission; provided that the prior written consent of the Dealer-Manager shall be deemed to have been given in respect of any free writing prospectus referenced on Schedule I attached hereto. The Company has complied and will comply with the requirements of Rules 164 and 433 under the Securities Act applicable to any Issuer-Represented Free Writing Prospectus as of its issue date and at all subsequent times through the Closing, including timely filing with the Commission where required, legending and record keeping. To the extent an electronic road show is used, the Company has satisfied and will satisfy the conditions in Rule 433 under the Securities Act to avoid a requirement to file with the Commission any electronic road show.

(f) As used in this Agreement, the terms set forth below shall have the following meanings:

(i) “**Issuer-Represented Free Writing Prospectus**” means any “issuer free writing prospectus,” as defined in Rule 433 under the Securities Act, relating to the Offering Securities that (A) is required to be filed with the Commission by the Company, or (B) is exempt from filing pursuant to Rule 433(d)(5)(i) under the Securities Act because it contains a description of the Offering Securities or of the Rights Offering that does not reflect the final terms or pursuant to Rule 433(d)(8)(ii) because it is a “bona fide electronic road show,” as defined in Rule 433 under the Securities Act, in each case in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company’s records pursuant to Rule 433(g) under the Securities Act.

(ii) “**Issuer-Represented General Free Writing Prospectus**” means any Issuer-Represented Free Writing Prospectus that is intended for general distribution to prospective investors, as evidenced by its being specified in Schedule I to this Agreement.

(iii) “**Issuer-Represented Limited-Use Free Writing Prospectus**” means any Issuer-Represented Free Writing Prospectus that is not an Issuer-Represented General Free Writing Prospectus. The term Issuer-Represented Limited-Use Free Writing Prospectus also includes any “bona fide electronic road show,” as defined in Rule 433 under the Securities Act, that is made available without restriction pursuant to Rule 433(d)(8)(ii), even though not required to be filed with the Commission.

(g) There are no contracts, agreements, plans or other documents which are required to be described in the Prospectus or filed as exhibits to the Registration Statement by the Securities Act or by the Rules and Regulations which have not been described in the Prospectus or filed as exhibits to the Registration Statement or referred to in, or incorporated by reference into, the exhibit table of the Registration Statement as permitted by the Rules and Regulations.

(h) The Company and each of its Subsidiaries have been duly incorporated and are validly existing as corporations in good standing under the laws of their respective jurisdictions of incorporation, are duly qualified to do business and are in good standing as foreign corporations in each jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such qualification, and have all power and authority necessary to own or hold their respective properties and to conduct the businesses in which they are engaged, except where the absence of such power or authority (either individually and in the aggregate) could not reasonably be expected to have a material adverse effect on: (i) the business, condition (financial or otherwise), results of operations, shareholders' equity, properties or prospects (as such prospects are disclosed or described in the Prospectus) of the Company or its Subsidiaries; (ii) the long-term debt or capital stock of the Company or its Subsidiaries; or (iii) the Rights Offering or consummation of any of the other transactions contemplated by this Agreement, the Registration Statement or the Prospectus (any such effect being a "**Material Adverse Effect**").

(i) This Agreement has been duly authorized, executed and delivered by the Company and, assuming the due authorization, execution and delivery by the Dealer-Manager, constitutes the valid and legally binding agreement of the Company, enforceable against the Company in accordance with its terms, except as the enforceability thereof may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws relating to or affecting creditors' rights generally and by general principles of equity.

(j) Neither the Company nor any of its Subsidiaries: (i) is in violation of its charter or by-laws, (ii) in default under or in breach of, and no event has occurred which, with notice or lapse of time or both, would constitute a default or breach under or result in the creation or imposition of any lien, charge, mortgage, pledge, security interest, claim, equity, trust or other encumbrance, preferential arrangement, defect or restriction of any kind whatsoever (each, a "**Lien**") upon any of their property or assets pursuant to, any material contract (including Government Contracts (as defined below), agreement, indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which it is a party or by which it is bound or to which any of its properties or assets is subject or (iii) is in violation in any respect of any law, rule, regulation, ordinance, directive, judgment, decree or order, foreign and domestic, to which it or its properties or assets may be subject or has failed to obtain any material license, permit, certificate, franchise or other governmental authorization or permit necessary to the ownership of its properties or assets or to the conduct of its business, except, in the case of clauses (ii) and (iii) above, any violation, default or failure to possess the same that would not have a Material Adverse Effect.

Each Government Contract is in full force and effect and constitutes a legal, valid and binding agreement, enforceable in accordance with its terms against all parties thereto and was awarded in compliance with applicable Law (as defined below). The Company has complied in all material respects with all terms and conditions of each Government Contract, including all clauses, provisions and requirements incorporated expressly by reference or by operation of Law therein and including any requirements relating to the charging of prices or costs, minimum qualifications of personnel and warranties. No Government Contract has, to date, or is currently projected to have, fully burdened costs incurred in excess of the Government Contract fixed price, or, in the case of flexibly-priced or cost-reimbursement contracts, fully burdened costs incurred in excess of the ceiling price or funded amount of the Government Contract. The Company is not aware of any adverse or negative past performance evaluations or ratings pertaining to any Government Contract. There has not been any withholding or setoff of any payments by a Governmental Authority or prime contractor or higher-tier subcontractor nor, to the Company's knowledge, has there been any attempt to withhold or setoff, any payments due under any Government Contract on any basis, including the basis that a cost incurred or invoice rendered by the Company was questioned or disallowed by a Governmental Authority, prime contractor or higher-tier subcontractor or any of their audit representatives, nor is there any basis for any such withhold or setoff. "**Government Contract**" means any material prime contract, subcontract, teaming agreement or arrangement, joint venture, basic ordering agreement, blanket purchase agreement, pricing agreement, letter contract, contract awarded under the Federal Supply Schedule program, purchase order, task order or delivery order or other Contract or similar arrangement of any kind, between the Company and (a) any Governmental Authority, (b) any prime contractor of a Governmental Authority in its capacity as a prime contractor, or (c) any subcontractor (or lower tier subcontractor) with respect to any contract of a type described in clauses (a) or (b) above. "**Governmental Authority**" means any federal, state, local, foreign or other governmental, quasi-governmental or administrative body, instrumentality, department or agency or any court, tribunal, administrative hearing body, arbitration panel, commission, or other similar dispute resolving panel or body and shall include any Person acting on behalf of a such Governmental Authority. "**Law**" means any federal, state, local, municipal, foreign or other law, statute, legislation, principle of common law, ordinance, code, edict, decree, proclamation, treaty, convention, rule, regulation, directive, requirement, writ, injunction, settlement, Permit or Order that is or has been issued, enacted, adopted, passed, approved, promulgated, made, implemented or otherwise put into effect by or under the authority of any Governmental Authority.

(k) Prior to or on the date hereof the Company and Broadridge have or will have entered into a subscription and information agent agreement (the "**Agent Agreement**"). When executed by the Company, the Agent Agreement will have been duly authorized, executed and delivered by the Company and, assuming due authorization, execution and delivery by Broadridge will constitute a valid and legally binding agreement of the Company enforceable in accordance with its terms, except as the enforceability thereof may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws relating to or affecting creditors' rights generally and by general principles of equity.

(l) The Rights to be issued and distributed by the Company have been duly and validly authorized and, when issued and delivered in accordance with the terms of the Offer Documents, will be duly and validly issued, and will constitute valid and legally binding obligations of the Company enforceable against the Company in accordance with their terms, no holder of the Rights is or will be subject to personal liability by reason of being such a holder, and the Rights conform to the description thereof contained in the Prospectus.

(m) The Rights Warrants conform to the description thereof in the Registration Statement and in the Prospectus and, when issued and delivered by the Company in accordance with the terms of the Offer Documents, will be duly and validly issued, and will constitute valid and legally binding obligations of the Company enforceable against the Company in accordance with their terms. The Underlying Shares issuable upon exercise of the Rights Warrants have been duly authorized and reserved for issuance upon exercise of the Rights Warrants by all necessary corporate action on the part of the Company and, when issued and delivered and paid for upon such exercise in accordance with the terms of the Rights Warrants, will be validly issued, fully paid, nonassessable and free of preemptive rights and will conform to the description thereof in the Prospectus.

(n) Except as disclosed in the Prospectus with respect to the Company's authorized capitalization, the Rights Shares have been duly and validly authorized and reserved for issuance upon exercise of the Rights and are free of statutory and contractual preemptive rights and are sufficient in number to meet the exercise requirements of the Rights Offering; and Rights Shares, when so issued and delivered against payment therefor in accordance with the terms of the Rights Offering, will be duly and validly issued, fully paid and non-assessable, with no personal liability attaching to the ownership thereof, and will conform to the description thereof contained in the Prospectus.

(o) The Common Stock is listed for trading on the NYSE American (the "**NYSE American**"). Except as set forth in the Registration Statement, the Company has not received an oral or written notification from NYSE American or any court or any other federal, state, local or foreign governmental or regulatory authority having jurisdiction over the Company or any of its Subsidiaries or any of their properties or assets ("**Governmental Authority**") of any inquiry or investigation or other action that would cause the Common Stock, the Rights Shares or the Underlying Shares to not be listed for trading on NYSE American.

(p) The Company has an authorized capitalization as set forth under the caption "Description of Securities" in the Prospectus and all of the issued shares of capital stock of the Company have been duly and validly authorized and issued, are fully paid and non-assessable and have been issued in compliance with federal and state securities laws. None of the outstanding shares of the Company capital stock were issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. There are no authorized or outstanding options, warrants, preemptive rights, rights of first refusal or other rights to purchase, or equity or debt securities convertible into or exchangeable or exercisable for, any capital stock of the Company or any of its subsidiaries other than those accurately described in the Registration Statement and Prospectus. The description of the Company's stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, set forth in the Registration Statement and Prospectus accurately and fairly presents in all material respects the information required to be shown with respect to such plans, arrangements, options and rights.

(q) The Company and its Subsidiaries own or lease all such assets or properties as are necessary to the conduct of its business as presently operated and as proposed to be operated as described in the Registration Statement and the Prospectus. The Company and its Subsidiaries have good and marketable title in fee simple to all assets or real property and good and marketable title to all personal property owned by them, in each case free and clear of any Lien, except for such (i) Liens as are described in the Registration Statement and the Prospectus, (ii) Liens as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and the Subsidiaries and (iii) Liens for the payment of federal, state or other taxes, for which appropriate reserves have been made in accordance with GAAP, and the payment of which is neither delinquent nor subject to penalties. Any assets or real property and buildings held under lease or sublease by the Company or any Subsidiary is held under valid, subsisting and enforceable leases with such exceptions as are not material to, and do not interfere with, the use made and proposed to be made of such property and buildings by the Company or such Subsidiary. Neither the Company nor any Subsidiary has received any notice of any material claim adverse to its ownership of any real or personal property or of any material claim against the continued possession of any real property, whether owned or held under lease or sublease by the Company or any Subsidiary.

(r) The Company and each of its Subsidiaries have all material consents, approvals, authorizations, orders, registrations, qualifications, licenses, filings and permits of, with and from all judicial, regulatory and other Governmental Authorities and all third parties, foreign and domestic, including, without limitation, those administered by the U.S. Food and Drug Administration of the U.S. Department of Health and Human Services (“**FDA**”), the European Medicines Agency (“**EMA**”) or by any foreign, federal, state or local governmental or regulatory authority performing functions similar to those performed by the FDA or EMA (collectively, with the Licensing Requirements described below, the “**Consents**”), to own, lease and operate their properties and conduct their businesses as presently being conducted and as disclosed in the Registration Statement and the Prospectus, and, to the Company’s knowledge, each such Consent is valid and in full force and effect. The Company has not received notice of any investigation or proceedings which results in or, if decided adversely to the Company, would reasonably be expected to result in the revocation of any Consent or would reasonably be expected to have a Material Adverse Effect. No Consent contains a materially burdensome restriction not adequately disclosed in the Registration Statement and the Prospectus. To the Company’s knowledge, the Company and its Subsidiaries are in compliance with all such Consents, and all such Consents are valid and in full force and effect. Neither the Company nor any Subsidiary has received notification of any revocation, suspension, termination or invalidation (or proceedings related thereto) of any such Consent and, to the Company’s knowledge after reasonable investigation, no event has occurred that allows or results in, or after notice or lapse of time or both would allow or result in, revocation, suspension, termination or invalidation (or proceedings related thereto ) of any such Consent and the Company has no reason to believe that any such Consent will not be renewed (if renewal is required).

(s) The execution, delivery and performance of this Agreement by the Company, the issuance of the Rights in accordance with the terms of the Offer Documents, the issuance of the Units, the Rights Shares, the Rights Warrants and the Underlying Shares in accordance with the terms of the Rights Offering, and the consummation by the Company of the transactions contemplated hereby, the Agent Agreement, will not conflict with or result in a breach or violation of any of the terms or provisions of, or constitute a default under, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its Subsidiaries or any of its Affiliates is a party or by which the Company or any of its Subsidiaries or its Affiliates is bound or to which any of the properties or assets of the Company or any of its Subsidiaries or its Affiliates is subject, nor will such actions result in any violation of the provisions of the charter or by-laws of the Company or any of its Subsidiaries or any statute or any order, rule or regulation of any Governmental Authority, except where such violation would not reasonably be expected to have a Material Adverse Effect; and except for the registration of the Offering Securities under the Securities Act and such consents, approvals, authorizations, registrations or qualifications as may be required under the Exchange Act and applicable state securities laws in connection with the distribution of the Rights and the offer and sale of the Units, the Rights Shares, the Rights Warrants and the Underlying Shares by the Company, no consent, approval, authorization or order of, or filing or registration with, any such court or Governmental Authority is required for the execution, delivery and performance of this Agreement by the Company and the consummation by it of the transactions contemplated hereby.

(t) Except as otherwise set forth in the Registration Statement and the Prospectus, there are no contracts, agreements or understandings between the Company and any Person granting such Person the right to require the Company to file a registration statement under the Securities Act with respect to any securities of the Company owned or to be owned by such Person or to require the Company to include such securities in the securities registered pursuant to the Registration Statement or in any securities being registered pursuant to any other registration statement filed by the Company under the Securities Act. No holder of any security of the Company has any rights of rescission or similar rights with respect to such securities held by them.

(u) Neither the Company nor any of its Subsidiaries has sustained, since the date of the latest balance sheet included in the Prospectus or after such date and as disclosed in the Prospectus, any material loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree; and, since such date or after such date and as disclosed in the Prospectus, there has not been any change in the capital stock or long-term debt of the Company or any of its Subsidiaries or any material adverse change, or any development involving a prospective material adverse change, in or affecting the general affairs, management, financial position, stockholders' equity, results of operations or prospects (as such prospects are disclosed or described in the Prospectus) of the Company and its Subsidiaries (a "**Material Adverse Change**"). Since the date of the latest balance sheet presented in the Prospectus, the Company has not incurred or undertaken any liabilities or obligations, whether direct or indirect, liquidated or contingent, matured or unmatured, or entered into any transactions, including any acquisition or disposition of any business or asset, which are material to the Company, except for liabilities, obligations and transactions which are disclosed in the Registration Statement, any Preliminary Prospectus and the Prospectus.

(v) GBH CPAs, PC ("**GBH**"), whose reports relating to the Company are included in the Registration Statement, are independent public accountants as required by the Securities Act, the Exchange Act, the Rules and Regulations and the rules and regulations promulgated by the Public Company Accounting Oversight Board (the "**PCAOB**"). GBH is duly registered and in good standing with the PCAOB. GBH has not, during the periods covered by the financial statements included in the Registration Statement, the Preliminary Prospectus and the Prospectus, provided to the Company any non-audit services, as such term is used in Section 10A(g) of the Exchange Act.

(w) The financial statements, including the notes thereto, and any supporting schedules included in the Registration Statement, any Preliminary Prospectus and the Prospectus present fairly, in all material respects, the financial position as of the dates indicated and the cash flows and results of operations for the periods specified of the Company. Except as otherwise stated in the Registration Statement, any Preliminary Prospectus and the Prospectus, said financial statements have been prepared in conformity with United States generally accepted accounting principles applied on a consistent basis throughout the periods involved. Any supporting schedules included in the Registration Statement, any Preliminary Prospectus and the Prospectus present fairly, in all material respects, the information required to be stated therein. No other financial statements or supporting schedules are required to be included or incorporated by reference in the Registration Statement. The other financial and statistical information included in the Registration Statement, any Preliminary Prospectus and the Prospectus present fairly, in all material respects, the information included therein and have been prepared on a basis consistent with that of the financial statements that are included in the Registration Statement, such Preliminary Prospectus and the Prospectus and the books and records of the respective entities presented therein.

(x) There are no pro forma or as adjusted financial statements which are required to be included in the Registration Statement, any Preliminary Prospectus and the Prospectus in accordance with Regulation S-X under the Securities Act which have not been included as so required. The pro forma and/or as adjusted financial information included in the Registration Statement, any Preliminary Prospectus and the Prospectus has been properly compiled and prepared in accordance with the applicable requirements of the Securities Act and the Rules and Regulations and include all adjustments necessary to present fairly, in all material respects, in accordance with generally accepted accounting principles the pro forma and as adjusted financial position of the respective entity or entities presented therein at the respective dates indicated and their cash flows and the results of operations for the respective periods specified. The assumptions used in preparing the pro forma and as adjusted financial information included in the Registration Statement, any Preliminary Prospectus and the Prospectus provide a reasonable basis for presenting the significant effects directly attributable to the transactions or events described therein. The related pro forma and pro forma as adjusted adjustments give appropriate effect to those assumptions; and the pro forma and pro forma as adjusted financial information reflect the proper application of those adjustments to the corresponding historical financial statement amounts.

(y) The statistical, industry-related and market-related data included in the Registration Statement, any Preliminary Prospectus and the Prospectus are based on or derived from sources which the Company reasonably believes are reliable and accurate, and such data agree with the sources from which they are derived. All required third party consents have been obtained in order for such data to be included in the Registration Statement, any Preliminary Prospectus and the Prospectus.

(z) Except as disclosed in the Registration Statement and the Prospectus, the Company maintains a system of internal accounting and other controls sufficient to provide reasonable assurances that: (i) transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with United States generally accepted accounting principles and to maintain accountability for assets, (iii) access to assets is permitted only in accordance with management's general or specific authorization, and (iv) the recorded accounting for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

(aa) The Company's Board of Directors has validly appointed an audit committee and compensation committee whose composition satisfies the requirements of the rules and regulations of the Commission and NYSE American and the Company's Board of Directors and/or audit committee and the compensation committee has each adopted a charter and such charters are in full force and effect as of the date hereof. Neither the Company's Board of Directors nor the audit committee thereof has been informed, nor is any director of the Company aware, of: (i) except as disclosed in the Registration Statement and the Prospectus, any significant deficiencies or material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; or (ii) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

(bb) The Company is in material compliance with the provisions of the Sarbanes-Oxley Act of 2002, as amended ("**Sarb-Ox**") applicable to the Company, and the rules and regulations promulgated thereunder and related or similar rules and regulations promulgated by any other Governmental Authority or self-regulatory entity or agency, except for violations which, singly or in the aggregate, are disclosed in the Prospectus or would not have a Material Adverse Effect.

(cc) No relationship, direct or indirect, exists between or among any of the Company or any Affiliate of the Company, on the one hand, and any director, officer, shareholder, customer or supplier of the Company or any Affiliate of the Company, on the other hand, which is required by the Securities Act, the Exchange Act or the Rules and Regulations to be described in the Registration Statement or the Prospectus which is not so described as required. Except as disclosed in the Registration Statement and the Prospectus, there are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees of indebtedness by the Company to or for the benefit of any of the officers or directors of the Company or any of their respective family members. The Company has not, in violation of Sarb-Ox, directly or indirectly, including through any Affiliate of the Company (other than as permitted under the Sarb-Ox for depository institutions), extended or maintained credit, arranged for the extension of credit, or renewed an extension of credit, in the form of a personal loan to or for any director or executive officer of the Company.

(dd) Except as described in the Prospectus, there are no legal or governmental proceedings pending to which the Company or any of its Subsidiaries is a party or of which any property or asset of the Company or any of its Subsidiaries is the subject, including without limitation any proceeding before the FDA, the EMEA or comparable federal, state, local or foreign governmental bodies (it being understood that the interaction between the Company and the FDA, the EMEA and such comparable governmental bodies relating to the clinical development and product approval process shall not be deemed proceedings for purposes of this representation), which, if determined adversely to the Company or any of its Subsidiaries, are reasonably likely to have a Material Adverse Effect; and to the Company's knowledge, except as disclosed in the Prospectus, no such proceedings are threatened or contemplated by Governmental Authorities or threatened by others. The Company has not received any written cure notice or show cause notice regarding performance of a Government Contract or any written or oral notice of, any claim, action, litigation, inquiry, proceeding (arbitral, administrative, legal or otherwise, including any informal proceeding), cause of action, audit, suit, settlement, stipulation, hearing, investigation, charge, complaint, demand or similar matter, for, or assertion of, a condition of default, breach of contract, or material violation of applicable Law, in connection with a Government Contract.

(ee) The Company and its Subsidiaries have filed all necessary federal, state and foreign income and franchise tax returns and have paid all taxes required to be paid by any of them and, if due and payable, any related or similar assessment, fine or penalty levied against any of them, except where the failure to make such filings or make such payments, either individually or in the aggregate, could not reasonably be expected to have, a Material Adverse Effect. The Company has made adequate charges, accruals and reserves in its financial statements above in respect of all federal, state and foreign income and franchise taxes for all periods as to which the tax liability of the Company or any of its Subsidiaries has not been finally determined.

(ff) Each of the Company and its Subsidiaries maintains insurance of the types and in the amounts which the Company believes to be reasonable and sufficient for a company of its size operating in the Company's industry, including, but not limited to: (i) directors' and officers' insurance (including insurance covering the Company, its directors and officers for liabilities or losses arising in connection with the Rights Offering, including, without limitation, liabilities or losses arising under the Securities Act, the Exchange Act, the Rules and Regulations and applicable foreign securities laws), (ii) insurance covering real and personal property owned or leased against theft, damage, destruction, acts of vandalism and all other risks customarily insured against, (iii) business interruption insurance and (iv) product-related or clinical trial-related insurance. There are no material claims by the Company or any of its Subsidiaries under any policy or instrument described in this paragraph as to which any insurance company is denying liability or defending under a reservation of rights clause. All of the insurance policies described in this paragraph are in full force and effect. Neither the Company nor any of its Subsidiaries has been refused any insurance coverage sought or applied for, and the Company has no reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not have a Material Adverse Effect.

(gg) Intellectual Property.

(i) The Company owns, licenses or possess the right to use sufficient trademarks, trade names, patents, patent rights, copyrights, domain names, licenses, approvals, trade secrets, inventions, technology, know-how and other similar rights (collectively, "**Intellectual Property Rights**") as are reasonably necessary or material to conduct its business as now conducted and contemplated to be conducted, each as described in the Registration Statement, any Preliminary Prospectus and the Prospectus. To the Company's knowledge, all Intellectual Property Rights are valid and enforceable.

(ii) Except as set forth in the Registration Statement, any Preliminary Prospectus and the Prospectus: (A) there is no actual, pending or, to the Company's knowledge, threatened action, suit, proceeding, or claim by others challenging the rights of the Company and its Subsidiaries and Affiliates in or to any Intellectual Property Rights, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (B) there is no actual, pending or, to the Company's knowledge, threatened action, suit, proceeding, or claim by others that the Company or its Subsidiaries or Affiliates infringes, misappropriates, or otherwise violates any Intellectual Property Rights of others, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (C) there is no actual, pending or, to the Company's knowledge, threatened action, suit, proceeding, or claim by others challenging the validity or scope of any such Intellectual Property Rights owned by the Company or its Subsidiaries or Affiliates and the Company is unaware of any facts which would form a reasonable basis for any such claim; (D) to the Company's knowledge, the operation of the business of the Company, its Subsidiaries and its Affiliates as now conducted and in connection with the development and commercialization of its technology described in the Registration Statement, any Preliminary Prospectus and the Prospectus does not infringe any claim of any patent or published patent application nor would such infringement, misappropriation or violation arise upon the commercialization of any product or service described in the Registration Statement, any Preliminary Prospectus and the Prospectus as under development; (E) to the Company's knowledge, there is no "prior art" of which the Company is aware that may render any patent owned or licensed by the Company invalid or any patent application owned or licensed by the Company or its Subsidiaries or Affiliates unpatentable which has not been disclosed to the applicable government patent office; and (F) the patents, trademarks, and copyrights maintained by the Company or its Subsidiaries or Affiliates are in full force and in effect, and none of such patents, trademarks and copyrights have been adjudged invalid or unenforceable in whole or in part. Neither the Company nor its Subsidiaries or Affiliates is a party to or bound by any options, licenses or agreements with respect to the Intellectual Property Rights of any other Person that are required to be set forth in the Registration Statement, any Preliminary Prospectus and Prospectus and are not described therein in all material respects.

(iii) The Company has duly and properly filed or caused to be filed with the U. S. Patent and Trademark Office (the "PTO") and applicable foreign and international patent authorities all patent applications owned by the Company, its Subsidiaries or Affiliates (the "**Company Patent Applications**"). The product candidates described in the Registration Statement, any Preliminary Prospectus and the Prospectus as under development by the Company fall within the scope of the claims of one or more patents or patent applications owned by, or exclusively licensed to, the Company. The Company has complied in all material respects with the PTO's duty of candor and disclosure for the Company Patent Applications and has made no material misrepresentation in the Company Patent Applications. The Company Patent Applications disclose patentable subject matters, and the Company has not been notified of any inventorship challenges nor has any interference been declared or provoked nor is any material fact known by the Company that would preclude the issuance of patents with respect to the Company Patent Applications or would render such patents invalid or unenforceable. No third party possesses rights to the Company's Intellectual Property Rights that, if exercised, could enable such party to develop products competitive to those the Company intends to develop as described in the Prospectus.

(iv) Other than as disclosed in the Registration Statement, any Preliminary Prospectus and Prospectus, to the Company's knowledge, there are no rulemaking or similar proceedings before the FDA, PTO or applicable foreign and international patent authorities, which affect or involve the Company or any of the processes or technologies that the Company has developed, is developing or proposes to develop or uses or proposes to use which, if the subject of an action unfavorable to the Company, would result in a Material Adverse Change.

(v) The Company has obtained legally binding written agreements from all officers, employees and third parties with whom the Company has shared confidential proprietary information: (A) of the Company, or (B) received from others which the Company is obligated to treat as confidential, which agreements require such employees and third parties to keep such information confidential. The Company has taken all necessary actions to obtain ownership of all works of authorship and inventions made by its employees, consultants and contractors during the time they were employed by or under contract with the Company and which relate to the Company's business as currently conducted. All founders and current key employees have signed confidentiality and invention assignment agreements with the Company.

(vi) The Company possesses valid and current licenses, registrations, certificates, permits and other authorizations issued by the appropriate foreign, federal, state or local regulatory authorities as necessary to conduct its respective businesses (collectively, the "**Licensing Requirements**") and are enforceable by or against the parties thereto in accordance to its terms, except where the failure of a Licensing Requirement would not have a Material Adverse Effect. The Company has not received any notice of proceedings relating to the revocation or modification of, or noncompliance with, any such license, certificate, permit or authorization, which could result in a Material Adverse Effect. No action, suit or proceeding, other than routine audits, by or before any court or Governmental Authority or any arbitrator involving the Company with respect to the removal, revocation, suspension or other termination of the authority to operate under the Licensing Requirements is pending or, to the Company's knowledge, threatened. The Company does not believe that any pending audit is reasonably likely to result in the removal, revocation, suspension or other termination of the Company's authority to operate under the Licensing Requirements.

(vii) The consummation of the transactions contemplated by this Agreement will not result in the loss or impairment of or payment of any additional amounts with respect to, nor require the consent of any other person in respect of, the Company's right to own, use, or hold for use any of the Intellectual Property Rights as owned, used or held for use in the conduct of the business as currently conducted.

(viii) To the Company's knowledge, the Company has at all times complied with all applicable laws relating to privacy, data protection, and the collection and use of personal information collected, used, or held for use by the Company in the conduct of the Company's business. No claims have been asserted or threatened against the Company alleging a violation of any person's privacy or personal information or data rights and the consummation of the transactions contemplated hereby will not breach or otherwise cause any violation of any law related to privacy, data protection, or the collection and use of personal information collected, used, or held for use by the Company in the conduct of the Company's business, except such claims as would not reasonably be likely to result in a Material Adverse Effect. The Company takes reasonable measures to ensure that such information is protected against unauthorized access, use, modification, or other misuse.

(hh) Except as described in any Preliminary Prospectus, the Prospectus and the Registration Statement, the Company: (i) is and at all times has been in compliance with all statutes, rules, regulations or guidance applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product manufactured, distributed or sold by the Company or any component thereof (such statutes, rules, regulations or guidance, collectively, "**Applicable Laws**"); (ii) is, and to the Company's knowledge, the Company's manufacturing facility, after reasonable investigation, and operations of its suppliers are in compliance with all applicable federal, state, local and foreign laws, regulations, orders and decrees governing its business as prescribed by the FDA, the EMEA or any other applicable federal, state or foreign governmental authority agencies or bodies engaged in the regulation of pharmaceuticals or biohazardous substances or materials, (iii) has not received any notice of adverse finding, warning letter, untitled letter or other correspondence or notice from the FDA, the EMEA or any other Governmental Authority alleging or asserting noncompliance with any Applicable Laws or any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws ("**Authorizations**"); (iv) possesses all Authorizations and such Authorizations are valid and in full force and effect and are not in violation of any term of any such Authorizations; (v) has not received notice of any claim, suit, proceeding, hearing, enforcement, audit, investigation, arbitration or other action from any Governmental Authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Authorizations and has no knowledge that any such Governmental Authority or third party is considering any such claim, suit, proceeding, hearing, enforcement, audit, investigation, arbitration or other action; (vi) has not received notice that any Governmental Authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any Authorizations and has no knowledge that any such Governmental Authority is considering such action; and (vii) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and correct in all material respects on the date filed (or were corrected or supplemented by a subsequent submission), except, in the case of each of clauses (i), (ii), (iii) (iv), (vi) and (vii) for any default, violation or event that would not, individually or in the aggregate, have or reasonably be expected to have a Material Adverse Effect.

(ii) The studies, tests and trials conducted or sponsored by or on behalf of the Company that are described or referred to in any Preliminary Prospectus, the Prospectus and the Registration Statement (the “Studies”) were and, if still pending, are being conducted in accordance with experimental protocols, procedures and controls pursuant to accepted professional scientific standards and all Applicable Laws and Authorizations; the descriptions of the results of such Studies contained in any Preliminary Prospectus, the Prospectus and the Registration Statement are accurate and complete in all material respects and fairly present the data derived from such Studies. The Company is not aware of any studies, tests or trials, the results of which the Company believes reasonably call into question the Studies when viewed in the context in which such results are described. The Company has not received any notices or correspondence with the FDA, the EMEA or any foreign, state or local governmental body exercising comparable authority suggesting or requiring a clinical hold, termination, suspension or material modification of the Studies, and, to the Company’s knowledge after reasonable investigation, there are no reasonable grounds for the same. The Company has obtained (or caused to be obtained) informed consent by or on behalf of each human subject who participated in Studies. In using or disclosing patient information received by the Company in connection with the Studies, the Company has complied in all material respects with all applicable laws and regulatory rules, including, without limitation, the Health Insurance Portability and Accountability Act of 1996 and the rules and regulations thereunder. To the Company’s knowledge after reasonable investigation, none of the Studies involved any investigator who has been disqualified as a clinical investigator or has been found by the FDA to have engaged in scientific misconduct or debarred or excluded from participation in any governmental health care payment program.

(jj) Neither the Company nor, to the Company’s knowledge, any of the Company’s directors, officers or employees has violated: (i) the Bank Secrecy Act, as amended, (ii) the Money Laundering Control Act of 1986, as amended, (iii) the Foreign Corrupt Practices Act, or (iv) the Uniting and Strengthening of America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001, and/or the rules and regulations promulgated under any such law, or any successor law, except for such violations which, singly or in the aggregate, would not have a Material Adverse Effect.

(kk) Neither the Company nor any of its Affiliates has, prior to the date hereof, made any offer or sale of any securities which are required to be “integrated” pursuant to the Securities Act or the Rules and Regulations with the offer and sale of the Units, the Rights Shares and the Rights Warrants pursuant to the Registration Statement.

(ll) Transactions Affecting Disclosure to FINRA.

(i) Except as described in the Registration Statement and the Prospectus, there are no claims, payments, arrangements, agreements or understandings relating to the payment of a finder’s, consulting or origination fee or other compensation by the Company with respect to the issuance or exercise of the Rights or the offer and sale of the Units, the Rights Shares or the Rights Warrants or any other arrangements, agreements or understandings of the Company or, to the Company’s knowledge, the Company’s officers, directors and employees or Affiliates that may affect the Dealer-Manager’s compensation, as determined by the Financial Industry Regulatory Authority, Inc. (“FINRA”).

(ii) Except as previously disclosed by the Company to the Dealer-Manager in writing, no officer, director, or beneficial owner of 5% or more of any class of the Company's securities (whether debt or equity, registered or unregistered, regardless of the time acquired or the source from which derived) or any other Affiliate is a member or a Person associated, or affiliated with a member of FINRA.

(iii) No proceeds from the exercise of the Rights will be paid to any FINRA member, or any Persons associated or affiliated with a member of FINRA, except as specifically contemplated herein.

(iv) Except as previously disclosed by the Company to the Dealer-Manager, no Person to whom securities of the Company have been privately issued within the 180-day period prior to the initial filing date of the Registration Statement has any relationship or affiliation or association with any member of FINRA.

(mm) There are no contracts, agreements or understandings between the Company and any Person that would give rise to a valid claim against the Company or the Dealer-Manager for a brokerage commission, finder's fee or other like payment in connection with the transactions contemplated by this Agreement. Other than the Dealer-Manager, the Company has not employed any brokers, dealers or underwriters in connection with solicitation of exercise of Rights in the Rights Offering, and except provided for in Sections 6 and 7 hereof, no other commissions, fees or discounts will be paid by the Company or otherwise in connection with the Rights Offering.

(nn) The Company and its Subsidiaries have at all times operated their businesses in material compliance with all Environmental Laws, and no material expenditures are or will be required in order to comply therewith. The Company has not received any notice or communication that relates to or alleges any actual or potential violation or failure to comply with any Environmental Laws that will result in a Material Adverse Effect. As used herein, the term "**Environmental Laws**" means all applicable laws and regulations, including any licensing, permits or reporting requirements, and any action by a Governmental Authority pertaining to the protection of the environment, protection of public health, protection of worker health and safety, or the handling of hazardous materials, including without limitation, the Clean Air Act, 42 U.S.C. § 7401, et seq., the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, et seq., the Federal Water Pollution Control Act, 33 U.S.C. § 1321, et seq., the Hazardous Materials Transportation Act, 49 U.S.C. § 1801, et seq., the Resource Conservation and Recovery Act, 42 U.S.C. § 690-1, et seq., and the Toxic Substances Control Act, 15 U.S.C. § 2601, et seq.

(oo) Except as set forth in the Registration Statement, any Preliminary Prospectus or the Prospectus, the Company is not a party to an "employee benefit plan," as defined in Section 3(3) of the Employee Retirement Income Security Act of 1974 ("**ERISA**") which: (i) is subject to any provision of ERISA and (ii) is or was at any time maintained, administered or contributed to by the Company and covers any employee or former employee of the Company or any ERISA Affiliate (as defined hereafter). These plans are referred to collectively herein as the "**Employee Plans**." For purposes of this paragraph, "**ERISA Affiliate**" of any Person means any other person or entity which, together with that person or entity, could be treated as a single employer under Section 414(m) of the Internal Revenue Code of 1986, as amended (the "**Code**"), or is an "affiliate," whether or not incorporated, as defined in Section 407(d)(7) of ERISA, of the Person.

(pp) Each employment, severance or other similar arrangement or policy and each material plan or arrangement providing for insurance coverage (including any self-insured arrangements), workers' compensation, disability benefits, severance benefits, supplemental unemployment benefits, vacation benefits, retirement benefits or for deferred compensation, profit-sharing, bonuses, stock options, stock appreciation or other forms of incentive compensation, or post-retirement insurance, compensation or benefits to which the Company or any Subsidiary is a party and which : (i) is not an Employee Plan, (ii) is entered into, maintained or contributed to, as the case may be, by the Company or any of their respective ERISA Affiliates, and (iii) covers any employee or former employee of the Company or any of their respective ERISA Affiliates (such contracts, plans and arrangements being referred to collectively in this Agreement as the "**Benefit Arrangements**") is fully and accurately disclosed in the Registration Statement to the extent it is material and required to be disclosed by the Securities Act and the Rules and Regulations and has been maintained in substantial compliance with its terms and with requirements prescribed by any and all statutes, orders, rules and regulations that are applicable to that Benefit Arrangement.

(qq) Except as set forth in the Registration Statement, any Preliminary Prospectus or the Prospectus, there is no material liability in respect of post-retirement health and medical benefits for retired employees of the Company or any of their respective ERISA Affiliates other than medical benefits required to be continued under applicable law, determined using assumptions that are reasonable in the aggregate, over the fair market value of any fund, reserve or other assets segregated for the purpose of satisfying such liability (including for such purposes any fund established pursuant to Section 401(h) of the Code). With respect to any of the Company's Employee Plans which are "group health plans" under Section 4980B of the Code and Section 607(1) of ERISA, there has been material compliance with all requirements imposed there under such that the Company or their respective ERISA Affiliates have no (and will not incur any) loss, assessment, tax penalty, or other sanction with respect to any such plan.

(rr) The execution of this Agreement and consummation of the Rights Offering does not constitute a triggering event under any Employee Plan or any other employment contract, whether or not legally enforceable, which (either alone or upon the occurrence of any additional or subsequent event) will or may result in any payment (of severance pay or otherwise), acceleration, increase in vesting, or increase in benefits to any current or former participant, employee or director of the Company.

(ss) No "prohibited transaction" (as defined in either Section 406 of the ERISA or Section 4975 of Code), "accumulated funding deficiency" (as defined in Section 302 of ERISA) or other event of the kind described in Section 4043(b) of ERISA (other than events with respect to which the 30-day notice requirement under Section 4043 of ERISA has been waived) has occurred with respect to any employee benefit plan for which the Company would have any liability; each employee benefit plan of the Company is in compliance in all material respects with applicable law, including (without limitation) ERISA and the Code; the Company has not incurred and does not expect to incur liability under Title IV of ERISA with respect to the termination of, or withdrawal from any "pension plan"; and each employee benefit plan of the Company that is intended to be qualified under Section 401(a) of the Code is so qualified and nothing has occurred, whether by action or by failure to act, which could cause the loss of such qualification.

(tt) Neither the Company nor, to the Company's knowledge, any of the Company's officers, directors, employees or agents has at any time during the last five (5) years: (i) made any unlawful contribution to any candidate for foreign office, or failed to disclose fully any contribution in violation of law; or (ii) made any payment to any federal or state governmental officer or official, or other Person charged with similar public or quasi-public duties, other than payments that are not prohibited by the laws of the United States of any jurisdiction thereof.

(uu) The Company has not and will not, directly or indirectly through any officer, director or Affiliate of the Company or through any other Person: (i) taken any action designed to cause or to result in, or that has constituted or which might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the issuance of the Rights or the sale or resale of the Rights Shares, (ii) since the filing of the Registration Statement sold, bid for or purchased, or paid any Person (other than the Dealer-Manager) any compensation for soliciting exercises or purchases of, the Rights or the Rights Shares; and (iii) until the later of the expiration of the Rights or the completion of the distribution (within the meaning of Regulation M under the Exchange Act) of the Rights Shares, sell, bid for or purchase, apply or agree to pay to any Person (other than the Dealer-Manager) any compensation for soliciting another to purchase any other securities of the Company (except for the solicitation of the exercises of Rights pursuant to this Agreement or pursuant to the Company's "at-the-market" offering program). The foregoing shall not apply to the offer, sale, agreement to sell or delivery with respect to: (i) the Units, the Rights Shares and the Rights Warrants offered and sold upon exercise of the Rights, as described in the Prospectus; or (ii) any shares of Common Stock sold pursuant to the Company's employee benefit plans.

(vv) As used in this Agreement, references to matters being "material" with respect to the Company or any matter relating to the Company shall mean a material item, event, change, condition, status or effect related to the condition (financial or otherwise), properties, assets (including intangible assets), liabilities, business, prospects (as such prospects are disclosed or described in any Preliminary Prospectus or the Prospectus), operations or results of operations of the Company and its Subsidiaries, taken as a whole.

(ww) As used in this Agreement, the term "Company's knowledge" (or similar language) shall mean the knowledge of the officers of the Company who are named in the Prospectus, with the assumption that such officers shall have made reasonable and diligent inquiry of the matters presented (with reference to what is customary and prudent for the applicable individuals in connection with the discharge by the applicable individuals of their duties as officers or directors of the Company).

(xx) Any certificate signed by or on behalf of the Company and delivered to the Dealer-Manager or to Lowenstein Sandler LLP, counsel for the Dealer-Manager, shall be deemed to be a representation and warranty by the Company to the Dealer-Manager as to the matters covered thereby.

6. Compensation of the Dealer-Manager. In consideration of the services rendered and to be rendered by the Dealer-Manager to the Company in connection with the Rights Offering, the Company agrees to pay the Dealer-Manager the following:

(a) to the Dealer-Manager, a cash fee equal to 7.0% of the total gross proceeds generated from the Rights Offering;

(b) the Dealer-Manager shall be entitled to reimbursement (less the advance in the amount of \$15,000 previously paid to Maxim, the “**Advance**”) of its reasonable and documented out-of-pocket expenses, including, without limitation, the fees and expenses of the Dealer-Manager’s outside legal counsel (the “**Legal Fees**”) of no more than \$75,000 and closing costs (the “**Closing Costs**”) of no more than \$10,000, by the Company. The Company must pre-approve any expense of the Dealer-Manager in excess of \$1,000, exclusive of the Legal Fees and the Closing Costs. Any portion of the Advance will be returned to the Company in the event it is not actually incurred. Except as provided in this Section 6(b) or Section 11, the Dealer-Manager shall be responsible for its own expenses.

7. Expenses. The Company shall pay or cause to be paid:

(a) all of its expenses (including any taxes) incurred in connection with the Rights Offering and the preparation, issuance, execution, authentication and delivery of the Offering Securities;

(b) all fees, expenses and disbursements of the Company’s accountants, legal counsel and other third party advisors;

(c) all fees and expenses of the Subscription Agent and the Information Agent set forth in the Agent Agreement;

(d) all fees, expenses and disbursements (including, without limitation, fees and expenses of the Company’s accountants and counsel) in connection with the preparation, printing, filing, delivery and shipping of the Registration Statement (including the financial statements therein and all amendments and exhibits thereto), each Preliminary Prospectus, the Prospectus, the other Offer Documents and any amendments or supplements of the foregoing;

(e) all fees, expenses and disbursements relating to the registration or qualification of the Rights and the Rights Shares under the “blue sky” securities laws of any states or other jurisdictions and all fees and expenses associated with the preparation of the preliminary and final forms of Blue Sky Memoranda;

(f) all filing fees of the Commission;

(g) all filing fees relating to the review of the Rights Offering by FINRA;

(h) any applicable listing or other fees;

(i) the cost of printing certificates representing the Offering Securities;

(j) all advertising charges pertaining to the Rights Offering agreed to by the Company;

(k) the cost and charges of the Company's transfer agent(s) or registrar(s) agreed to by the Company; and

(l) all other costs and expenses incident to the performance of its obligations hereunder for which provision is not otherwise made in this Section.

The Company shall perform its obligations set forth in this Section 7 whether or not the Rights Offering commences or any Rights are exercised pursuant to the Rights Offering.

8. Shareholder Lists; Subscription Agent.

(a) The Company will cause the Dealer-Manager to be provided with any cards or lists showing the names and addresses of, and the number of shares of Common Stock held by, the holders of shares of Common Stock as of a recent date and will use its best efforts to cause the Dealer-Manager to be advised from time to time during the period, as the Dealer-Manager shall request, of the Rights Offering as to any transfers of record of shares of Common Stock.

(b) The Company will arrange for the Subscription Agent to advise the Dealer-Manager daily as to such matters as they may reasonably request, including the number of Rights which have been exercised pursuant to the Rights Offering.

9. Covenants. The Company covenants and agrees with the Dealer-Manager:

(a) To use its best efforts to cause the Registration Statement and any amendments thereto to become effective, provided that the Company shall have the right to discontinue the Rights Offering and withdraw the Registration Statement if the Company's Board of Directors determines in good faith that the Rights Offering is no longer in the best interests of the Company and its stockholders; to advise the Dealer-Manager, promptly after it receives notice thereof, of the time when the Registration Statement, or any amendment thereto, becomes effective or any supplement to the Prospectus or any amended Prospectus has been filed and to furnish the Dealer-Manager with copies thereof; to prepare a Prospectus in a form approved by the Dealer-Manager (such approval not to be unreasonably withheld or delayed) and to file such Prospectus pursuant to Rule 424(b) under the Securities Act within the time prescribed by such rule; to advise the Dealer-Manager, promptly after it receives notice thereof, of the issuance by the Commission of any stop order or of any order preventing or suspending the use of any Preliminary Prospectus or the Prospectus, of the suspension of the qualification of the Rights for offering or sale in any jurisdiction, of the initiation or threatening of any proceeding for any such purpose, or of any request by the Commission for the amending or supplementing of the Registration Statement or the Prospectus or for additional information; and, in the event of the issuance of any stop order or of any order preventing or suspending the use of any Preliminary Prospectus or the Prospectus or suspending any such qualification, to use promptly its reasonable best efforts to obtain its withdrawal;

(b) To deliver promptly to the Dealer-Manager in New York City such number of the following documents as the Dealer-Manager shall reasonably request: (i) conformed copies of the Registration Statement as originally filed with the Commission and each amendment thereto (in each case excluding exhibits other than this Agreement, any other Offer Documents filed as exhibits, the computation of the ratio of earnings to fixed charges and the computation of per share earnings); (ii) each Preliminary Prospectus, the Prospectus and any amended or supplemented Prospectus; and (iii) any document incorporated by reference in the Prospectus (excluding exhibits thereto); and, if the delivery of a prospectus is required at any time during which the Prospectus relating to the Rights or the Units, the Rights Shares or the Rights Warrants is required to be delivered under the Securities Act and if at such time any events shall have occurred as a result of which the Prospectus as then amended or supplemented would include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made when such Prospectus is delivered, not misleading, or, if for any other reason it shall be necessary during such period to amend or supplement the Prospectus or to file under the Exchange Act any document incorporated by reference in the Prospectus in order to comply with the Securities Act or the Exchange Act, to notify the Dealer-Manager and, upon its request, to file such document and to prepare and furnish without charge to the Dealer-Manager as many copies as the Dealer-Manager may from time to time reasonably request of an amended or supplemented Prospectus which will correct such statement or omission or effect such compliance;

(c) To file promptly with the Commission any amendment to the Registration Statement or the Prospectus or any supplement to the Prospectus that may, in the judgment of the Company or the Dealer-Manager, be necessary or advisable in connection with the distribution of the Rights or the offer and sale of the Units, the Rights Shares, the Rights Warrants and the Underlying Shares or be requested by the Commission;

(d) Prior to filing with the Commission any: (i) Preliminary Prospectus, (ii) amendment to the Registration Statement, any document incorporated by reference in the Prospectus or (iii) any Prospectus pursuant to Rule 424 of the Rules and Regulations, to furnish a copy thereof to the Dealer-Manager and counsel for the Dealer-Manager and obtain the consent of the Dealer-Manager to the filing (which consent shall not be unreasonably withheld);

(e) Until the completion of the Rights Offering, to furnish to the Dealer-Manager copies of all materials not available via EDGAR furnished by the Company to its shareholders and all public reports and all reports and financial statements furnished by the Company to the principal national securities exchange upon which any of the Company's securities may be listed pursuant to requirements of or agreements with such exchange or to the Commission pursuant to the Exchange Act or any rule or regulation of the Commission thereunder;

(f) To qualify or register the Offering Securities for sale under (or obtain exemptions from the application of) the state securities or blue sky laws of those jurisdictions designated by the Dealer-Manager, to comply with such laws and to continue such qualifications, registrations and exemptions in effect so long as required for the distribution of the Offering Securities; provided, however, that the Company shall not be required to qualify as a foreign corporation or to take any action that would subject it to general service of process in any such jurisdiction where it is not presently qualified or where it would be subject to taxation as a foreign corporation. The Company will advise the Dealer-Manager promptly of the suspension of the qualification or registration of (or any such exemption relating to) the Offering Securities for offering, sale or trading in any jurisdiction or any initiation or threat of any proceeding for any such purpose, and in the event of the issuance of any order suspending such qualification, registration or exemption, the Company shall use its best efforts to obtain the withdrawal thereof at the earliest possible moment.

(g) To apply the net proceeds from the exercise of the Rights in the manner described under the caption “Use of Proceeds” in the Prospectus.

(h) To apply for the listing of the Rights Shares and Underlying Shares on NYSE American and to use its best efforts to complete that listing, subject only to official notice of issuance (if applicable), prior to the expiration of the Rights Offering.

(i) To take such steps as shall be necessary to ensure that neither the Company nor any Subsidiary shall become an “investment company” within the meaning of such term under the Investment Company Act of 1940 and the rules and regulations of the Commission thereunder.

(j) To advise the Dealer-Manager, directly or through the Subscription Agent, from time to time, as the Dealer-Manager shall request, of the number of Units, Rights Shares and Rights Warrants subscribed for, and arrange for the Subscription Agent to furnish the Dealer-Manager with copies of written reports it furnishes to the Company concerning the Rights Offering;

(k) To commence mailing the Offer Documents to record holders of the Common Stock not later than the second business day following the record date for the Rights Offering, and complete such mailing as soon as practicable;

(l) To reserve and keep available for issue upon the exercise of the Rights such number of authorized but unissued shares of Common Stock as will be sufficient to permit the exercise in full of all Rights and all Rights Warrants issued upon such exercise in full, except as otherwise contemplated by the Prospectus;

(m) To not take, directly or indirectly, any action designed to cause or to result in, or that has constituted or which might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the issuance of the Rights or the sale or resale of the Units, the Rights Shares or the Rights Warrants;

(n) To comply with Instruction I.B.6 of Form S-3 during all applicable time periods set forth therein; and

(o) From the date hereof until 30 days after the date of the Closing, neither the Company nor any Subsidiary shall issue, enter into any agreement to issue or announce the issuance or proposed issuance of any shares of Common Stock or Common Stock Equivalents (as defined below) without the written consent of Maxim. Notwithstanding the foregoing, this Section 9(o) shall not apply in respect of any issuance of (A) equity awards, and Common Stock issuable upon exercise or vesting of equity awards, to directors, officers, employees, consultants or new hires of the Company; (B) shares of Common Stock issued upon the conversion or exercise of Common Stock Equivalents; (C) the Rights Shares; (D) the Rights Warrants; (E) the Underlying Shares; (F) Common Stock or Common Stock Equivalents to any distributor, supplier, manufacturer, licensor or licensee of the Company's products or services; and (G) Common Stock or Common Stock Equivalents in connection with any acquisitions, partnerships or strategic transactions, which in the case of each clause of this subsection (G) are approved by a majority of the disinterested directors of the Company, provided that any such issuance shall only be to a person which is, itself or through its subsidiaries, an operating company or an owner of an asset in a business synergistic with the business of the Company and shall provide to the Company additional benefits in addition to the investment of funds, but shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities. As used herein, "**Common Stock Equivalents**" shall mean any security of the Company or any other entity that is convertible into, or exercisable or exchangeable for, Common Stock, or any warrant or other right to purchase Common Stock or any other security of the Company or any other entity that is convertible into, or exercisable or exchangeable for, Common Stock.

10. Conditions of Dealer-Manager's Obligations. The obligations of the Dealer-Manager hereunder are subject to (and the occurrence of any Closing shall be conditioned upon) the accuracy, as of the date hereof and at all times during the Rights Offering, of the representations and warranties of the Company contained herein, to the performance by the Company of its obligations hereunder (in each case in the reasonable opinion of the Dealer-Manager) and to the following additional conditions:

(a) (i) The Registration Statement shall have become effective and the Prospectus shall have been timely filed with the Commission in accordance with the Rules and Regulations; (ii) all post-effective amendments to the Registration Statement shall have become effective; and (iii) no stop order suspending the effectiveness of the Registration Statement or any amendment or supplement thereto shall have been issued and no proceedings for the issuance of any such order shall have been initiated or threatened, and any request of the Commission for additional information (to be included in the Registration Statement or the Prospectus or otherwise) shall have been disclosed to the Dealer-Manager and complied with to the Dealer-Manager's reasonable satisfaction.

(b) The Dealer-Manager shall not have been advised by the Company or shall have discovered and disclosed to the Company that the Registration Statement or the Prospectus or any amendment or supplement thereto, contains an untrue statement of fact which in the Dealer-Manager's opinion, or in the opinion of counsel to the Dealer-Manager, is material, or omits to state a fact which, in the Dealer-Manager's opinion, or in the opinion of counsel to the Dealer-Manager, is material and is required to be stated therein or is necessary to make the statements therein not misleading.

(c) All corporate proceedings and other legal matters incident to the authorization, form and validity of this Agreement, the Offering Securities, the Registration Statement and the Prospectus, and all other legal matters relating to this Agreement and the transactions contemplated hereby shall be reasonably satisfactory in all material respects to counsel for the Dealer-Manager, and the Company shall have furnished to such counsel all documents and information that they may reasonably request to enable them to pass upon such matters.

(d) Concurrently with the execution of this Agreement and upon such Closing, there shall have been furnished to the Dealer-Manager the signed opinion (addressed to the Dealer-Manager) of The Matt Law Firm, PLLC, counsel for the Company, dated the date hereof and in form and substance satisfactory to counsel for the Dealer-Manager.

(e) Concurrently with the execution of this Agreement and upon such Closing, there shall have been furnished to the Dealer-Manager the signed opinion (addressed to the Dealer-Manager) of Wilmer Cutler Pickering Hale and Dorr LLP, intellectual property counsel for the Company, dated the date hereof and in form and substance satisfactory to counsel for the Dealer-Manager.

(f) Concurrently with the execution of this Agreement and upon such Closing, the Company shall have furnished to the Dealer-Manager a letter of GBH, addressed to the Dealer-Manager and dated the date hereof: (i) confirming that they are independent registered public accountants of the Company within the meaning of the Securities Act and are in compliance with the applicable requirements relating to the qualification of accountants under the PCAOB and applicable rules of the Commission, and (ii) stating, as of the date of the letter (or, with respect to matters involving changes or developments since the respective dates as of which specified financial information is given in the Prospectus, as of a date not more than five days prior to the date of the letter), the conclusions and findings of such firm with respect to the financial information and other matters specified by the Dealer-Manager.

(g) The Company shall have furnished to the Dealer-Manager a certificate, dated the date hereof and of such Closing, of its Chief Executive Officer and its Principal Financial Officer stating that:

(i) To the best of their knowledge after reasonable investigation, the representations, warranties, covenants and agreements of the Company in Section 5 hereof are true and correct in all material respects;

(ii) The conditions set forth in this Section 10 have been fulfilled;

(iii) Neither the Company nor any of its Subsidiaries has sustained any material loss or interference with its business, whether or not covered by insurance, or from any labor dispute or any legal or governmental proceeding;

(iv) Subsequent to the respective dates as of which information is given in the Registration Statement and the Prospectus, there has not been any Material Adverse Change or any development involving a prospective Material Adverse Change; and

(v) They have carefully examined the Registration Statement and the Prospectus and, in their opinion (A) the Registration Statement and the Prospectus, as of the Effective Date, did not include any untrue statement of a material fact and did not omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading, and (B) since the Effective Date no event has occurred which should have been set forth in a supplement or amendment to the Registration Statement or the Prospectus and has not been.

(h) Neither the Company nor any of its Subsidiaries shall have sustained since the date of the latest audited financial statements included in the Prospectus any Material Adverse Change, the effect of which is, in the judgment of the Dealer-Manager, so material and adverse as to make it impracticable or inadvisable to proceed with the Rights Offering.

(i) NYSE American shall have approved the Rights Shares and Underlying Shares for listing, subject only to official notice of issuance.

(j) All opinions, letters, evidence and certificates mentioned above or elsewhere in this Agreement shall be deemed to be in compliance with the provisions hereof only if they are in form and substance reasonably satisfactory to counsel for the Dealer-Manager. If any of the conditions specified in this Section 10 shall not have been fulfilled when and as required by this Agreement, this Agreement and all obligations of the Dealer-Manager hereunder may be canceled at, or at any time during the Rights Offering, by the Dealer-Manager. Any such cancellation shall be without liability of the Dealer-Manager to the Company. Notice of such cancellation shall be given to the Company in writing, or by telephone and confirmed in writing.

(k) The Company shall have furnished to the Dealer-Manager and its counsel such additional documents, certificates and evidence as the Dealer-Manager or its counsel may have reasonably requested.

## 11. Indemnification and Contribution.

(a) The Company agrees to hold harmless and indemnify Maxim and its affiliates and any officer, director, employee or agent of Maxim or any such affiliates and any Person controlling (within the meaning of Section 20(a) of the Exchange Act) Maxim or any of such affiliates from and against any and all (A) losses, claims, damages and liabilities whatsoever, under the Securities Act or otherwise (as incurred or suffered), arising out of or based upon: (i) any untrue statement or alleged untrue statement of a material fact contained in the Offer Documents or any amendment or supplement thereto, in any other solicitation material used by the Company or authorized by it for use in connection with the Rights Offering, or in any blue sky application or other document prepared or executed by the Company (or based on any written information furnished by the Company) specifically for the purpose of qualifying any or all of the Offering Securities under the securities laws of any state or other jurisdiction (any such application, document or information being hereinafter called a "Blue Sky Application") or arising out of or based upon the omission or alleged omission to state in any such document a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading (other than statements or omissions made in reliance upon and in conformity with the Dealer-Manager Information); (ii) any withdrawal or termination by the Company of, or failure by the Company to make or consummate, the Rights Offering, (iii) actions taken or omitted to be taken by an indemnified party with the consent of the Company or in conformity with actions taken or omitted to be taken by the Company; (iv) any failure by the Company to comply with any agreement or covenant contained in this Agreement; or (v) arising out of, relating to or in connection with or alleged to arise out of, relate to or be in connection with, the Rights Offering, any of the other transactions contemplated thereby or the performance of Maxim's services to the Company with respect to the Rights Offering, and (B) all reasonable expenses (including, but not limited to, any and all reasonable legal expenses) incurred in connection with investigating, preparing to defend or defending any lawsuit, claim or other proceeding, commenced or threatened, whether or not resulting in any liability, which legal or other expenses shall be reimbursed by the Company promptly after receipt of any invoices therefore from Maxim. However, the Company will not be obligated to indemnify an indemnified party for any loss, claim, damage, liability or expense pursuant to the preceding sentence which has been determined in a final judgment by a court of competent jurisdiction to have resulted directly from willful misconduct or gross negligence on the part of any indemnified party.

(b) The Dealer-Manager shall indemnify and hold harmless the Company, its officers, directors and employees, each of its directors and each Person, if any, who controls the Company within the meaning of the Securities Act, from and against any loss, claim, damage or liability, joint or several, or any action in respect thereof, to which the Company or any such director, officer or controlling Person may become subject, under the Securities Act or otherwise, insofar as such loss, claim, damage, liability or action arises out of, or is based upon: (i) any untrue statement or alleged untrue statement of a material fact contained (A) in any Offer Documents, or in any such amendment or supplement, in any other solicitation material used by the Company or authorized by it for use in connection with the Rights Offering or (B) in any Blue Sky Application; or (ii) the omission or alleged omission to state in any Offer Documents, or in any such amendment or supplement, in any other solicitation material used by the Company or authorized by it for use in connection with the Rights Offering, or in any Blue Sky Application, any material fact required to be stated therein or necessary to make the statements therein not misleading, but in each case solely and exclusively to the extent that the untrue statement or alleged untrue statement or omission or alleged omission was made in reliance upon and in conformity with the Dealer-Manager Information, and shall reimburse the Company and any such director, officer or controlling Person for any legal or other expenses reasonably incurred by the Company or any such director, officer or controlling Person in connection with investigating or defending or preparing to defend against any such loss, claim, damage, liability or action as such expenses are incurred.

(c) If any lawsuit, claim or proceeding is brought against any indemnified party in respect of which indemnification may be sought against the indemnifying party pursuant to this Section 11, such indemnified party shall promptly notify the indemnifying party of the commencement of such lawsuit, claim or proceeding; provided, however, that the failure so to notify the indemnifying party shall not relieve the indemnifying party from any obligation or liability which it may have under this Section 11 except to the extent that it has been prejudiced in any material respect by such failure and in any event shall not relieve the indemnifying party from any other obligation or liability which it may have to such indemnified party otherwise than under this Section 11. In case any such lawsuit, claim or proceeding shall be brought against any indemnified party and such indemnified party shall notify the indemnifying party of the commencement of such lawsuit, claim or proceeding, the indemnifying party shall be entitled to participate in such lawsuit, claim or proceeding, and, after written notice from the indemnifying party to such indemnified party, to assume the defense of such lawsuit, claim or proceeding with counsel of its choice at its expense; provided, however, that such counsel shall be satisfactory to the indemnified party in the exercise of its reasonable judgment. Notwithstanding the election of the indemnifying party to assume the defense of such lawsuit, claim or proceeding, such indemnified party shall have the right to employ separate counsel and to participate in the defense of such lawsuit, claim or proceeding, and the indemnifying party shall bear the reasonable fees, costs and expenses of such separate counsel (and shall pay such reasonable fees, costs and expenses promptly after receipt of any invoice therefor) if: (i) the use of counsel chosen by the indemnifying party to represent such indemnified party would present such counsel with a conflict of interest; (ii) the defendants in, or targets of, any such lawsuit, claim or proceeding include both an indemnified party and the indemnifying party, and such indemnified party shall have reasonably concluded that there may be legal defenses available to it or to other indemnified parties which are different from or in addition to those available to the indemnifying party (in which case the indemnifying party shall not have the right to direct the defense of such action on behalf of the indemnified party); (iii) the indemnifying party shall not have employed counsel satisfactory to such indemnified party, in the exercise of such indemnified party's reasonable judgment, to represent such indemnified party within a reasonable time after notice of the institution of any such lawsuit, claim or proceeding; or (iv) the indemnifying party shall authorize such indemnified party to employ separate counsel at the expense of the indemnifying party. The foregoing indemnification commitments shall apply whether or not the indemnified party is a formal party to any such lawsuit, claim or proceeding. The indemnifying party shall not be liable for any settlement of any lawsuit, claim or proceeding effected without its consent (which consent will not be unreasonably withheld), but if settled with such consent, the indemnifying party agrees, subject to the provisions of this Section 11, to indemnify the indemnified party from and against any loss, damage or liability by reason of such settlement. The Company agrees to notify Maxim promptly, or cause Maxim to be notified promptly, of the assertion of any lawsuit, claim or proceeding against the Company, any of its officers or directors or any Person who controls any of the foregoing within the meaning of Section 20(a) of the Exchange Act, arising out of or relating the Rights Offering. The Company further agrees that any settlement of a lawsuit, claim or proceeding against it arising out of Rights Offering shall include an explicit and unconditional release from the parties bringing such lawsuit, claim or proceeding of Maxim, its respective affiliates, and any officer, director, employee or agent of Maxim, and any Person controlling (within the meaning of Section 20(a) of the Exchange Act) Maxim.

(d) The amount paid or payable by an indemnified party as a result of the losses, claims, damages, liabilities or expenses referred to in the immediately preceding paragraph shall be deemed to include, subject to the limitations set forth above, any legal or other expenses reasonably incurred by such indemnified party in connection with investigating, preparing to defend or defending any such action or claim.

(e) The foregoing rights to indemnification and contribution shall be in addition to any other rights which any indemnified parties may have under common law or otherwise but shall supersede, amend and restate, retroactively, the rights to indemnification, reimbursement and contribution provided for under the Engagement Letter.

(f) In order to provide for contribution in circumstances in which the indemnification provided for in this Section 11 for any reason held to be unavailable from any indemnifying party or is insufficient to hold harmless a party indemnified thereunder, the Company, on the one hand, and Maxim, on the other hand, shall contribute to the aggregate losses, claims, damages, liabilities and expenses of the nature contemplated by such indemnification provision (including any investigation, legal and other expenses incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claims asserted, but after deducting in the case of losses, claims, damages, liabilities and expenses suffered by the Company, any contribution received by the Company from Persons, other than Maxim, who may also be liable for contribution, including Persons who control the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, officers of the Company who signed the Registration Statement and directors of the Company) as incurred to which the Company and Maxim may be subject, in such proportions as is appropriate to reflect the relative benefits received by the Company, on the one hand, and Maxim, on the other hand, from the Rights Offering or, if such allocation is not permitted by applicable law, in such proportions as are appropriate to reflect not only the relative benefits referred to above but also the relative fault of the Company, on the one hand, and Maxim, on the other hand, in connection with the statements or omissions which resulted in such losses, claims, damages, liabilities or expenses, as well as any other relevant equitable considerations. The relative benefits received by the Company, on the one hand, and Maxim, on the other hand, shall be deemed to be in the same proportion as: (x) the total proceeds from the Rights Offering (net of the fees of the Dealer-Manager set forth in Section 6 hereof, but before deducting expenses) received by the Company bears to (y) the fees of the Dealer-Manager set forth in Section 6 hereof actually received by the Dealer-Manager. The relative fault of each of the Company, on the one hand, and Maxim, on the other hand, shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or Maxim (which consists solely and exclusively of the Dealer-Manager Information) and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Dealer-Manager agree that it would not be just and equitable if contribution pursuant to this Section 11(f) were determined by pro rata allocation or by any other method of allocation which does not take account of the equitable considerations referred to above in this Section. The aggregate amount of losses, liabilities, claims, damages and expenses incurred by an indemnified party and referred to above in this Section 11 shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in investigating, preparing or defending against any litigation, or any investigation or proceeding by any judicial, regulatory or other legal or governmental agency or body, commenced or threatened, or any claim whatsoever based upon any such untrue or alleged untrue statement or omission or alleged omission. Notwithstanding the provisions of this Section 11: (i) the Dealer-Manager shall not be required to contribute any amount in excess of the fees actually received by the Dealer-Manager from the Company in connection with the Rights Offering and (ii) no Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 11, each Person controlling a Dealer-Manager within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act shall have the same rights to contribution as such Dealer-Manager, and each Person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, each officer of the Company who shall have signed the Registration Statement and each director of the Company shall have the same rights to contribution as the Company, subject in each case to clauses (i) and (ii) of the immediately preceding sentence. Any party entitled to contribution will, promptly after receipt of notice of commencement of any action, suit or proceeding against such party in respect of which a claim for contribution may be made against another party or parties, notify each party or parties from whom contribution may be sought, but the omission to so notify such party or parties shall not relieve the party or parties from whom contribution may be sought from any obligation it or they may have under this Section 11(f) or otherwise.

12. Effective Date of Agreement; Termination.

(a) This Agreement shall become effective upon the later of the time on which the Dealer-Manager shall have received notification of the effectiveness of the Registration Statement and the time which this Agreement shall have been executed by all of the parties hereto.

(b) At any time during the Rights Offering, this Agreement may be terminated by the Dealer-Manager by giving notice as hereinafter provided to the Company if:

(i) the Company shall have failed, refused or been unable, at any applicable time during the Rights Offering, to perform any material agreement on its part to be performed hereunder,

(ii) any other material condition of the Dealer-Manager's obligations as set forth in Section 10 or elsewhere hereunder is not fulfilled,

(iii) trading in securities generally on the New York Stock Exchange, the NYSE American or the Nasdaq Stock Market or in the OTC Bulletin Board, or trading in any securities of the Company on any exchange or in the over-the-counter market, shall have been suspended or minimum prices shall have been established on any such exchanges or such market by the Commission, by such exchange or by any other regulatory body or Governmental Authority,

(iv) a banking moratorium shall have been declared by Federal or state authorities,

(v) there shall have occurred any outbreak or escalation of hostilities or acts of terrorism involving the United States or there is a declaration of a national emergency or war by the United States or there shall have been any other calamity or crisis or any change in political, financial or economic conditions of the United States, or

(vi) there shall have occurred such a material adverse change in general economic, political or financial conditions (or the effect of international conditions on the financial markets in the United States shall be such) as to make it, in the judgment of the Dealer-Manager, inadvisable or impracticable to solicit exercises of the Rights or perform any other of its obligations hereunder.

(c) At any time during the Rights Offering, this Agreement may be terminated by the Company by giving notice as hereinafter provided to the Dealer-Manager if the Company's Board of Directors determines in good faith that the Rights Offering is no longer in the best interests of the Company and its stockholders.

(d) Any termination of this Agreement pursuant to this Section 12 shall be without liability on the part of the Company or the Dealer-Manager, except as otherwise provided in Section 11 hereof. Any notice referred to above may be given at the address specified in Section 14 hereof in writing or by facsimile or telephone, and if by telephone, shall be immediately confirmed in writing.

13. Survival of Certain Provisions. The agreements contained in Section 11 hereof and the representations, warranties and agreements of the Company contained in Sections 5, 6 and 7 hereof shall survive the consummation of or failure to commence the Rights Offering and shall remain in full force and effect, regardless of any termination or cancellation of this Agreement or any investigation made by or on behalf of any indemnified party; *provided* however than in the event of any failure to commence or consummate the Rights Offering, the agreements contained in Section 6 shall terminate and be of no further force or effect.

14. Notices. All notices or other communications hereunder shall be in writing, and (a) if sent to the Dealer-Manager, shall be mailed, delivered, or faxed and confirmed in writing, to Maxim Group LLC, 405 Lexington, New York, New York 10174, Fax Number: (212) 895-3783, Attention: Clifford A. Teller, Executive Managing Director - Investment Banking, in each case, with a copy to Lowenstein Sandler LLP, 1251 Avenue of the Americas, New York, New York, 10020 Fax Number: (973) 597-2477, Attention: Steven M. Skolnick, Esq.; and (b) if sent to the Company shall be mailed, delivered, or faxed and confirmed in writing to the Company and its counsel at the address set forth in the Registration Statement, with a copy to The Matt Law Firm, PLLC, 1701 Genesee Street, Utica, NY 13501, Fax Number: (315) 624-7359, Attention: Thomas R. Slusarczyk, Esq. Any such notices and other communications shall take effect at the time of receipt thereof.

15. Parties. This Agreement shall inure to the benefit of and be binding upon the Dealer-Manager, the Company and their respective successors. This Agreement and the terms and provisions hereof are for the sole benefit of only those Persons, except that the representations, warranties, indemnities and agreements of the Company contained in this Agreement shall also be deemed to be for the benefit of the Person or Persons, if any, who control the Dealer-Manager within the meaning of Section 15 of the Act. Nothing in this Agreement shall be construed to give any Person, other than the Persons referred to in this Section, any legal or equitable right, remedy or claim under or in respect of this Agreement or any provision contained herein.

16. Amendment. This Agreement may not be amended or modified except in writing signed by each of the parties hereto.

17. Governing Law; Venue. This Agreement shall be deemed to have been executed and delivered in New York and both this Agreement and the transactions contemplated hereby shall be governed as to validity, interpretation, construction, effect, and in all other respects by the laws of the State of New York, without regard to the conflicts of laws principals thereof (other than Section 5-1401 of The New York General Obligations Law). Each of the Dealer-Manager and the Company: (a) agrees that any legal suit, action or proceeding arising out of or relating to this Agreement and/or the transactions contemplated hereby shall be instituted exclusively in the Supreme Court of the State of New York, New York County, or in the United States District Court for the Southern District of New York; (b) waives any objection which it may have or hereafter to the venue of any such suit, action or proceeding; and (c) irrevocably consents to the jurisdiction of Supreme Court of the State of New York, New York County, or in the United States District Court for the Southern District of New York in any such suit, action or proceeding. Each of the Dealer-Manager and the Company further agrees to accept and acknowledge service of any and all process which may be served in any such suit, action or proceeding in the Supreme Court of the State of New York, New York County, or in the United States District Court for the Southern District of New York and agrees that service of process upon the Company mailed by certified mail to the Company's address or delivered by Federal Express via overnight delivery shall be deemed in every respect effective service of process upon the Company, in any such suit, action or proceeding, and service of process upon the Dealer-Manager mailed by certified mail to the Dealer-Manager's address or delivered by Federal Express via overnight delivery shall be deemed in every respect effective service process upon the Dealer-Manager, in any such suit, action or proceeding. THE COMPANY (ON BEHALF OF ITSELF AND, TO THE FULLEST EXTENT PERMITTED BY LAW, ON BEHALF OF ITS RESPECTIVE EQUITY HOLDERS AND CREDITORS) HEREBY WAIVES ANY RIGHT THEY MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY CLAIM BASED UPON, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT AND THE TRANSACTIONS CONTEMPLATED BY THIS AGREEMENT, THE REGISTRATION STATEMENT, ANY PRELIMINARY PROSPECTUS AND THE PROSPECTUS.

18. Entire Agreement. This Agreement, together with the exhibit attached hereto and as the same may be amended from time to time in accordance with the terms hereof, contains the entire agreement among the parties hereto relating to the subject matter hereof and there are no other or further agreements outstanding not specifically mentioned herein.

19. Severability. If any term or provision of this Agreement or the performance thereof shall be invalid or unenforceable to any extent, such invalidity or unenforceability shall not affect or render invalid or unenforceable any other provision of this Agreement and this Agreement shall be valid and enforced to the fullest extent permitted by law.

20. Headings. The headings herein are inserted for convenience of reference only and are not intended to be part of, or to affect the meaning or interpretation of, this Agreement.

21. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all such counterparts shall together constitute one and the same instrument. Delivery of a signed counterpart of this Agreement by facsimile or other electronic transmission shall constitute valid and sufficient delivery thereof.

[Signature Page Follows]

If the foregoing correctly sets forth your understanding, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement among us.

Very truly yours,

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Sandesh Seth

Name: Sandesh Seth

Title: Chairman & CEO

**Accepted by the Dealer-Manager  
as of the date first written above:**

MAXIM GROUP LLC

By: /s/ Clifford A. Teller

Name: Clifford A. Teller

Title: Head of Investment Banking

[Signature Page to Dealer-Manager Agreement]

**Schedule I**

**Free Writing Prospectus(es)**

None.

Actinium Pharmaceuticals, Inc.

and

Action Stock Transfer Corporation, as  
Warrant Agent

Warrant Agency Agreement

Dated as of [            ]

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## WARRANT AGENCY AGREEMENT

WARRANT AGENCY AGREEMENT, dated as of [ ] (“Agreement”), between Actinium Pharmaceuticals, Inc., a Delaware corporation (the “Company”), and Action Stock Transfer Corporation (the “Warrant Agent”).

WITNESSETH

WHEREAS, pursuant to a registered offering by the Company of shares of Common Stock, par value \$0.001 per share (the “Common Stock”), Series A Warrants (the “Series A Warrants”) and Series B Warrants (the “Series B Warrants”) and, collectively with the Series A Warrants, the “Warrants”) to purchase shares of Common Stock, pursuant to an effective registration statement on Form S-3 (File No. 333-216748), as amended (the “Registration Statement”), the Company wishes to issue Warrants in book entry form entitling the respective holders of the Warrants (the “Holders”, which term shall include a Holder’s transferees, successors and assigns; and “Holder” shall include, if the Warrants are held in “street name”, a Participant (as defined below) or a designee appointed by such Participant) to purchase an aggregate of up to an aggregate of [ ] shares of Common Stock upon exercise of the Series A Warrants and [ ] shares of Common Stock upon exercise of the Series B Warrants, upon the terms and subject to the conditions set forth here in and in the Warrant Certificates (as defined below) (the “Offering”);

WHEREAS, the shares of Common Stock and Warrants to be issued in connection with the Offering shall be immediately separable and will be issued separately, but will be purchased together in the Offering; and

WHEREAS, the Company wishes the Warrant Agent to act on behalf of the Company, and the Warrant Agent is willing so to act, in connection with the issuance, registration, transfer, exchange, exercise and replacement of the Warrants and, in the Warrant Agent’s capacity as the Company’s transfer agent, the delivery of the Warrant Shares.

NOW, THEREFORE, in consideration of the premises and the mutual agreements herein set forth, the parties hereby agree as follows:

Section 1. Certain Definitions. For purposes of this Agreement, the following terms have the meanings indicated:

(a) “Affiliate” has the meaning ascribed to it in Rule 12b-2 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”).

(b) “Business Day” means any day except any Saturday, any Sunday, any day which is a federal legal holiday in the United States or any day on which the Nasdaq Stock Market is authorized or required by law or other governmental action to close.

(c) “Close of Business” on any given date means 5:00 p.m., New York City time, on such date; provided, however, that if such date is not a Business Day it means 5:00 p.m., New York City time, on the next succeeding Business Day.

(e) “Person” means an individual, corporation, association, partnership, limited liability company, joint venture, trust, unincorporated organization, government or political subdivision thereof or governmental agency or other entity.

(j) “Warrant Certificate” means a certificate in substantially the forms attached as Exhibit 1 hereto, with respect to the Series A Warrants, and Exhibit 2 hereto, with respect to the Series B Warrants, in each case representing such number of Warrant Shares as is indicated therein, provided that any reference to the delivery of a Warrant Certificate in this Agreement shall include delivery of notice from the Depository or a Participant (each as defined below) of the transfer or exercise of Warrant in the form of a Global Warrant (as defined below).

(k) “Warrant Shares” means the shares of Common Stock underlying the Warrants and issuable upon exercise of the Warrants.

All other capitalized terms used but not otherwise defined herein shall have the meaning ascribed to such terms in each Warrant Certificate.

Section 2. Appointment of Warrant Agent. The Company hereby appoints the Warrant Agent to act as agent for the Company in accordance with the terms and conditions hereof, and the Warrant Agent hereby accepts such appointment. The Company may from time to time appoint a Co-Warrant Agent as it may, in its sole discretion, deem necessary or desirable. The Warrant Agent shall have no duty to supervise, and will in no event be liable for the acts or omissions of, any co-Warrant Agent.

### Section 3. Global Warrants.

(a) The Warrants shall be issuable in book entry form (the “Global Warrants”). All of the Warrants shall initially be represented by one or more Global Warrants deposited with the Warrant Agent and registered in the name of Cede & Co., a nominee of The Depository Trust Company (the “Depository”), or as otherwise directed by the Depository. Ownership of beneficial interests in the Warrants shall be shown on, and the transfer of such ownership shall be effected through, records maintained by (i) the Depository or its nominee for each Global Warrant or (ii) institutions that have accounts with the Depository (such institution, with respect to a Warrant in its account, a “Participant”).

(b) If the Depository subsequently ceases to make its book-entry settlement system available for the Warrants, the Company may instruct the Warrant Agent regarding other arrangements for book-entry settlement. In the event that the Warrants are not eligible for, or it is no longer necessary to have the Warrants available in, book-entry form, the Warrant Agent shall provide written instructions to the Depository to deliver to the Warrant Agent for cancellation each Global Warrant, and the Company shall instruct the Warrant Agent to deliver to each Holder a Warrant Certificate.

(c) A Holder has the right to elect at any time or from time to time a Warrant Exchange (as defined below) pursuant to a Warrant Certificate Request Notice (as defined below). Upon written notice by a Holder to the Warrant Agent for the exchange of some or all of such Holder’s Global Warrants for a Warrant Certificate evidencing the same number of Warrants, which request shall be in the forms attached hereto as Annex A1 and Annex A2 (a “Warrant Certificate Request Notice”; and the date of delivery of such Warrant Certificate Request Notice by the Holder, the “Warrant Certificate Request Notice Date”; and the deemed surrender upon delivery by the Holder of a number of Global Warrants for the same number of Warrants evidenced by a Warrant Certificate, ready defined above, a “Warrant Exchange”), the Warrant Agent and the Company shall promptly effect the Warrant Exchange by the Company promptly issuing and delivering and shall promptly issue and deliver to the Holder a Warrant Certificate for such number of Warrants in the name set forth in the Warrant Certificate Request Notice. Such Warrant Certificate shall be dated the original issue date of the Warrants, shall be manually executed by an authorized signatory of the Company, and shall be in the respective forms attached hereto as Exhibits 1 and 2. In connection with a Warrant Exchange, the Company agrees to deliver the Warrant Certificate to the Holder within three (3) Business Days of the Warrant Certificate Request Notice pursuant to the delivery instructions in the Warrant Certificate Request Notice (“Warrant Certificate Delivery Date”). If the Company fails for any reason to deliver to the Holder the Warrant Certificate subject to the Warrant Certificate Request Notice by the Warrant Certificate Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares evidenced by such Warrant Certificate (based on the VWAP (as defined in each Warrant Certificate) of the Common Stock on the Warrant Certificate Request Notice Date), \$10 per Business Day (increasing to \$20 per Trading Day on the fifth Trading Day after such liquidated damages begin to accrue) for each Business Day after such Warrant Certificate Delivery Date until such Warrant Certificate is delivered or, prior to delivery of such Warrant Certificate, the Holder rescinds such Warrant Exchange. The Company covenants and agrees that, upon the date of delivery of the Warrant Certificate Request Notice, the Holder shall be deemed to be the holder of the Warrant Certificate and, notwithstanding anything to the contrary set forth herein, the Warrant Certificate shall be deemed for all purposes to contain all of the terms and conditions of the Warrants evidenced by such Warrant Certificate and the terms of this Agreement, other than Sections 3(c) and 9 herein, which shall not apply to the Warrants evidenced by the Warrant Certificate.

Section 4. Form of Warrant Certificates. The Warrant Certificate, together with the form of election to purchase Common Stock (“Exercise Notice”) and the form of assignment to be printed on the reverse thereof, shall be in the forms of Exhibit 1 and Exhibit 2 hereto, for the Series A Warrants and the Series B Warrants, respectively.

Section 5. Countersignature and Registration. The Warrant Certificates shall be executed on behalf of the Company by its Chief Executive Officer, Principal Financial Officer or Vice President, either manually or by facsimile signature. The Warrant Certificates shall be countersigned by the Warrant Agent either manually or by facsimile signature and shall not be valid for any purpose unless so countersigned. In case any officer of the Company who shall have signed any of the Warrant Certificates shall cease to be such officer of the Company before countersignature by the Warrant Agent and issuance and delivery by the Company, such Warrant Certificates, nevertheless, may be countersigned by the Warrant Agent, issued and delivered with the same force and effect as though the person who signed such Warrant Certificate had not ceased to be such officer of the Company; and any Warrant Certificate may be signed on behalf of the Company by any person who, at the actual date of the execution of such Warrant Certificate, shall be a proper officer of the Company to sign such Warrant Certificate, although at the date of the execution of this Warrant Agreement any such person was not such an officer.

The Warrant Agent will keep or cause to be kept, at one of its offices, or at the office of one of its agents, books for registration and transfer of the Warrant Certificates issued hereunder. Such books shall show the names and addresses of the respective Holders of the Warrant Certificates, the number of warrants evidenced on the face of each of such Warrant Certificate and the date of each of such Warrant Certificate. The Warrant Agent will create a special account for the issuance of Warrant Certificates.

Section 6. Transfer, Split Up, Combination and Exchange of Warrant Certificates; Mutilated, Destroyed, Lost or Stolen Warrant Certificates. With respect to the Global Warrant, subject to the provisions of the Warrant Certificates and the last sentence of this first paragraph of Section 6 and subject to applicable law, rules or regulations, or any “stop transfer” instructions the Company may give to the Warrant Agent, at any time after the closing date of the Offering, and at or prior to the Close of Business on the Termination Date, any Warrant Certificate or Warrant Certificates or Global Warrant or Global Warrants may be transferred, split up, combined or exchanged for another Warrant Certificate or Warrant Certificates or Global Warrant or Global Warrants, entitling the Holder to purchase a like number of shares of Common Stock as the Warrant Certificate or Warrant Certificates or Global Warrant or Global Warrants surrendered then entitled such Holder to purchase. Any Holder desiring to transfer, split up, combine or exchange any Warrant Certificate or Global Warrant shall make such request in writing delivered to the Warrant Agent, and shall surrender the Warrant Certificate or Warrant Certificates to be transferred, split up, combined or exchanged at the principal office of the Warrant Agent, provided that no such surrender is applicable to the Holder of a Global Warrant. Any requested transfer of Warrants, whether in book-entry form or certificate form, shall be accompanied by reasonable evidence of authority of the party making such request that may be required by the Warrant Agent. Thereupon the Warrant Agent shall, subject to the last sentence of this first paragraph of Section 6, countersign and deliver to the Person entitled thereto a Warrant Certificate or Warrant Certificates, as the case may be, as so requested. The Company may require payment from the Holder of a sum sufficient to cover any tax or governmental charge that may be imposed in connection with any transfer, split up, combination or exchange of Warrant Certificates. The Company shall compensate the Warrant Agent per the fee schedule mutually agreed upon by the parties hereto and provided separately on the date hereof.

Upon receipt by the Warrant Agent of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of a Warrant Certificate, which evidence shall include an affidavit of loss, or in the case of mutilated certificates, the certificate or portion thereof remaining, and, in case of loss, theft or destruction, of indemnity in customary form and amount, and satisfaction of any other reasonable requirements established by Section 8-405 of the Uniform Commercial Code as in effect in the State of Delaware, and reimbursement to the Company and the Warrant Agent of all reasonable expenses incidental thereto, and upon surrender to the Warrant Agent and cancellation of the Warrant Certificate if mutilated, the Company will make and deliver a new Warrant Certificate of like tenor to the Warrant Agent for delivery to the Holder in lieu of the Warrant Certificate so lost, stolen, destroyed or mutilated.

Section 7. Exercise of Warrants; Exercise Price; Termination Date.

(a) The Series A Warrants and Series B Warrants shall be exercisable commencing on their respective Initial Exercise Date. The Warrants shall cease to be exercisable and shall terminate and become void, and all rights thereunder and under this Agreement shall cease, at or prior to the Close of Business on the Termination Date. Subject to the foregoing and to Section 7(b) below, the Holder of a Warrant may exercise the Warrant in whole or in part upon surrender of the Warrant Certificate, if required, with the executed Exercise Notice and payment of the Exercise Price, which may be made, at the option of the Holder, by wire transfer or by certified or official bank check in United States dollars, to the Company at the principal office of the Company or to the office of one of its agents as may be designated by the Company from time to time. In the case of the Holder of a Global Warrant, the Holder shall deliver the executed Exercise Notice and the payment of the Exercise Price as described herein. Notwithstanding any other provision in this Agreement, a holder whose interest in a Global Warrant is a beneficial interest in a Global Warrant held in book-entry form through the Depository (or another established clearing corporation performing similar functions), shall effect exercises by delivering to the Depository (or such other clearing corporation, as applicable) the appropriate instruction form for exercise, complying with the procedures to effect exercise that are required by the Depository (or such other clearing corporation, as applicable).

(b) Upon receipt of an Exercise Notice for a cashless exercise pursuant to Section 7(c) of the applicable Warrant Certificate (“Cashless Exercise”), if applicable under the Warrant Certificate, the Company will promptly calculate and transmit to the Warrant Agent the number of Warrant Shares issuable in connection with such Cashless Exercise and deliver a copy of the Exercise Notice to the Warrant Agent, which shall issue such number of Warrant Shares in connection with such Cashless Exercise.

(c) Upon the Warrant Agent’s receipt of a Warrant Certificate at or prior to the Close of Business on the Termination Date set forth in such Warrant Certificate, with the executed Exercise Notice, accompanied by payment of the Exercise Price for the shares to be purchased (other than in the case of a Cashless Exercise) and an amount equal to any applicable tax, governmental charge or expense reimbursement referred to in Section 6 in cash, or by certified check or bank draft payable to the order of the Company (or, in the case of the Holder of a Global Warrant, the delivery of the executed Exercise Notice and the payment of the Exercise Price (other than in the case of a Cashless Exercise) and any other applicable amounts as set forth herein), the Warrant Agent shall cause the Warrant Shares underlying such Warrant Certificate or Global Warrant to be delivered to or upon the order of the Holder of such Warrant Certificate or Global Warrant, registered in such name or names as may be designated by such Holder, no later than the Warrant Share Delivery Date. If the Company is then a participant in the DWAC system of the Depository and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by Holder or (B) the Warrant is being exercised via Cashless Exercise, then the certificates for Warrant Shares shall be transmitted by the Warrant Agent to the Holder by crediting the account of the Holder’s broker with the Depository through its DWAC system. For the avoidance of doubt, if the Company becomes obligated to pay any amounts to any Holders pursuant to Section 2(d)(i) or 2(d)(iv) of the Warrant Certificate, such obligation shall be solely that of the Company and not that of the Warrant Agent. Notwithstanding anything else to the contrary in this Agreement, except in the case of a Cashless Exercise, if any Holder fails to duly deliver payment to the Warrant Agent of an amount equal to the aggregate Exercise Price of the Warrant Shares to be purchased upon exercise of such Holder’s Warrant as set forth in Section 7(a) hereof, the Warrant Agent will not be obligated to deliver certificates or other evidence representing any such Warrant Shares (via DWAC or otherwise) until following receipt of such payment, and the applicable Warrant Share Delivery Date shall be deemed extended by one day for each day (or part thereof) until such payment is delivered to the Warrant Agent.

(d) In case the Holder of any Warrant Certificate shall exercise fewer than all Warrants evidenced thereby, a new Warrant Certificate evidencing the number of Warrants equivalent to the number of Warrants remaining unexercised may be issued by the Warrant Agent to the Holder of such Warrant Certificate or to his duly authorized assigns in accordance with Section 2(d) of the Warrant Certificate, subject to the provisions of Section 6 hereof.

Section 8. Cancellation and Destruction of Warrant Certificates. All Warrant Certificates surrendered for the purpose of exercise, transfer, split up, combination or exchange shall, if surrendered to the Company or to any of its agents, be delivered to the Warrant Agent for cancellation or in canceled form, or, if surrendered to the Warrant Agent, shall be canceled by it, and no Warrant Certificates shall be issued in lieu thereof except as expressly permitted by any of the provisions of this Agreement. The Company shall deliver to the Warrant Agent for cancellation and retirement, and the Warrant Agent shall so cancel and retire, any other Warrant Certificate purchased or acquired by the Company otherwise than upon the exercise thereof.

Section 9. Certain Representations; Reservation and Availability of Shares of Common Stock or Cash.

(a) This Agreement has been duly authorized, executed and delivered by the Company and, assuming due authorization, execution and delivery hereof by the Warrant Agent, constitutes a valid and legally binding obligation of the Company enforceable against the Company in accordance with its terms, and the Warrants have been duly authorized, executed and issued by the Company and, assuming due authentication thereof by the Warrant Agent pursuant hereto and payment therefor by the Holders as provided in the Registration Statement, constitute valid and legally binding obligations of the Company enforceable against the Company in accordance with their terms and entitled to the benefits hereof; in each case except as enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium and other similar laws relating to or affecting creditors' rights generally or by general equitable principles (regardless of whether such enforceability is considered in a proceeding in equity or at law).

(b) As of the date hereof, the authorized capital stock of the Company consists of (i) 200,000,000 shares of Common Stock, of which [80,072,900] shares of Common Stock are issued and outstanding, (ii) [35,714,285] share of Common Stock are reserved for issuance in the Offering, and (iii) [35,714,284] shares of Common Stock are reserved for issuance upon exercise of the Warrants. Except as disclosed in the Registration Statement, there are no other outstanding obligations, warrants, options or other rights to subscribe for or purchase from the Company any class of capital stock of the Company.

(c) The Company covenants and agrees that it will cause to be reserved and kept available out of its authorized and unissued shares of Common Stock or its authorized and issued shares of Common Stock held in its treasury, free from preemptive rights, the number of shares of Common Stock that will be sufficient to permit the exercise in full of all outstanding Warrants.

(d) The Warrant Agent will create a special reserve for the issuance of Common Stock upon the exercise of Warrants.

(e) The Company further covenants and agrees that it will pay when due and payable any and all federal and state transfer taxes and charges which may be payable in respect of the original issuance or delivery of the Warrant Certificates or certificates evidencing Common Stock upon exercise of the Warrants. The Company shall not, however, be required to pay any tax or governmental charge which may be payable in respect of any transfer involved in the transfer or delivery of Warrant Certificates or the issuance or delivery of certificates for Common Stock in a name other than that of the Holder of the Warrant Certificate evidencing Warrants surrendered for exercise or to issue or deliver any certificate for shares of Common Stock upon the exercise of any Warrants until any such tax or governmental charge shall have been paid (any such tax or governmental charge being payable by the Holder of such Warrant Certificate at the time of surrender) or until it has been established to the Company's reasonable satisfaction that no such tax or governmental charge is due.

Section 10. Common Stock Record Date. Upon delivery of a valid Exercise Notice by a Holder, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which the Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares; provided that payment of the aggregate Exercise Price (other than in the case of a Cashless Exercise) is received within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise.

Section 11. Adjustment of Exercise Price, Number of Shares of Common Stock or Number of the Company Warrants. The Exercise Price, the number of shares covered by each Warrant and the number of Warrants outstanding are subject to adjustment from time to time as provided in Section 3 of the Warrant Certificate. In the event that at any time, as a result of an adjustment made pursuant to Section 3 of the Warrant Certificate, the Holder of any Warrant thereafter exercised shall become entitled to receive any shares of capital stock of the Company other than shares of Common Stock, thereafter the number of such other shares so receivable upon exercise of any Warrant shall be subject to adjustment from time to time in a manner and on terms as nearly equivalent as practicable to the provisions with respect to the shares contained in Section 3 of the Warrant Certificate. All Warrants originally issued by the Company subsequent to any adjustment made to the Exercise Price pursuant to the Warrant Certificate shall evidence the right to purchase, at the adjusted Exercise Price, the number of shares of Common Stock purchasable from time to time hereunder upon exercise of the Warrants, all subject to further adjustment as provided herein.

Section 12. Certification of Adjusted Exercise Price or Number of Shares of Common Stock. Whenever the Exercise Price or the number of shares of Common Stock issuable upon the exercise of each Warrant is adjusted as provided in Section 11 or 13, the Company shall (a) promptly prepare a certificate setting forth the Exercise Price of each Warrant as so adjusted, and a brief statement of the facts accounting for such adjustment, (b) promptly file with the Warrant Agent and with each transfer agent for the Common Stock a copy of such certificate and (c) instruct the Warrant Agent to send a brief summary thereof to each Holder of a Warrant Certificate.

Section 13. Fractional Shares of Common Stock.

(a) The Company shall not issue fractions of Warrants or distribute Warrant Certificates which evidence fractional Warrants. Whenever any fractional Warrant would otherwise be required to be issued or distributed, the actual issuance or distribution shall reflect a rounding of such fraction to the nearest whole Warrant (rounded down).

(b) The Company shall not issue fractions of shares of Common Stock upon exercise of Warrants or distribute stock certificates which evidence fractional shares of Common Stock. Whenever any fraction of a share of Common Stock would otherwise be required to be issued or distributed, the actual issuance or distribution in respect thereof shall be made in accordance with Section 2(d) of the Warrant Certificate.

Section 14. Conditions of the Warrant Agent's Obligations. The Warrant Agent accepts its obligations herein set forth upon the terms and conditions hereof, including the following to all of which the Company agrees and to all of which the rights hereunder of the Holders from time to time of the Warrant Certificates shall be subject:

- (a) Compensation and Indemnification. The Company agrees promptly to pay the Warrant Agent the compensation detailed on Exhibit 3 hereto for all services rendered by the Warrant Agent and to reimburse the Warrant Agent for reasonable out-of-pocket expenses (including reasonable counsel fees) incurred without gross negligence, bad faith or willful misconduct by the Warrant Agent in connection with the services rendered hereunder by the Warrant Agent. The Company also agrees to indemnify the Warrant Agent for, and to hold it harmless against, any loss, liability or expense incurred without gross negligence, bad faith or willful misconduct on the part of the Warrant Agent, arising out of or in connection with its acting as Warrant Agent hereunder, including the reasonable costs and expenses of defending against any claim of such liability.
- (b) Agent for the Company. In acting under this Warrant Agreement and in connection with the Warrant Certificates, the Warrant Agent is acting solely as agent of the Company and does not assume any obligations or relationship of agency or trust for or with any of the Holders of Warrant Certificates or beneficial owners of Warrants.

- (c) Counsel. The Warrant Agent may consult with counsel satisfactory to it, which may include counsel for the Company, and the written advice of such counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in accordance with the advice of such counsel.
- (d) Documents. The Warrant Agent shall be protected and shall incur no liability for or in respect of any action taken or omitted by it in reliance upon any Warrant Certificate, notice, direction, consent, certificate, affidavit, statement or other paper or document reasonably believed by it to be genuine and to have been presented or signed by the proper parties.
- (e) Certain Transactions. The Warrant Agent, and its officers, directors and employees, may become the owner of, or acquire any interest in, Warrants, with the same rights that it or they would have if it were not the Warrant Agent hereunder, and, to the extent permitted by applicable law, it or they may engage or be interested in any financial or other transaction with the Company and may act on, or as depository, trustee or agent for, any committee or body of Holders or other obligations of the Company as freely as if it were not the Warrant Agent hereunder. Nothing in this Warrant Agreement shall be deemed to prevent the Warrant Agent from acting as trustee under any indenture to which the Company is a party.
- (f) No Liability for Interest. Unless otherwise agreed with the Company, the Warrant Agent shall have no liability for interest on any monies at any time received by it pursuant to any of the provisions of this Agreement or of the Warrant Certificates.
- (g) No Liability for Invalidity. The Warrant Agent shall have no liability with respect to any invalidity of this Agreement or any of the Warrant Certificates (except as to the Warrant Agent's countersignature thereon).
- (h) No Responsibility for Representations. The Warrant Agent shall not be responsible for any of the recitals or representations herein or in the Warrant Certificates (except as to the Warrant Agent's countersignature thereon), all of which are made solely by the Company.
- (i) No Implied Obligations. The Warrant Agent shall be obligated to perform only such duties as are herein and in the Warrant Certificates specifically set forth and no implied duties or obligations shall be read into this Agreement or the Warrant Certificates against the Warrant Agent. The Warrant Agent shall not be under any obligation to take any action hereunder which may tend to involve it in any expense or liability, the payment of which within a reasonable time is not, in its reasonable opinion, assured to it. The Warrant Agent shall not be accountable or under any duty or responsibility for the use by the Company of any of the Warrant Certificates authenticated by the Warrant Agent and delivered by it to the Company pursuant to this Agreement or for the application by the Company of the proceeds of the Warrant Certificates. The Warrant Agent shall have no duty or responsibility in case of any default by the Company in the performance of its covenants or agreements contained herein or in the Warrant Certificates or in the case of the receipt of any written demand from a Holder of a Warrant Certificate with respect to such default, including, without limiting the generality of the foregoing, any duty or responsibility to initiate or attempt to initiate any proceedings at law.

Section 15. Purchase or Consolidation or Change of Name of Warrant Agent. Any corporation into which the Warrant Agent or any successor Warrant Agent may be merged or with which it may be consolidated, or any corporation resulting from any merger or consolidation to which the Warrant Agent or any successor Warrant Agent shall be party, or any corporation succeeding to the corporate trust business of the Warrant Agent or any successor Warrant Agent, shall be the successor to the Warrant Agent under this Agreement without the execution or filing of any paper or any further act on the part of any of the parties hereto, provided that such corporation would be eligible for appointment as a successor Warrant Agent under the provisions of Section 17. In case at the time such successor Warrant Agent shall succeed to the agency created by this Agreement any of the Warrant Certificates shall have been countersigned but not delivered, any such successor Warrant Agent may adopt the countersignature of the predecessor Warrant Agent and deliver such Warrant Certificates so countersigned; and in case at that time any of the Warrant Certificates shall not have been countersigned, any successor Warrant Agent may countersign such Warrant Certificates either in the name of the predecessor Warrant Agent or in the name of the successor Warrant Agent; and in all such cases such Warrant Certificates shall have the full force provided in the Warrant Certificates and in this Agreement.

In case at any time the name of the Warrant Agent shall be changed and at such time any of the Warrant Certificates shall have been countersigned but not delivered, the Warrant Agent may adopt the countersignature under its prior name and deliver Warrant Certificates so countersigned; and in case at that time any of the Warrant Certificates shall not have been countersigned, the Warrant Agent may countersign such Warrant Certificates either in its prior name or in its changed name; and in all such cases such Warrant Certificates shall have the full force provided in the Warrant Certificates and in this Agreement.

Section 16. Duties of Warrant Agent. The Warrant Agent undertakes the duties and obligations imposed by this Agreement upon the following terms and conditions, by all of which the Company, by its acceptance hereof, shall be bound:

(a) The Warrant Agent may consult with legal counsel reasonably acceptable to the Company (who may be legal counsel for the Company), and the opinion of such counsel shall be full and complete authorization and protection to the Warrant Agent as to any action taken or omitted by it in good faith and in accordance with such opinion.

(b) Whenever in the performance of its duties under this Agreement the Warrant Agent shall deem it necessary or desirable that any fact or matter be proved or established by the Company prior to taking or suffering any action hereunder, such fact or matter (unless other evidence in respect thereof be herein specifically prescribed) may be deemed to be conclusively proved and established by a certificate signed by the Chief Executive Officer, Principal Financial Officer or Vice President of the Company; and such certificate shall be full authentication to the Warrant Agent for any action taken or suffered in good faith by it under the provisions of this Agreement in reliance upon such certificate.

(c) Subject to the limitation set forth in Section 14, the Warrant Agent shall be liable hereunder only for its own gross negligence, bad faith or willful misconduct, or for a breach by it of this Agreement.

(d) The Warrant Agent shall not be liable for or by reason of any of the statements of fact or recitals contained in this Agreement or in the Warrant Certificates (except its countersignature thereof) by the Company or be required to verify the same, but all such statements and recitals are and shall be deemed to have been made by the Company only.

(e) The Warrant Agent shall not be under any responsibility in respect of the validity of this Agreement or the execution and delivery hereof (except the due execution hereof by the Warrant Agent) or in respect of the validity or execution of any Warrant Certificate (except its countersignature thereof); nor shall it be responsible for any breach by the Company of any covenant or condition contained in this Agreement or in any Warrant Certificate; nor shall it be responsible for the adjustment of the Exercise Price or the making of any change in the number of shares of Common Stock required under the provisions of Section 11 or 13 or responsible for the manner, method or amount of any such change or the ascertaining of the existence of facts that would require any such adjustment or change (except with respect to the exercise of Warrants evidenced by Warrant Certificates after actual notice of any adjustment of the Exercise Price); nor shall it by any act hereunder be deemed to make any representation or warranty as to the authorization or reservation of any shares of Common Stock to be issued pursuant to this Agreement or any Warrant Certificate or as to whether any shares of Common Stock will, when issued, be duly authorized, validly issued, fully paid and nonassessable.

(f) Each party hereto agrees that it will perform, execute, acknowledge and deliver or cause to be performed, executed, acknowledged and delivered all such further and other acts, instruments and assurances as may reasonably be required by the other party hereto for the carrying out or performing by any party of the provisions of this Agreement.

(g) The Warrant Agent is hereby authorized to accept instructions with respect to the performance of its duties hereunder from the Chief Executive Officer, Principal Financial Officer or Vice President of the Company, and to apply to such officers for advice or instructions in connection with its duties, and it shall not be liable and shall be indemnified and held harmless for any action taken or suffered to be taken by it in good faith in accordance with instructions of any such officer, provided Warrant Agent carries out such instructions without gross negligence, bad faith or willful misconduct.

(h) The Warrant Agent and any shareholder, director, officer or employee of the Warrant Agent may buy, sell or deal in any of the Warrants or other securities of the Company or become pecuniarily interested in any transaction in which the Company may be interested, or contract with or lend money to the Company or otherwise act as fully and freely as though it were not Warrant Agent under this Agreement. Nothing herein shall preclude the Warrant Agent from acting in any other capacity for the Company or for any other legal entity.

(i) The Warrant Agent may execute and exercise any of the rights or powers hereby vested in it or perform any duty hereunder either itself or by or through its attorney or agents, and the Warrant Agent shall not be answerable or accountable for any act, default, neglect or misconduct of any such attorney or agents or for any loss to the Company resulting from any such act, default, neglect or misconduct, provided reasonable care was exercised in the selection and continued employment thereof.

Section 17. Change of Warrant Agent. The Warrant Agent may resign and be discharged from its duties under this Agreement upon 30 days' notice in writing sent to the Company and to each transfer agent of the Common Stock, and to the Holders. The Company may remove the Warrant Agent or any successor Warrant Agent upon 30 days' notice in writing, sent to the Warrant Agent or successor Warrant Agent, as the case may be, and to each transfer agent of the Common Stock, and to the Holders. If the Warrant Agent shall resign or be removed or shall otherwise become incapable of acting, the Company shall appoint a successor to the Warrant Agent. If the Company shall fail to make such appointment within a period of 30 days after such removal or after it has been notified in writing of such resignation or incapacity by the resigning or incapacitated Warrant Agent or by the Holder of a Warrant Certificate (who shall, with such notice, submit his Warrant Certificate for inspection by the Company), then the Holder of any Warrant Certificate may apply to any court of competent jurisdiction for the appointment of a new Warrant Agent, provided that, for purposes of this Agreement, the Company shall be deemed to be the Warrant Agent until a new warrant agent is appointed. Any successor Warrant Agent, whether appointed by the Company or by such a court, shall be a corporation organized and doing business under the laws of the United States or of a state thereof, in good standing, which is authorized under such laws to exercise corporate trust powers and is subject to supervision or examination by federal or state authority and which has at the time of its appointment as Warrant Agent a combined capital and surplus of at least \$50,000,000. After appointment, the successor Warrant Agent shall be vested with the same powers, rights, duties and responsibilities as if it had been originally named as Warrant Agent without further act or deed; but the predecessor Warrant Agent shall deliver and transfer to the successor Warrant Agent any property at the time held by it hereunder, and execute and deliver any further assurance, conveyance, act or deed necessary for the purpose. Not later than the effective date of any such appointment, the Company shall file notice thereof in writing with the predecessor Warrant Agent and each transfer agent of the Common Stock, and mail a notice thereof in writing to the Holders. However, failure to give any notice provided for in this Section 17, or any defect therein, shall not affect the legality or validity of the resignation or removal of the Warrant Agent or the appointment of the successor Warrant Agent, as the case may be.

Section 18. Issuance of New Warrant Certificates. Notwithstanding any of the provisions of this Agreement or of the Warrants to the contrary, the Company may, at its option, issue new Warrant Certificates evidencing Warrants in such form as may be approved by its Board of Directors to reflect any adjustment or change in the Exercise Price per share and the number or kind or class of shares of stock or other securities or property purchasable under the several Warrant Certificates made in accordance with the provisions of this Agreement.

Section 19. Notices. Notices or demands authorized by this Agreement to be given or made (i) by the Warrant Agent or by the Holder of any Warrant Certificate to or on the Company, (ii) subject to the provisions of Section 17, by the Company or by the Holder of any Warrant Certificate to or on the Warrant Agent or (iii) by the Company or the Warrant Agent to the Holder of any Warrant Certificate, shall be deemed given (a) on the date delivered, if delivered personally, (b) on the first Business Day following the deposit thereof with Federal Express or another recognized overnight courier, if sent by Federal Express or another recognized overnight courier, (c) on the fourth Business Day following the mailing thereof with postage prepaid, if mailed by registered or certified mail (return receipt requested), and (d) the date of transmission, if such notice or communication is delivered via facsimile or email attachment at or prior to 5:30 p.m. (New York City time) on a Business Day and (e) the next Business Day after the date of transmission, if such notice or communication is delivered via facsimile or email attachment on a day that is not a Business Day or later than 5:30 p.m. (New York City time) on any Business Day, in each case to the parties at the following addresses (or at such other address for a party as shall be specified by like notice):

- (a) If to the Company, to:

Actinium Pharmaceuticals, Inc.  
275 Madison Avenue, Suite 702, New York, NY 10018,  
Attention: Principal financial Officer  
Fax: [            ]  
Email: [            ]

- (b) If to the Warrant Agent, to:

Action Stock Transfer Corporation  
2469 E. Fort Union Blvd., Suite 214, Salt Lake City, UT 84121  
Attention: [            ]  
Email: [            ]  
Fax: [            ]

For any notice delivered by email to be deemed given or made, such notice must be followed by notice sent by overnight courier service to be delivered on the next business day following such email, unless the recipient of such email has acknowledged via return email receipt of such email.

(c) If to the Holder of any Warrant Certificate, to the address of such Holder as shown on the registry books of the Company. Any notice required to be delivered by the Company to the Holder of any Warrant may be given by the Warrant Agent on behalf of the Company. Notwithstanding any other provision of this Agreement, where this Agreement provides for notice of any event to a Holder of any Warrant, such notice shall be sufficiently given if given to the Depository (or its designee) pursuant to the procedures of the Depository or its designee.

Section 20. Supplements and Amendments.

(a) The Company and the Warrant Agent may from time to time supplement or amend this Agreement without the approval of any Holders in order to add to the covenants and agreements of the Company for the benefit of the Holders or to surrender any rights or power reserved to or conferred upon the Company in this Agreement, provided that such addition or surrender shall not adversely affect the interests of the Holders in any material respect.

(b) In addition to the foregoing, with the consent of Holders of Warrants entitled, upon exercise thereof, to receive not less than a majority of the shares of Common Stock issuable thereunder, the Company and the Warrant Agent may modify this Agreement for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of this Warrant Agreement or modifying in any manner the rights of the Holders; provided, however, that no modification of the terms (including but not limited to the adjustments described in Section 11) set forth in the Warrant Certificates may be made without the consent of each Holder affected thereby in accordance with Section 5(j) of each Warrant Certificate. As a condition precedent to the Warrant Agent's execution of any amendment, the Company shall deliver to the Warrant Agent a certificate from a duly authorized officer of the Company that states that the proposed amendment complies with the terms of this Section 20.

Section 21. Successors. All covenants and provisions of this Agreement by or for the benefit of the Company or the Warrant Agent shall bind and inure to the benefit of their respective successors and assigns hereunder.

Section 22. Benefits of this Agreement. Nothing in this Agreement shall be construed to give any Person other than the Company, the Holders and the Warrant Agent any legal or equitable right, remedy or claim under this Agreement; but this Agreement shall be for the sole and exclusive benefit of the Company, the Warrant Agent and the Holders.

Section 23. Governing Law. This Agreement and each Warrant Certificate issued hereunder shall be governed by, and construed in accordance with, the laws of the State of New York without giving effect to the conflicts of law principles thereof.

Section 24. Counterparts. This Agreement may be executed in any number of counterparts and each of such counterparts shall for all purposes be deemed to be an original, and all such counterparts shall together constitute but one and the same instrument.

Section 25. Captions. The captions of the sections of this Agreement have been inserted for convenience only and shall not control or affect the meaning or construction of any of the provisions hereof.

Section 26. Information. The Company agrees to promptly provide to the Holders any information it provides to the holders of the Common Stock, except to the extent any such information is publicly available on the EDGAR system (or any successor thereof) of the Securities and Exchange Commission.

Section 27. Warrant Certificates Control. Notwithstanding anything to the contrary provided herein, the provisions of the Warrant Certificates are hereby incorporated by reference into this Agreement and shall be binding in all respects on each of the Company and the Warrant Agent. To the extent any term or provision herein is inconsistent with the Warrant Certificates, the terms and provisions of the Warrant Certificates shall control.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the day and year first above written.

ACTINIUM PHARMACEUTICALS, INC.

By: \_\_\_\_\_  
Name:  
Title:

By: \_\_\_\_\_  
Name:  
Title:

ACTION STOCK TRANSFER CORPORATION

By: \_\_\_\_\_  
Name:  
Title:

**Annex A1: Form of Series A Warrant Certificate Request Notice**

WARRANT CERTIFICATE REQUEST NOTICE

To: Action Stock Transfer Corporation as Warrant Agent for Actinium Pharmaceuticals, Inc. (the "Company")

The undersigned Holder of Series A Common Stock Purchase Warrants ("Warrants") in the form of Global Warrants issued by the Company hereby elects to receive a Warrant Certificate evidencing the Warrants held by the Holder as specified below:

1. Name of Holder of Warrants in form of Global Warrants: \_\_\_\_\_
2. Name of Holder in Warrant Certificate (if different from name of Holder of Warrants in form of Global Warrants):  
\_\_\_\_\_
3. Number of Warrants in name of Holder in form of Global Warrants: \_\_\_\_\_
4. Number of Warrants for which Warrant Certificate shall be issued: \_\_\_\_\_
5. Number of Warrants in name of Holder in form of Global Warrants after issuance of Warrant Certificate, if any: \_\_\_\_\_
6. Warrant Certificate shall be delivered to the following address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The undersigned hereby acknowledges and agrees that, in connection with this Warrant Exchange and the issuance of the Warrant Certificate, the Holder is deemed to have surrendered the number of Warrants in form of Global Warrants in the name of the Holder equal to the number of Warrants evidenced by the Warrant Certificate.

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_

*Signature of Authorized Signatory of Investing Entity:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Date: \_\_\_\_\_

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**Annex A2: Form of Series B Warrant Certificate Request Notice**

WARRANT CERTIFICATE REQUEST NOTICE

To: Action Stock Transfer Corporation as Warrant Agent for Actinium Pharmaceuticals, Inc. (the "Company")

The undersigned Holder of Series B Common Stock Purchase Warrants ("Warrants") in the form of Global Warrants issued by the Company hereby elects to receive a Warrant Certificate evidencing the Warrants held by the Holder as specified below:

1. Name of Holder of Warrants in form of Global Warrants: \_\_\_\_\_
2. Name of Holder in Warrant Certificate (if different from name of Holder of Warrants in form of Global Warrants):  
\_\_\_\_\_
3. Number of Warrants in name of Holder in form of Global Warrants: \_\_\_\_\_
4. Number of Warrants for which Warrant Certificate shall be issued: \_\_\_\_\_
5. Number of Warrants in name of Holder in form of Global Warrants after issuance of Warrant Certificate, if any: \_\_\_\_\_
6. Warrant Certificate shall be delivered to the following address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The undersigned hereby acknowledges and agrees that, in connection with this Warrant Exchange and the issuance of the Warrant Certificate, the Holder is deemed to have surrendered the number of Warrants in form of Global Warrants in the name of the Holder equal to the number of Warrants evidenced by the Warrant Certificate.

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_

*Signature of Authorized Signatory of Investing Entity:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Date: \_\_\_\_\_

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**Exhibit 1: Form of Series A Warrant Certificate**

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**Exhibit 1: Form of Series B Warrant Certificate**

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## SERIES A COMMON STOCK PURCHASE WARRANT

## ACTINIUM PHARMACEUTICALS, INC.

Warrant Shares: [ ]  
 Warrant Number: [ ]

Initial Exercise Date: March [ ], 2018  
 Issue Date: March [ ], 2018

CUSIP: [ ]  
 ISIN: [ ]

THIS SERIES A COMMON STOCK PURCHASE WARRANT (the “Warrant”) certifies that, for value received, Cede & Co. or its assigns (the “Holder”) is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after March [ ], 2018 (the “Initial Exercise Date”) and on or prior to the close of business on the one (1) year anniversary of the Initial Exercise Date (the “Termination Date”); provided, however, that if such date is not a Trading Day, the Termination Date shall be the immediately following Trading Day) but not thereafter, to subscribe for and purchase from Actinium Pharmaceuticals, Inc., a Delaware corporation (the “Company”), up to [ ] shares (as subject to adjustment hereunder, the “Warrant Shares”) of Common Stock. The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b). This Warrant shall initially be issued and maintained in the form of a security held in book-entry form and the Depository Trust Company or its nominee (“DTC”) shall initially be the sole registered holder of this Warrant, subject to the Holder’s right to elect to receive a Warrant in certificated form pursuant to the terms of the Warrant Agency Agreement, in which case this sentence shall not apply.

Section 1. Definitions. In addition to the terms defined elsewhere in this Warrant, the following terms shall have the meanings indicated in this Section 1:

“Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 under the Securities Act.

“Bid Price” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in the “Pink Sheets” published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Board of Directors” means the board of directors of the Company.

“Business Day” means any day except any Saturday, any Sunday, any day which is a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.0001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Dealer-Manager Agreement” means the agreement, dated as of February 15, 2018, among the Company and Maxim Group LLC as representative of the underwriters named therein, as amended, modified or supplemented from time to time in accordance with its terms.

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Registration Statement” means the Company’s registration statement on Form S-3, as amended (File No. 333-216748).

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Subsidiary” means any subsidiary of the Company and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means a day on which the Common Stock is traded on a Trading Market.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange, OTCQB or OTCQX (or any successors to any of the foregoing).

“Transfer Agent” means Action Stock Transfer Corporation, the current transfer agent of the Company, with a mailing address of [ ], a phone number of [ ], and an e-mail address of [ ], and any successor transfer agent of the Company.

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in the “Pink Sheets” published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Warrant Agency Agreement” means that certain warrant agency agreement, dated as of the Initial Exercise Date, between the Company and the Warrant Agent.

“Warrant Agent” means the Transfer Agent and any successor warrant agent of the Company.

“Warrants” means this Series A Warrant and other Common Stock purchase warrants issued by the Company pursuant to the Registration Statement.

Section 2. Exercise; No Settlement in Cash.

a) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company (or such other office or agency of the Company as it may designate by notice in writing to the registered Holder at the address of the Holder appearing on the books of the Company) of a duly executed facsimile copy (or e-mail attachment) of the Notice of Exercise in the form annexed hereto (“Notice of Exercise”). Only whole warrants shall be exercisable. Within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the shares specified in the applicable Notice of Exercise by wire transfer or cashier’s check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise within one (1) Business Day of receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.**

Notwithstanding the foregoing in this Section 2(a), a holder whose interest in this Warrant is a beneficial interest in certificate(s) representing this Warrant held in book-entry form through DTC (or another established clearing corporation performing similar functions), shall effect exercises made pursuant to this Section 2(a) by delivering to DTC (or such other clearing corporation, as applicable) the appropriate instruction form for exercise, complying with the procedures to effect exercise that are required by DTC (or such other clearing corporation, as applicable), subject to a Holder’s right to elect to receive a Warrant in certificated form pursuant to the terms of the Warrant Agency Agreement, in which case this sentence shall not apply.

Without limiting the rights of a Holder to receive Warrant Shares on a “cashless exercise” solely in respect of the circumstance set forth in Section 2(c), and without limiting the liquidated damages provision of Section 2(d)(i) and the buy-in provision of Section 2(d)(iv), in no event will the Company be required to net cash settle a warrant exercise.

b ) Exercise Price. The exercise price per share of the Common Stock under this Warrant shall be **\$0.90**, subject to adjustment hereunder (the “Exercise Price”).

c ) Cashless Exercise. If at the time of exercise hereof there is no effective registration statement registering, or the prospectus contained therein is not available for, the issuance of the Warrant Shares to the Holder, then this Warrant may only be exercised, in whole or in part, at such time by means of a “cashless exercise” in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) both executed and delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) both executed and delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of “regular trading hours” (as defined in Rule 600(b)(64) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) at the option of the Holder, either (y) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise or (z) the Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. as of the time of the Holder’s execution of the applicable Notice of Exercise if such Notice of Exercise is executed during “regular trading hours” on a Trading Day and is delivered within two (2) hours thereafter pursuant to Section 2(a) hereof or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is both executed and delivered pursuant to Section 2(a) hereof after the close of “regular trading hours” on such Trading Day;

(B) = the Exercise Price of this Warrant, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised. The Company agrees not to take any position contrary to this Section 2(c).

Notwithstanding anything herein to the contrary, on the Termination Date, this Warrant shall be automatically exercised via cashless exercise pursuant to this Section 2(c).

d) Mechanics of Exercise.

i. Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Transfer Agent to the Holder by crediting the account of the Holder's or its designee's balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system ("DWAC") if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by the Holder or (B) this Warrant is being exercised via cashless exercise, and otherwise by physical delivery of a certificate, registered in the Company's share register in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the address specified by the Holder in the Notice of Exercise by the date that is the earlier of (i) the earlier of (A) two (2) Trading Days after the delivery to the Company of the Notice of Exercise, and (B) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company, and (ii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the "Warrant Share Delivery Date"). Upon delivery of the Notice of Exercise, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares; provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise. If the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$10 per Trading Day (increasing to \$20 per Trading Day on the fifth Trading Day after such liquidated damages begin to accrue) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, "Standard Settlement Period" means the standard settlement period, expressed in a number of Trading Days, on the Company's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise.

i i. Delivery of New Warrants Upon Exercise. If this Warrant is not held in global form through DTC (or any successor depository) and if this Warrant shall have been exercised in part, the Company shall, at the request of the Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

iii. Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d)(i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

i v . Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

v. No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

v i. Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to a Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

vii. Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant, pursuant to the terms hereof.

e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and the Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company (including, without limitation, any other Common Stock Equivalents) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within two Trading Days confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be 4.99% (or, upon election by a Holder prior to the issuance of any Warrants, 9.99%) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder and the provisions of this Section 2(e) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61<sup>st</sup> day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant.

Section 3. Certain Adjustments.

a ) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions payable in shares of Common Stock on shares of its Common Stock or any other Common Stock Equivalents or preferred stock (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise of this Warrant), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, of the Company) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

b ) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

c) Notice to Holder.

i . Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by facsimile or e-mail a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

d ) Right to Call. The Company may call this Warrant for redemption upon written notice to all Purchasers of Units (each as defined in the Dealer-Manager Agreement) at any time the closing price of the Common Stock exceeds \$1.80 (as adjusted pursuant to Section 2) for 10 consecutive trading days, as reported by Bloomberg, provided at such time there is an effective registration statement covering the resale of the Shares. In the 30 calendar days following the date the redemption notice is deemed given in accordance with Section 3 hereof (the "Exercise Period"), investors may choose to exercise this Warrant or a portion of the Warrant by paying the then applicable Exercise Price per share for every Share exercised. Any Shares not exercised by 5:00 pm Eastern Time on the last day of the Exercise Period will be redeemed by the Company at \$0.001 per share.

Section 4. Transfer of Warrant.

a) Transferability. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date the Holder delivers an assignment form to the Company assigning this Warrant full. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

b) New Warrants. If this Warrant is not held in global form through DTC (or any successor depository), this Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the initial issuance date of this Warrant and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

c) Warrant Register. The Warrant Agent shall register this Warrant, upon records to be maintained by the Warrant Agent for that purpose (the "Warrant Register"), in the name of the record Holder hereof from time to time. The Company and the Warrant Agent may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

Section 5. Miscellaneous.

a) No Rights as Stockholder Until Exercise. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3.

b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then, such action may be taken or such right may be exercised on the next succeeding Business Day.

d) Authorized Shares.

The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

e) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Warrant (whether brought against a party hereto or their respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is improper or is an inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If either party shall commence an action, suit or proceeding to enforce any provisions of this Warrant, the prevailing party in such action, suit or proceeding shall be reimbursed by the other party for their reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered, and the Holder does not utilize cashless exercise, will have restrictions upon resale imposed by state and federal securities laws.

g) Nonwaiver. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies.

h) Notices. Any notices, consents, waivers or other document or communications required or permitted to be given or delivered under the terms of this Warrant must be in writing and will be deemed to have been delivered: (i) upon receipt, if delivered personally; (ii) when sent, if sent by facsimile (provided confirmation of transmission is mechanically or electronically generated and kept on file by the sending party); (iii) when sent, if sent by e-mail (provided that such sent e-mail is kept on file (whether electronically or otherwise) by the sending party and the sending party does not receive an automatically generated message from the recipient's e-mail server that such e-mail could not be delivered to such recipient) and (iv) if sent by overnight courier service, one (1) Trading Day after deposit with an overnight courier service with next day delivery specified, in each case, properly addressed to the party to receive the same. If notice is given by facsimile or email, a copy of such notice shall be dispatched no later than the next business day by first class mail, postage prepaid. The addresses, facsimile numbers and e-mail addresses for such communications shall be:

If to the Company:

Actinium Pharmaceuticals, Inc.  
275 Madison Avenue, Suite 702  
New York, NY 10016  
Attention: Principal Financial Officer  
Telecopy number: [\_\_\_\_\_]

If to a Holder, to its address, facsimile number or e-mail address set forth herein or on the books and records of the Company.

Or, in each of the above instances, to such other address, facsimile number or e-mail address and/or to the attention of such other Person as the recipient party has specified by written notice given to each other party at least five (5) days prior to the effectiveness of such change. Written confirmation of receipt (A) given by the recipient of such notice, consent, waiver or other communication, (B) mechanically or electronically generated by the sender's facsimile machine containing the time, date and recipient facsimile number or (C) provided by an overnight courier service shall be rebuttable evidence of personal service, receipt by facsimile or receipt from an overnight courier service in accordance with clause (i), (ii) or (iv) above, respectively. A copy of the e-mail transmission containing the time, date and recipient e-mail address shall be rebuttable evidence of receipt by e-mail in accordance with clause (iii) above. Notwithstanding any other provision of this Warrant, where this Warrant provides for notice of any event to the Holder, if this Warrant is held in global form by DTC (or any successor depository), such notice shall be sufficiently given if given to DTC (or any successor depository) pursuant to the procedures of DTC (or such successor depository), subject to the Holder's right to elect to receive a Warrant in certificated form pursuant to the terms of the Warrant Agency Agreement, in which case this sentence shall not apply.

i) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Warrant Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

j ) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

k ) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

l ) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company, on the one hand, and the Holder or the beneficial owner of this Warrant, on the other hand.

m ) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

n ) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

o) Warrant Agency Agreement. If this Warrant is held in global form through DTC (or any successor depositary), this Warrant is issued subject to the Warrant Agency Agreement. To the extent any provision of this Warrant conflicts with the express provisions of the Warrant Agency Agreement, the provisions of this Warrant shall govern and be controlling.

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*(Signature Page Follows)*

IN WITNESS WHEREOF, the Company has caused this Series A Warrant to be executed by its officer thereunto duly authorized as of the date first above indicated.

**ACTINIUM PHARMACEUTICALS, INC.**

By: \_\_\_\_\_

Name:

Title:

**SERIES A WARRANT NOTICE OF EXERCISE**

TO: ACTINIUM PHARMACEUTICALS, INC.

(1) The undersigned hereby elects to purchase \_\_\_\_\_ Warrant Shares of the Company pursuant to the terms of the attached Warrant (only if exercised in full), and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

in lawful money of the United States; or

if permitted the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

\_\_\_\_\_

(4) By checking the box in this Item 4, the holder elects to exercise the Warrant by substituting the Variable Price for the Exercise Price pursuant to Section 3(b) of the Warrant, which Variable Price equals \$ \_\_\_\_\_ per share.

The Warrant Shares shall be delivered to the following DWAC Account Number:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_

*Signature of Authorized Signatory of Investing Entity:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_

**SERIES A WARRANT ASSIGNMENT FORM**

*(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)*

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: \_\_\_\_\_  
(Please Print)

Address: \_\_\_\_\_  
(Please Print)

Phone Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

Dated: \_\_\_\_\_, \_\_\_\_\_

Holder's Signature: \_\_\_\_\_

Holder's Address: \_\_\_\_\_

\_\_\_\_\_

**SERIES B COMMON STOCK PURCHASE WARRANT**

**ACTINIUM PHARMACEUTICALS, INC.**

Warrant Shares: [ ]  
Warrant Number: [ ]

Initial Exercise Date: March [ ], 2018  
Issue Date: March [ ], 2018

CUSIP: [ ]  
ISIN: [ ]

THIS SERIES B COMMON STOCK PURCHASE WARRANT (the "Warrant") certifies that, for value received, Cede & Co. or its assigns (the "Holder") is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after March [ ], 2018 (the "Initial Exercise Date") and on or prior to the close of business on the thirty (30) month anniversary of the Initial Exercise Date (the "Termination Date"); provided, however, that if such date is not a Trading Day, the Termination Date shall be the immediately following Trading Day) but not thereafter, to subscribe for and purchase from Actinium Pharmaceuticals, Inc., a Delaware corporation (the "Company"), up to [ ] shares (as subject to adjustment hereunder, the "Warrant Shares") of Common Stock. The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b). This Warrant shall initially be issued and maintained in the form of a security held in book-entry form and the Depository Trust Company or its nominee ("DTC") shall initially be the sole registered holder of this Warrant, subject to the Holder's right to elect to receive a Warrant in certificated form pursuant to the terms of the Warrant Agency Agreement, in which case this sentence shall not apply.

Section 1. Definitions. In addition to the terms defined elsewhere in this Warrant, the following terms shall have the meanings indicated in this Section 1:

"Affiliate" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 under the Securities Act.

"Bid Price" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in the "Pink Sheets" published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

"Board of Directors" means the board of directors of the Company.

"Business Day" means any day except any Saturday, any Sunday, any day which is a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

"Commission" means the United States Securities and Exchange Commission.

"Common Stock" means the common stock of the Company, par value \$0.0001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Dealer-Manager Agreement” means the agreement, dated as of February 15, 2018, among the Company and Maxim Group LLC as representative of the underwriters named therein, as amended, modified or supplemented from time to time in accordance with its terms.

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Registration Statement” means the Company’s registration statement on Form S-3, as amended (File No. 333-216748).

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Subsidiary” means any subsidiary of the Company and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means a day on which the Common Stock is traded on a Trading Market.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange, OTCQB or OTCQX (or any successors to any of the foregoing).

“Transfer Agent” means Action Stock Transfer Corporation, the current transfer agent of the Company, with a mailing address of [ ], a phone number of [ ], and an e-mail address of [ ], and any successor transfer agent of the Company.

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in the “Pink Sheets” published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Warrant Agency Agreement” means that certain warrant agency agreement, dated as of the Initial Exercise Date, between the Company and the Warrant Agent.

“Warrant Agent” means the Transfer Agent and any successor warrant agent of the Company.

“Warrants” means this Series B Warrant and other Common Stock purchase warrants issued by the Company pursuant to the Registration Statement.

Section 2. Exercise; No Settlement in Cash.

a) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company (or such other office or agency of the Company as it may designate by notice in writing to the registered Holder at the address of the Holder appearing on the books of the Company) of a duly executed facsimile copy (or e-mail attachment) of the Notice of Exercise in the form annexed hereto (“Notice of Exercise”). Only whole warrants shall be exercisable. Within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the shares specified in the applicable Notice of Exercise by wire transfer or cashier’s check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise within one (1) Business Day of receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.**

Notwithstanding the foregoing in this Section 2(a), a holder whose interest in this Warrant is a beneficial interest in certificate(s) representing this Warrant held in book-entry form through DTC (or another established clearing corporation performing similar functions), shall effect exercises made pursuant to this Section 2(a) by delivering to DTC (or such other clearing corporation, as applicable) the appropriate instruction form for exercise, complying with the procedures to effect exercise that are required by DTC (or such other clearing corporation, as applicable), subject to a Holder’s right to elect to receive a Warrant in certificated form pursuant to the terms of the Warrant Agency Agreement, in which case this sentence shall not apply.

Without limiting the rights of a Holder to receive Warrant Shares on a “cashless exercise” solely in respect of the circumstance set forth in Section 2(c), and without limiting the liquidated damages provision of Section 2(d)(i) and the buy-in provision of Section 2(d)(iv), in no event will the Company be required to net cash settle a warrant exercise.

b ) Exercise Price. The exercise price per share of the Common Stock under this Warrant shall be **\$1.10**, subject to adjustment hereunder (the “Exercise Price”).

c ) Cashless Exercise. If at the time of exercise hereof there is no effective registration statement registering, or the prospectus contained therein is not available for, the issuance of the Warrant Shares to the Holder, then this Warrant may only be exercised, in whole or in part, at such time by means of a “cashless exercise” in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) both executed and delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) both executed and delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of “regular trading hours” (as defined in Rule 600(b)(64) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) at the option of the Holder, either (y) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise or (z) the Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. as of the time of the Holder’s execution of the applicable Notice of Exercise if such Notice of Exercise is executed during “regular trading hours” on a Trading Day and is delivered within two (2) hours thereafter pursuant to Section 2(a) hereof or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is both executed and delivered pursuant to Section 2(a) hereof after the close of “regular trading hours” on such Trading Day;

(B) = the Exercise Price of this Warrant, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised. The Company agrees not to take any position contrary to this Section 2(c).

Notwithstanding anything herein to the contrary, on the Termination Date, this Warrant shall be automatically exercised via cashless exercise pursuant to this Section 2(c).

d) Mechanics of Exercise.

i. Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Transfer Agent to the Holder by crediting the account of the Holder's or its designee's balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system ("DWAC") if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by the Holder or (B) this Warrant is being exercised via cashless exercise, and otherwise by physical delivery of a certificate, registered in the Company's share register in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the address specified by the Holder in the Notice of Exercise by the date that is the earlier of (i) the earlier of (A) two (2) Trading Days after the delivery to the Company of the Notice of Exercise, and (B) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company, and (ii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the "Warrant Share Delivery Date"). Upon delivery of the Notice of Exercise, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares; provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise. If the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$10 per Trading Day (increasing to \$20 per Trading Day on the fifth Trading Day after such liquidated damages begin to accrue) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, "Standard Settlement Period" means the standard settlement period, expressed in a number of Trading Days, on the Company's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise.

i i. Delivery of New Warrants Upon Exercise. If this Warrant is not held in global form through DTC (or any successor depository) and if this Warrant shall have been exercised in part, the Company shall, at the request of the Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

iii. Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d)(i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

i v . Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

v. No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

v i. Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to a Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

vii. Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant, pursuant to the terms hereof.

e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and the Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company (including, without limitation, any other Common Stock Equivalents) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within two Trading Days confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be 4.99% (or, upon election by a Holder prior to the issuance of any Warrants, 9.99%) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder and the provisions of this Section 2(e) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61<sup>st</sup> day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant.

Section 3. Certain Adjustments.

a ) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions payable in shares of Common Stock on shares of its Common Stock or any other Common Stock Equivalents or preferred stock (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise of this Warrant), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, of the Company) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

b ) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

c) Notice to Holder.

i . Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by facsimile or e-mail a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

d ) Right to Call. The Company may call this Warrant for redemption upon written notice to all Purchasers of Units (each as defined in the Dealer-Manager Agreement) at any time the closing price of the Common Stock exceeds \$3.30 (as adjusted pursuant to Section 2) for 10 consecutive trading days, as reported by Bloomberg, provided at such time there is an effective registration statement covering the resale of the Shares. In the 30 calendar days following the date the redemption notice is deemed given in accordance with Section 3 hereof (the "Exercise Period"), investors may choose to exercise this Warrant or a portion of the Warrant by paying the then applicable Exercise Price per share for every Share exercised. Any Shares not exercised by 5:00 pm Eastern Time on the last day of the Exercise Period will be redeemed by the Company at \$0.001 per share.

Section 4. Transfer of Warrant.

a) Transferability. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date the Holder delivers an assignment form to the Company assigning this Warrant full. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

b) New Warrants. If this Warrant is not held in global form through DTC (or any successor depository), this Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the initial issuance date of this Warrant and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

c) Warrant Register. The Warrant Agent shall register this Warrant, upon records to be maintained by the Warrant Agent for that purpose (the "Warrant Register"), in the name of the record Holder hereof from time to time. The Company and the Warrant Agent may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

Section 5. Miscellaneous.

a) No Rights as Stockholder Until Exercise. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3.

b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then, such action may be taken or such right may be exercised on the next succeeding Business Day.

d) Authorized Shares.

The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

e) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Warrant (whether brought against a party hereto or their respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is improper or is an inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If either party shall commence an action, suit or proceeding to enforce any provisions of this Warrant, the prevailing party in such action, suit or proceeding shall be reimbursed by the other party for their reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered, and the Holder does not utilize cashless exercise, will have restrictions upon resale imposed by state and federal securities laws.

g) Nonwaiver. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies.

h) Notices. Any notices, consents, waivers or other document or communications required or permitted to be given or delivered under the terms of this Warrant must be in writing and will be deemed to have been delivered: (i) upon receipt, if delivered personally; (ii) when sent, if sent by facsimile (provided confirmation of transmission is mechanically or electronically generated and kept on file by the sending party); (iii) when sent, if sent by e-mail (provided that such sent e-mail is kept on file (whether electronically or otherwise) by the sending party and the sending party does not receive an automatically generated message from the recipient's e-mail server that such e-mail could not be delivered to such recipient) and (iv) if sent by overnight courier service, one (1) Trading Day after deposit with an overnight courier service with next day delivery specified, in each case, properly addressed to the party to receive the same. If notice is given by facsimile or email, a copy of such notice shall be dispatched no later than the next business day by first class mail, postage prepaid. The addresses, facsimile numbers and e-mail addresses for such communications shall be:

If to the Company:

Actinium Pharmaceuticals, Inc.  
275 Madison Avenue, Suite 702  
New York, NY 10016  
Attention: Principal Financial Officer  
Telecopy number: [\_\_\_\_\_]

If to a Holder, to its address, facsimile number or e-mail address set forth herein or on the books and records of the Company.

Or, in each of the above instances, to such other address, facsimile number or e-mail address and/or to the attention of such other Person as the recipient party has specified by written notice given to each other party at least five (5) days prior to the effectiveness of such change. Written confirmation of receipt (A) given by the recipient of such notice, consent, waiver or other communication, (B) mechanically or electronically generated by the sender's facsimile machine containing the time, date and recipient facsimile number or (C) provided by an overnight courier service shall be rebuttable evidence of personal service, receipt by facsimile or receipt from an overnight courier service in accordance with clause (i), (ii) or (iv) above, respectively. A copy of the e-mail transmission containing the time, date and recipient e-mail address shall be rebuttable evidence of receipt by e-mail in accordance with clause (iii) above. Notwithstanding any other provision of this Warrant, where this Warrant provides for notice of any event to the Holder, if this Warrant is held in global form by DTC (or any successor depository), such notice shall be sufficiently given if given to DTC (or any successor depository) pursuant to the procedures of DTC (or such successor depository), subject to the Holder's right to elect to receive a Warrant in certificated form pursuant to the terms of the Warrant Agency Agreement, in which case this sentence shall not apply.

i) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Warrant Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

j ) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

k ) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

l ) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company, on the one hand, and the Holder or the beneficial owner of this Warrant, on the other hand.

m ) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

n ) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

o) Warrant Agency Agreement. If this Warrant is held in global form through DTC (or any successor depositary), this Warrant is issued subject to the Warrant Agency Agreement. To the extent any provision of this Warrant conflicts with the express provisions of the Warrant Agency Agreement, the provisions of this Warrant shall govern and be controlling.

\*\*\*\*\*

*(Signature Page Follows)*

IN WITNESS WHEREOF, the Company has caused this Series B Warrant to be executed by its officer thereunto duly authorized as of the date first above indicated.

**ACTINIUM PHARMACEUTICALS, INC.**

By: \_\_\_\_\_

Name:

Title:

**SERIES B WARRANT NOTICE OF EXERCISE**

TO: ACTINIUM PHARMACEUTICALS, INC.

(1) The undersigned hereby elects to purchase \_\_\_\_\_ Warrant Shares of the Company pursuant to the terms of the attached Warrant (only if exercised in full), and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

in lawful money of the United States; or

if permitted the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

\_\_\_\_\_

(4) By checking the box in this Item 4, the holder elects to exercise the Warrant by substituting the Variable Price for the Exercise Price pursuant to Section 3(b) of the Warrant, which Variable Price equals \$ \_\_\_\_\_ per share.

The Warrant Shares shall be delivered to the following DWAC Account Number:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_

*Signature of Authorized Signatory of Investing Entity:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_

**SERIES B WARRANT ASSIGNMENT FORM**

*(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)*

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: \_\_\_\_\_  
(Please Print)

Address: \_\_\_\_\_  
(Please Print)

Phone Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

Dated: \_\_\_\_\_, \_\_\_\_\_

Holder's Signature: \_\_\_\_\_

Holder's Address: \_\_\_\_\_

\_\_\_\_\_

## FORM OF NON-TRANSFERABLE SUBSCRIPTION RIGHTS CERTIFICATE

RIGHTS CERTIFICATE # [\_\_\_\_\_]

NUMBER OF RIGHTS: [\_\_\_\_\_]

THE TERMS AND CONDITIONS OF THE RIGHTS OFFERING ARE SET FORTH IN THE COMPANY'S PROSPECTUS SUPPLEMENT DATED February 15, 2018 (AS IT MAY BE AMENDED FROM TIME TO TIME, THE "PROSPECTUS SUPPLEMENT") AND ARE INCORPORATED HEREIN BY REFERENCE. COPIES OF THE PROSPECTUS SUPPLEMENT ARE AVAILABLE UPON REQUEST FROM BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE INFORMATION AGENT.

**ACTINIUM PHARMACEUTICALS, INC.**  
**(Incorporated under the laws of the State of Delaware)**

**SUBSCRIPTION RIGHTS CERTIFICATE**

Evidencing non-transferable Subscription Rights, each to purchase Units of Actinium Pharmaceuticals, Inc., each Unit consisting of one share of Common Stock, 0.25 Series A Warrants and 0.75 Series B Warrants  
 Subscription Price: \$0.70 per Unit

THE SUBSCRIPTION RIGHTS WILL EXPIRE IF NOT EXERCISED ON OR BEFORE 5:00 P.M., EASTERN TIME,  
 ON MARCH 2, 2018,  
 SUBJECT TO EXTENSION OR EARLIER TERMINATION.

THIS CERTIFIES THAT

the registered owner whose name is inscribed hereon is the owner of the number of subscription rights ("**Subscription Rights**") set forth above. Each Subscription Right entitles the holder thereof to subscribe for and purchase (the "**Basic Subscription Right**") one Unit of Actinium Pharmaceuticals, a Delaware corporation (the "**Company**"), at a subscription price of \$0.70 per Unit (the "**Subscription Price**"), pursuant to a rights offering (the "**Rights Offering**"), on the terms and subject to the conditions set forth in the Prospectus Supplement and the "Instructions as to Use of Actinium Pharmaceuticals, Inc. Subscription Rights Certificates" accompanying this Subscription Rights Certificate. Each Unit consists of one share of Common Stock, par value of \$0.001, 0.25 Series A Warrants, and 0.75 Series B Warrants. Each WHOLE Series A Warrant and each whole Series B Warrant will be exercisable for one share of our common stock, par value of \$0.001. Holders who fully exercise their Basic Subscription Rights are entitled to subscribe for additional Units that remain unsubscribed for as a result of any unexercised Basic Subscription Rights pursuant to the terms and conditions of the Rights Offering, subject to proration and stock ownership limitations, as described in the Prospectus Supplement (the "**Over-subscription Privilege**"). The Subscription Rights represented by this Subscription Rights Certificate may be exercised by completing the appropriate forms on the reverse side hereof and by returning the full payment of the subscription price for each Unit. If the subscriber attempts to exercise its Over-subscription Privilege and the Company is unable to issue the subscriber the full amount of Units requested, the Subscription Agent will return to the subscriber any excess funds submitted as soon as practicable, without interest or deduction.

This Subscription Rights Certificate is not valid unless countersigned by Broadridge Corporate Issuer Solutions, Inc., the Subscription Agent.

WITNESS the seal of Actinium Pharmaceuticals, Inc. and the signatures of its duly authorized officers.

Dated: February 15, 2018

Sandesh Seth, Chairman &amp; Chief Executive Officer

COUNTERSIGNED AND REGISTERED:

By: \_\_\_\_\_  
 Broadridge Corporate Issuer Solutions, Inc.

**FORM ELECTION TO PURCHASE**

**PLEASE PRINT ALL INFORMATION CLEARLY AND LEGIBLY.**

The registered holder of this Subscription Rights Certificate is entitled to exercise the number of Subscription Rights shown in the upper right hand corner of the Subscription Rights Certificate and may subscribe for additional Units upon the terms and conditions specified in the Prospectus. The undersigned hereby represents, in connection with this election, that the undersigned has not since the Record Date entered into any short sale or similar transaction with respect to the common stock of Actinium Pharmaceuticals, Inc. The undersigned hereby notifies the Subscription Agent of its irrevocable election to subscribe for Units in the following amounts. To subscribe for Units pursuant to your Basic Subscription Right, please complete lines (a) and (c) below. To subscribe for additional Units pursuant to your Over-subscription Privilege, please also complete line (b).

**(a) EXERCISE OF BASIC SUBSCRIPTION RIGHT:**

Basic Subscription Right:	X	\$0.70	=	\$
Number of Units		Subscription price		Payment enclosed

**(b) EXERCISE OF OVER-SUBSCRIPTION PRIVILEGE:** If you have exercised your Basic Subscription Right in full, you may subscribe for additional Units pursuant to your Over-subscription Privilege

Over-Subscription Privilege:	X	\$0.70	=	\$
Number of Units		Subscription price		Payment enclosed

**(c) TOTAL AMOUNT OF PAYMENT ENCLOSED \$ \_\_\_\_\_**

**(d) IF YOU SPOKE WITH A BROKER WHO SOLICITED SUCH EXERCISE, PLEASE INDICATE THE NAME AND CONTACT INFORMATION OF THE PERSON YOU SPOKE WITH: \_\_\_\_\_**

**METHOD OF PAYMENT (CHECK ONE):**

- CERTIFIED CHECK DRAWN ON A U.S. BANK, payable to "Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent for Actinium Pharmaceuticals, Inc."
- Wire transfer of immediately available funds directly to the account maintained by Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent, for purposes of accepting subscriptions in this Rights Offering at

ABA/Routing number: 121000248  
Bank: Wells Fargo  
420 Montgomery Street  
San Francisco, CA 94104 United States  
Beneficiary Account Name: Broadridge Corporate Issuer Solutions  
Account Number: 4124218686  
FFC: Actinium Pharmaceuticals, Inc.  
Account Number: 4399752260

- U.S. POSTAL MONEY ORDER, payable to "Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent for Actinium Pharmaceuticals, Inc."
- UNCERTIFIED PERSONAL CHECK, payable to "Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent for Actinium Pharmaceuticals, Inc." (which must clear before the Expiration Date to be considered a valid form of payment; please see Prospectus Supplement and Instructions)

I acknowledge receipt of the Prospectus Supplement in connection with the Rights Offering and agree to its terms. I agree to cooperate with the Company and provide to the Company any and all information requested by the Company in connection with the exercise of the Subscription Rights.

\_\_\_\_\_  
Signature(s) of Subscriber(s)

Address:

\_\_\_\_\_  
Signature(s) of Subscriber(s)

Address:

**IMPORTANT: THE SIGNATURE(S) MUST CORRESPOND IN EVERY PARTICULAR, WITHOUT ALTERATION, WITH THE NAME(S) AS PRINTED ON THE FRONT OF THIS RIGHTS CERTIFICATE.** If signature is by trustee(s), executor(s), administrator(s), guardian(s), attorney(s)-in-fact, officer(s) of a corporation or another acting in a fiduciary or representative capacity, please print name and title of authorized signer.

FOR INSTRUCTIONS ON THE USE OF ACTINIUM PHARMACEUTICALS, INC. SUBSCRIPTION RIGHTS CERTIFICATES, CONSULT BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE INFORMATION AGENT, AT (855) 793-5068 (TOLL FREE).

# MATT

Attorneys at Law

The Matt Law Firm, PLLC  
1701 Genesee Street  
Utica, New York 13501

315.624.7360  
Fax: 315.624.7359

February 15, 2018

Actinium Pharmaceuticals, Inc.  
275 Madison Avenue, 7th Floor  
New York, New York 10016

Ladies and Gentlemen:

You have requested our opinion, as special counsel to Actinium Pharmaceuticals, Inc., a Delaware corporation (the “**Company**”), with respect to certain matters in connection with the issuance and sale by the Company of (i) 101,681,233 non-transferable subscription rights (the “**Rights**”) to be distributed by the Company without consideration in connection with a rights offering (the “**Rights Offering**”) to holders of record of common stock, par value \$0.001 per share, of the Company (the “**Common Stock**”) and to holders of certain outstanding warrants to purchase Common Stock who are entitled to participate in the Rights Offering; (ii) up to 35,714,285 units (the “**Units**”) issuable upon exercise of the Rights, each Unit consisting of one share of Common Stock, 0.25 series A warrants, with each whole warrant representing the right to purchase one share of Common Stock (the “**Series A Warrants**”) and 0.75 series B warrants, with each whole warrant representing the right to purchase one share of Common Stock (the “**Series B Warrants**”) and, together with the Series A Warrants, the “**Warrants**”); (iii) up to 8,928,571 Series A Warrants; (iv) up to 26,785,713 Series B Warrants; (v) up to 35,714,285 shares of Common Stock issuable as part of the Units (the “**Rights Shares**”); (vi) up to 8,928,571 shares of Common Stock issuable upon exercise of the Series A Warrants (the “**Series A Warrant Shares**”) and up to 26,785,713 shares of Common Stock issuable upon exercise of the Series B Warrants (the “**Series B Warrant Shares**”) and, collectively with the Series A Warrant Shares, the “**Warrant Shares**”). The Rights, Units, Rights Shares, Warrants, and Warrant Shares are referred to herein collectively as the “**Securities**.” The offering is being made pursuant to the Registration Statement on Form S-3 (No. 333-216748) (the “**Registration Statement**”) filed with the Securities and Exchange Commission (the “**Commission**”) under the Securities Act of 1933, as amended (the “**Act**”), the prospectus included within the Registration Statement dated October 24, 2017 (the “**Base Prospectus**”), and the prospectus supplement dated February 15, 2018, filed with the Commission pursuant to Rule 424(b) of the Rules and Regulations of the Act (the “**Prospectus Supplement**”). The Base Prospectus and Prospectus Supplement are collectively referred to as the “**Prospectus**.” The Securities are to be distributed or sold, as applicable, by the Company as described in the Registration Statement and the Prospectus.

We have examined and relied upon the Registration Statement and the Prospectus, the Company’s Certificate of Incorporation and By-laws, as currently in effect, and the originals or copies certified to our satisfaction of such records, documents, certificates, memoranda and other instruments as we have deemed relevant in connection with this opinion. We have assumed the genuineness and authenticity of all documents submitted to us as originals, the conformity to originals of all documents submitted to us as copies, and the accuracy, completeness and authenticity of certificates of public officials.

We are licensed to practice in the State of New York. This opinion letter is limited to New York law, the Delaware General Corporation Law and applicable federal law of the United States. We are not rendering any opinion as to compliance with any federal or state antifraud law, rule or regulation relating to securities or to the sale or issuance thereof.

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On the basis of the foregoing, and in reliance thereon, and subject to the qualifications herein stated, we are of the opinion that, on the date of this letter:

1. The Rights, when issued in accordance with the Registration Statement, will have been duly authorized for issuance by all necessary corporate action of the Company and will be the legally valid and binding obligations of the Company enforceable against the Company in accordance with their terms.

2. The Units, when issued and sold in accordance with the Registration Statement, will have been duly authorized for issuance and sale by all necessary corporate action of the Company and will be the legally valid and binding obligations of the Company enforceable against the Company in accordance with their terms.

3. The Rights Shares, when issued as part of the Units in accordance with the Registration Statement, will have been duly authorized for issuance by all necessary corporate action of the Company and will be validly issued, fully paid, and non-assessable.

4. The Warrants will have been duly authorized for issuance by all necessary corporation of the company when issued as part of the Units in accordance with the Registration Statement and duly delivered to purchasers thereof against payment therefore, and will be the legally valid and binding obligations of the Company, enforceable against the Company in accordance with their terms.

5. The Warrant Shares, when issued and sold upon exercise of the Warrants in accordance with the terms thereof and of the Registration Statement, will have been duly authorized for issuance and sale by all necessary corporate action of the Company and will be validly issued, fully paid and nonassessable.

With regard to our opinion regarding the Warrant Shares to be sold upon exercise of the Warrants after the date hereof, we express no opinion to the extent that, notwithstanding its current reservation of shares of Common Stock, future issuances by the Company of securities, including the Warrant Shares, and antidilution adjustments to outstanding securities, including the Warrants, may cause the Warrants to be exercisable for more shares of Common Stock than the number of shares of Common Stock which then are authorized but unissued.

Our opinions are subject to: (i) the effect of bankruptcy, insolvency, reorganization, fraudulent transfer, moratorium or other similar laws relating to or affecting the rights and remedies of creditors; and (ii) the effect of general principles of equity, whether considered in a proceeding in equity or at law (including the possible unavailability of specific performance or injunctive relief), concepts of materiality, reasonableness, good faith and fair dealing, and the discretion of the court before which a proceeding is brought.

We consent to the reference to our firm under the caption "Legal Matters" in the Prospectus and to the filing of this opinion as an exhibit to a Current Report on Form 8-K to be filed with the Commission for incorporation by reference into the Registration Statement. In giving this consent, we do not admit that we are "experts" within the meaning of Section 11 of the Securities Act or within the category of persons whose consent is required by Section 7 of the Securities Act.

Very truly yours,

/s/ The Matt Law Firm, PLLC

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**FORM OF  
INSTRUCTIONS AS TO USE OF SUBSCRIPTION RIGHTS CERTIFICATES  
ACTINIUM PHARMACEUTICALS, INC.**

**Please consult Broadridge Corporate Issuer Solutions, Inc., as to any questions.**

The following instructions relate to a rights offering (the "Rights Offering") by Actinium Pharmaceuticals, Inc., a Delaware corporation ("Actinium"), to the holders of record of its common stock, \$0.001 par value (the "Common Stock") and certain participating warrants, as described in Actinium's prospectus supplement dated February 15, 2018 (as it may be amended from time to time, the "Prospectus Supplement"). Capitalized terms used but not defined herein shall have the meanings ascribed to them in the Prospectus Supplement. Each holder of record of Common Stock or participating warrants at the close of business on February 14, 2018 (the "Record Date") will receive, at no charge, a non-transferable subscription right (the "Subscription Right") for every share of Common Stock held or underlying the participating warrants held at the Record Date.

Subscription Rights exercisable into an aggregate maximum of 35,714,285 Units of Actinium ("Units"), subject to increase as described in the Prospectus Supplement, are being distributed in connection with the Rights Offering. Each Unit is comprised of one share of Common Stock, 0.25 Series A Warrants, and 0.75 Series B Warrants. Each whole Series A Warrant and each whole Series B Warrant will be exercisable for one share of Common Stock. Each whole Subscription Right is exercisable, upon payment of \$0.70 in cash (the "Subscription Price"), to purchase one Unit (the "Basic Subscription Right"). In addition, each Subscription Right also carries the right to subscribe at the Subscription Price for additional Units that are not purchased by other holders pursuant to their Basic Subscription Right (to the extent available, and subject to proration and ownership limitations) (the "Over-Subscription Privilege"). A holder is entitled to exercise an Over-Subscription Privilege only if the holder fully exercises the Basic Subscription Right. See "The Rights Offering" in the Prospectus Supplement.

No fractional Subscription Rights or cash in lieu thereof will be issued or paid. Fractional Subscription Rights will be rounded down to the nearest whole number.

The Subscription Rights will expire at 5:00 p.m., Eastern Time, on March 2, 2018, unless extended ("the "Expiration Date"). If you do not exercise your Subscription Rights before that time, your Subscription Rights will expire and will no longer be exercisable. Actinium will not be required to issue shares to you if the Subscription Agent receives your Subscription Rights Certificate or your subscription payment after that time. Actinium has the option to extend the Rights Offering in its sole discretion, although it does not presently intend to do so. Actinium may extend the Rights Offering by giving oral or written notice to the Subscription Agent before the Expiration Date. If Actinium elects to extend the Rights Offering, Actinium will issue a press release announcing the extension no later than 9:00 a.m., Eastern Time, on the next business day after the most recently announced Expiration Date of the Rights Offering.

The number of Subscription Rights to which you are entitled is printed on the face of your Subscription Rights Certificate. You should indicate your wishes with regard to the exercise of your Subscription Rights by completing the appropriate section on the back of your Subscription Rights Certificate and returning the Subscription Rights Certificate with your payment to the Subscription Agent in the envelope provided.

Series A Warrants and Series B Warrants that are issued as a component of the Unit pursuant to the exercise of the Basic Subscription Rights and Over-Subscription Privilege entitle the holder to purchase one share of Common Stock at an exercise price (subject to adjustment) of \$0.90 and \$1.10, respectively per share. The Warrants are exercisable for cash, or solely during any period when a registration statement for the exercise of the Warrants is not in effect, on a cashless basis. The Series A Warrants and Series B Warrants may be redeemed for \$0.001 per Warrant if Actinium's Common Stock closes above \$1.80 and \$3.30 per share, respectively, for 10 consecutive trading days. See "The Rights Offering" in the Prospectus.

**YOUR SUBSCRIPTION RIGHTS CERTIFICATE MUST BE RECEIVED BY THE SUBSCRIPTION AGENT ON OR BEFORE THE EXPIRATION DATE. PAYMENT OF THE SUBSCRIPTION PRICE OF ALL SUBSCRIPTION RIGHTS EXERCISED, INCLUDING SUBSCRIPTION RIGHTS PURSUANT TO THE OVER-SUBSCRIPTION PRIVILEGE, INCLUDING FINAL CLEARANCE OF ANY CHECKS, MUST BE RECEIVED BY THE SUBSCRIPTION AGENT ON OR BEFORE THE EXPIRATION DATE.**

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**ONCE YOU EXERCISE YOUR SUBSCRIPTION RIGHTS, YOU CANNOT REVOKE THE EXERCISE OF SUCH SUBSCRIPTION RIGHTS. SUBSCRIPTION RIGHTS NOT VALIDLY EXERCISED PRIOR TO THE EXPIRATION DATE OF THE RIGHTS OFFERING WILL EXPIRE. HOLDERS WHO HOLD SUBSCRIPTION RIGHTS THROUGH A BROKER OR OTHER NOMINEE SHOULD VERIFY WITH THE BROKER OR NOMINEE BY WHEN THE INSTRUCTION MUST BE DELIVERED.**

**1. Subscription Rights.** To exercise Subscription Rights, complete your Subscription Rights Certificate and send your properly completed and executed Subscription Rights Certificate, together with payment in full of the Subscription Price for each Unit subscribed for pursuant to the Basic Subscription Right and the Over-Subscription Privilege, to the Subscription Agent. **PLEASE DO NOT SEND RIGHTS CERTIFICATES OR PAYMENTS TO ACTINIUM** . The method of delivery of the Subscription Rights Certificate and the payment of the Subscription Price to the Subscription Agent is at your election and risk. Subscription Rights Certificates and payments must be received by the Subscription Agent prior to the Expiration Date. If you send your Subscription Rights Certificate and payment by mail, then they should be sent by registered mail, properly insured, to arrive before the Expiration Date. If more Units are subscribed for pursuant to the Over-Subscription Privilege than are available for sale, additional Units will be allocated pro rata among holders and subject to ownership limitations, as described in the Prospectus Supplement. The Subscription Rights are non-transferable, and may not be sold, transferred, assigned or given away to anyone.

**2. Acceptance of Payments.** Payments will be deemed to have been received by the Subscription Agent only upon the (i) clearance of an uncertified personal check drawn against a U.S. bank payable to “Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent for Actinium Pharmaceuticals, Inc.,” (ii) receipt of a certified check drawn against a U.S. bank payable to “Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent for Actinium Pharmaceuticals, Inc.,” (iii) receipt of a U.S. Postal money order payable to “Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent for Actinium Pharmaceuticals, Inc.”; or (iv) receipt of a wire transfer of immediately available funds directly to the account maintained by Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent, for purposes of accepting subscriptions in this Rights Offering at

ABA/Routing number: 121000248  
Bank: Wells Fargo  
420 Montgomery Street  
San Francisco, CA 94104 United States  
Beneficiary Account Name: Broadridge Corporate Issuer Solutions  
Account Number: 4124218686  
FFC: Actinium Pharmaceuticals, Inc.  
Account Number: 4399752260

Funds paid by uncertified personal check may take several business days to clear. Accordingly, if you wish to pay the Subscription Price by uncertified personal check, then you should make payment sufficiently in advance of the Expiration Date to ensure its receipt and clearance by that time. To avoid disappointment caused by a failure of your subscription due to your payment not clearing prior to the expiration date, Actinium urges you to consider payment by means of certified or cashier’s check, money order or wire transfer. It is highly recommend that if you intend to pay the Subscription Price by personal check, then your subscription payment should be received by the Subscription Agent well before the Expiration Date. If your personal check does not clear before the Expiration Date, then you will not receive any Units, and Actinium’s only obligation will be to return your subscription payment, without interest or deduction.

**3. Contacting the Subscription Agent.** The address and telephone number of the Subscription Agent are shown below. Delivery to an address other than shown below does not constitute valid delivery.

*By mail:*

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Broadridge Corporate Issuer Solutions, Inc.  
Attn: BCIS Re-Organization Dept.  
P.O. Box 1317  
Brentwood, New York 11717-0693  
(855) 793-5068 (toll free)

*By hand or overnight courier:*

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Broadridge Corporate Issuer Solutions, Inc.  
Attn: BCIS IWS  
51 Mercedes Way  
Edgewood, New York 11717  
(855) 793-5068

**4. Partial Exercises; Effect of Over- and Under-Payments.** If you exercise less than all of the Subscription Rights evidenced by your Subscription Rights Certificate, the Subscription Agent will issue to you a new Subscription Rights Certificate evidencing the unexercised Subscription Rights. However, if you choose to have a new Subscription Rights Certificate sent to you, you may not receive any such new Subscription Rights Certificate in sufficient time to permit exercise of the Subscription Rights evidenced thereby. If you do not indicate the number of Units to be subscribed for on your Subscription Rights Certificate, or if you indicate a number of Units that does not correspond with the aggregate Subscription Price payment you delivered, you will be deemed to have subscribed for the maximum number of Units that may be subscribed for, under both the Basic Subscription Right and the Over-Subscription Privilege, for the aggregate Subscription Price you delivered. If the Subscription Agent does not apply your full Subscription Price payment to your purchase of Units, then the Subscription Agent will return the excess amount to you by mail, without interest or deduction, within 10 business days after the Expiration Date. If you subscribe for fewer than all of the Units represented by your Subscription Rights Certificate, then the unexercised Subscription Rights will become null and void on the Expiration Date.

**5. Deliveries to holders.** The following deliveries and payments to you will be made to the address shown on the face of your Subscription Rights Certificate:

(a) **Basic Subscription Right.** The shares of Common Stock and Warrants that are purchased pursuant to the valid exercise of Basic Subscription Rights to purchase Units will be issued in book-entry, or uncertificated, form meaning that you will receive a direct registration (DRS) account statement from our transfer agent reflecting ownership of these securities if you are a holder of record of Common Stock or participating warrants. The Subscription Agent will arrange for the issuance of the Common Stock and Warrants as soon as practicable after the expiration of the Rights Offering, payment for the Units subscribed for has cleared, and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected. For holders who hold shares of Common Stock or participating warrants in the name of a custodian bank, broker, dealer, or other nominee, DTC will credit the account with such nominee with the securities purchased in the Rights Offering.

(b) **Over-Subscription Privilege.** The shares of Common Stock and Warrants that are purchased pursuant to the valid exercise of Over-Subscription Privileges to purchase additional Units will also be issued in book-entry, or uncertificated, form meaning that you will receive a DRS account statement from our transfer agent reflecting ownership of these securities if you are a holder of record of Common Stock or participating warrants. The Subscription Agent will arrange for the issuance of the Common Stock and Warrants as soon as practicable after the expiration of the Rights Offering, payment for the Units subscribed for has cleared, and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected. For holders who hold shares of Common Stock or participating warrants in the name of a custodian bank, broker, dealer, or other nominee, DTC will credit the account with such nominee with the securities purchased in the Rights Offering.

(c) **Excess Payments.** If you exercised your Over-Subscription Privilege and are allocated less than all of the Units for which you wished to oversubscribe, then your excess Subscription Price payment for Units that were not allocated to you will be returned by the Subscription Agent to you by mail, without interest or deduction, within 10 business days after the Expiration Date.

## 6. Execution.

(a) **Execution by Registered Holder.** The signature on the Subscription Rights Certificate must correspond with the name of the registered holder exactly as it appears on the face of the Subscription Rights Certificate without any alteration or change whatsoever. Persons who sign the Subscription Rights Certificate in a representative or other fiduciary capacity must indicate their capacity when signing and, unless waived by the Subscription Agent in its sole and absolute discretion, must present to the Subscription Agent satisfactory evidence of their authority so to act.

(b) **Execution by Person Other Than Registered Holder.** If the Subscription Rights Certificate is executed by a person other than the holder named on the face of the Subscription Rights Certificate, proper evidence of authority of the person executing the Subscription Rights Certificate must accompany the same unless the Subscription Agent, in its discretion, dispenses with proof of authority.

7. **Method of Delivery.** The method of delivery of Subscription Rights Certificates and payment of the Subscription Price to the Subscription Agent will be at the election and risk of the Subscription Rights holder. If sent by mail, it is recommended that they be sent by registered mail, properly insured, with return receipt requested, and that a sufficient number of days be allowed to ensure delivery to and receipt by the Subscription Agent prior to the Expiration Date.

8. **No Revocation.** If you exercise any of your Basic Subscription Rights or Over-Subscription Privilege, you will not be permitted to revoke or change the exercise or request a refund of monies paid. You should not exercise your Subscription Rights unless you are sure that you wish to purchase Units at the Subscription Price.

Once you exercise your Subscription Rights, you cannot revoke the exercise of such Subscription Rights even if you later learn information that you consider to be unfavorable.

9. **Special Provisions Relating to the Exercise of Subscription Rights through the Depository Trust Company.** In the case of Subscription Rights that are held of record through The Depository Trust Company (“DTC”), exercises of the Subscription Rights may be effected by instructing DTC to transfer Subscription Rights from the DTC account of such holder to the DTC account of the Subscription Agent, together with certification as to the aggregate number of Subscription Rights exercised pursuant to the Subscription Right by each beneficial owner of Subscription Rights on whose behalf such nominee is acting, and payment of the Subscription Price for each Unit subscribed for. Banks, brokers and other nominee holders of Subscription Rights who exercise the Basic Subscription Right and the Over-Subscription Privilege on behalf of beneficial owners of Subscription Rights will be required to certify to the Subscription Agent and Actinium as to the aggregate number of Subscription Rights that have been exercised, and the number of Units that are being subscribed for pursuant to the Over-Subscription Privilege, by each beneficial owner of Subscription Rights (including such nominee itself) on whose behalf such nominee holder is acting. In the event such certification is not delivered in respect of a Subscription Rights Certificate, the Subscription Agent shall for all purposes (including for purposes of any allocation in connection with the Over-Subscription Privilege) be entitled to assume that such certificate is exercised on behalf of a single beneficial owner.

10. **Questions and Request for Additional Materials.** For questions regarding the Rights Offering, assistance regarding the method of exercising Subscription Rights or for additional copies of relevant documents, please contact the Information Agent as follows:

**Broadridge Corporate Issuer Solutions, Inc.**  
**(855) 793-5068 (toll free)**

**FORM OF  
LETTER TO STOCKHOLDERS AND PARTICIPATING WARRANT HOLDERS  
WHO ARE RECORD HOLDERS  
ACTINIUM PHARMACEUTICALS, INC.**

Subscription Rights to Purchase Units  
Offered Pursuant to Subscription Rights Distributed to Stockholders and Participating Warrant Holders of  
Actinium Pharmaceuticals, Inc.

February 15, 2018

Dear Stockholder and Participating Warrant Holder:

This letter is being distributed by Actinium Pharmaceuticals, Inc. (the "Company") to all holders of record of shares of its common stock, \$0.001 par value per share (the "Common Stock") and participating warrants as of 5:00 p.m., Eastern Time, on February 14, 2018 (the "Record Date"), in connection with a distribution in a rights offering (the "Rights Offering") of non-transferable subscription rights (the "Subscription Rights") to subscribe for and purchase units ("Units"). Each Unit entitles the holder to one share of the Company's Common Stock, 0.25 Series A Warrants, and 0.75 Series B Warrants. Each whole Series A Warrant and whole Series B Warrant will be exercisable for one share of Common Stock. The Subscription Rights and Units are described in the prospectus supplement dated February 15, 2018 (a copy of which accompanies this notice) (as it may be amended from time to time, the "Prospectus Supplement").

Pursuant to the Rights Offering, the Company is issuing Subscription Rights to subscribe for up to 35,714,285 Units, subject to increase as described in the Prospectus Supplement, on the terms and subject to the conditions described in the Prospectus Supplement, at a subscription price of \$0.70 per Unit (the "Subscription Price").

The Subscription Rights may be exercised at any time during the subscription period, which commences on February 15, 2018 and ends at 5:00 p.m., Eastern Time, on March 2, 2018, unless extended in the sole discretion of the Company and Maxim Group LLC (as it may be extended, the "Expiration Date").

As described in the Prospectus Supplement, holders will receive one Subscription Right for every share of Common Stock held or underlying participating warrants held owned on the Record Date, evidenced by non-transferable Subscription Rights certificates (the "Subscription Rights Certificates"). Each Subscription Right entitles the holder to purchase one Unit at the Subscription Price (the "Basic Subscription Right").

Based on 80,072,900 shares of common stock and 21,608,333 participating warrant outstanding as of February 14, 2018, we would grant Subscription Rights to acquire 101,681,233 Units but will only accept subscriptions for 35,714,285 Units, subject to increase as described in the Prospectus Supplement. Accordingly, sufficient Units may not be available to honor your subscription in full. If exercises of Basic Subscription Rights exceed the number of Units available in the Rights Offering, we will allocate the available Units pro-rata among the record holders exercising the Basic Subscription Rights in proportion to the number of shares of our Common Stock held or underlying participating warrants held on the Record Date by each of those record holders, relative to the number of shares owned on the Record Date by all record holders exercising the Over-Subscription Privilege. If this pro-rata allocation results in any record holders receiving a greater number of Units than the record holder subscribed for pursuant to the exercise of the Basic Subscription Rights, then such record holder will be allocated only that number of Units for which the record holder subscribed, and the remaining Units will be allocated among all other record holders exercising their Basic Subscription Rights on the same pro rata basis described above. The proration process will be repeated until all Units have been allocated. If for any reason the amount of Units allocated to you is less than you have subscribed for, then the excess funds held by the Subscription Agent on your behalf will be returned to you, without interest or deduction within 10 business days after the Rights Offering has expired, and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected, and we will have no further obligations to you.

The Company will not issue fractional shares or warrants. Fractional shares or warrants resulting from the exercise of the Basic Subscription Rights and the Over-Subscription Privileges will be eliminated by rounding down to the nearest whole Unit.

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Enclosed are copies of the following documents:

1. Prospectus Supplement
2. Subscription Rights Certificate
3. Instructions As to Use of Subscription Rights Certificates
4. Notice of Important Tax Information
5. A return envelope, addressed to Broadridge Corporate Issuer Solutions, Inc. (the "Subscription Agent")

Your prompt attention is requested. To exercise your Subscription Rights, you should deliver the properly completed and signed Subscription Rights Certificate, with payment of the Subscription Price in full for each Unit subscribed for pursuant to the Basic Subscription Right and Over-Subscription Privilege, if applicable, to the Subscription Agent, as indicated in the Prospectus Supplement. The Subscription Agent must receive the properly completed and duly executed Subscription Certificate and full payment of the Subscription Price, including final clearance of any checks, prior to the Expiration Date.

You cannot revoke the exercise of your Subscription Right. Subscription Rights not exercised at or prior to 5:00 p.m., Eastern Time, on the Expiration Date will expire.

**ANY QUESTIONS OR REQUESTS FOR ASSISTANCE CONCERNING THE RIGHTS OFFERING SHOULD BE DIRECTED TO BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE INFORMATION AGENT, TOLL-FREE AT (855) 793-5068.**

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**FORM OF  
LETTER TO BROKERS, DEALERS, BANKS AND OTHER NOMINEES  
ACTINIUM PHARMACEUTICALS, INC.**

Subscription Rights to Purchase Units  
Offered Pursuant to Subscription Rights Distributed to Shareholders and Participating Warrant Holders of  
Actinium Pharmaceuticals, Inc.

February 15, 2018

To Brokers, Dealers, Banks and Other Nominees:

This letter is being distributed by Actinium Pharmaceuticals, Inc. (the "Company") to brokers, dealers, banks and other nominees in connection with the rights offering (the "Rights Offering") by the Company to subscribe for and purchase Units (as defined below), pursuant to non-transferable subscription rights ("Subscription Rights") distributed to all holders of record of the Company's common stock, \$0.001 par value per share (the "Common Stock") and participating warrants, as of 5:00 p.m., Eastern Time, on February 14, 2018 (the "Record Date"). Each Unit entitles the holder to one share of the Company's Common Stock, 0.25 Series A Warrants and 0.75 Series B Warrants. Each whole Series A Warrant and whole Series B Warrant will be exercisable for one share of Common Stock. The Subscription Rights and Units are described in the prospectus supplement dated February 15, 2018 (a copy of which accompanies this notice) (as it may be amended from time to time, the "Prospectus Supplement").

Pursuant to the Rights Offering, the Company is issuing Subscription Rights to subscribe for up to 35,714,285 Units, subject to increase as described in the Prospectus Supplement, on the terms and subject to the conditions described in the Prospectus Supplement, at a subscription price of \$0.70 per Unit (the "Subscription Price").

The Subscription Rights may be exercised at any time during the subscription period, which commences on February 15, 2018 and ends at 5:00 p.m., Eastern Time, on March 2, 2018, unless extended in the sole discretion of the Company and Maxim Group LLC (as it may be extended, the "Expiration Date").

As described in the Prospectus Supplement, each beneficial owner of shares of Common Stock or participating warrants is entitled to one Subscription Right for every share of Common Stock held or underlying the participating warrants held by such beneficial owner on the Record Date, evidenced by non-transferable Subscription Rights certificates (the "Subscription Rights Certificates") registered in the name of such owner or its nominee. Each Subscription Right entitles holder to purchase one Unit at the Subscription Price (the "Basic Subscription Right").

Holders who fully exercise their Basic Subscription Right will be entitled to subscribe for additional Units that remain unsubscribed as a result of any unexercised Basic Subscription Right (the "Over-Subscription Privilege"). Subject to stock ownership limitations described in the Prospectus Supplement, if sufficient Units are available, all Over-Subscription Privilege requests will be honored in full. If Over-Subscription Privilege requests for Units exceed the remaining Units available, the remaining Units will be allocated pro-rata among holders who over-subscribe based on the number of shares of Common Stock held or underlying the participating warrants held by all holders exercising the Over-Subscription Privilege. If this pro rata allocation results in any holder receiving a greater number of Units than the holder subscribed for, then such holder will be allocated only the number of Units for which the holder oversubscribed, and the remaining Units will be allocated among all holders exercising the Over-Subscription Privilege on the same pro rata basis described above. The proration process will be repeated until all Units have been allocated.

The Company will not issue fractional shares. Fractional shares resulting from the exercise of the Basic Subscription Rights and the Over-Subscription Privileges will be eliminated by rounding down to the nearest whole Unit. Any excess subscription payment received by the Subscription Agent will be returned, without interest or penalty, within 10 business days following the expiration of the Offering.

The Company is asking persons who hold shares of the Company's Common Stock or participating warrants beneficially, and who have received the Subscription Rights distributable with respect to those securities through a broker, dealer, bank, or other nominee, to contact the appropriate institution or nominee and request it to effect the transactions for them.

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If you exercise Subscription Rights on behalf of beneficial owners, you will be required to certify to the Subscription Agent and the Company, in connection with such exercise, as to the aggregate number of Subscription Rights that have been exercised pursuant to the Basic Subscription Right, whether the Basic Subscription Rights of each beneficial owner of Subscription Rights on whose behalf you are acting has been exercised in full, and the number of Units being subscribed for pursuant to the Over-Subscription Privilege by each beneficial owner of Subscription Rights on whose behalf you are acting.

The Company is asking you to contact your clients for whom you hold shares of Common Stock registered in your name or the name of your nominee to obtain instruction with respect to the Subscription Rights.

Enclosed are copies of the following documents:

1. Prospectus Supplement
2. Form of Letter to Shareholders Who are Beneficial Holders
3. Form of Beneficial Owner Election Form
4. Form of Nominee Holder Certification

All commissions, fees and other expenses (including brokerage commissions and transfer taxes), other than fees and expenses of the Subscription Agent, incurred in connection with the exercise of the Subscription Rights will be for the account of the holder, and none of such commissions, fees or expenses will be paid by the Company or the Subscription Agent.

Your prompt action is requested. To exercise the Subscription Rights, you should deliver the properly completed and signed Subscription Rights Certificate, with payment of the Subscription Price in full for each Unit subscribed for pursuant to the Basic Subscription Right and Over-Subscription Privilege, if applicable, to the Subscription Agent, as indicated in the Prospectus Supplement. The Subscription Agent must receive the properly completed and duly executed Subscription Rights Certificate and full payment of the Subscription Price, including final clearance of any checks, prior to the Expiration Date.

A holder cannot revoke the exercise of a Subscription Right. Subscription Rights not exercised at or prior to 5:00 p.m., Eastern Time, on the Expiration Date will expire.

**ANY QUESTIONS OR REQUESTS FOR ASSISTANCE CONCERNING THE RIGHTS OFFERING SHOULD BE DIRECTED TO BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE INFORMATION AGENT, TOLL-FREE AT (855) 793-5068.**

**NOTHING HEREIN OR IN THE ENCLOSED DOCUMENTS SHALL MAKE YOU OR ANY OTHER PERSON AN AGENT OF THE COMPANY, THE DEALER-MANAGER, THE SUBSCRIPTION AGENT, THE INFORMATION AGENT OR ANY OTHER PERSON MAKING OR DEEMED TO BE MAKING OFFERS OF THE SECURITIES ISSUABLE UPON VALID EXERCISE OF THE SUBSCRIPTION RIGHTS, OR AUTHORIZE YOU OR ANY OTHER PERSON TO MAKE ANY STATEMENTS ON BEHALF OF ANY OF THEM WITH RESPECT TO THE OFFERING, EXCEPT FOR STATEMENTS MADE IN THE PROSPECTUS SUPPLEMENT.**

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**FORM OF  
BROKER LETTER TO CLIENTS WHO ARE BENEFICIAL HOLDERS  
ACTINIUM PHARMACEUTICALS, INC.**

Subscription Rights to Purchase Units  
Offered Pursuant to Subscription Rights Distributed to Shareholders of Actinium Pharmaceuticals, Inc.

February 15, 2018

To our Clients:

This letter is being distributed to our clients who are holders of Actinium Pharmaceuticals, Inc. (the “Company”) common stock, \$0.001 par value per share (the “Common Stock”) and participating warrants, as of 5:00 p.m., Eastern Time, on February 14, 2018 (the “Record Date”), in connection with a distribution in a rights offering (the “Rights Offering”) of non-transferable subscription rights (the “Subscription Rights”) to subscribe for and purchase units (“Units”). Each Unit entitles the holder to one share of the Company's Common Stock, 0.25 Series A Warrants and 0.75 Series B Warrants. Each whole Series A Warrant and whole Series B Warrant will be exercisable for one share of Common Stock. The Subscription Rights and Units are described in the prospectus supplement dated February 15, 2018 (a copy of which accompanies this notice) (, as may be amended from time to time, the “Prospectus Supplement”).

Pursuant to the Rights Offering, the Company is issuing Subscription Rights to subscribe for up to 35,714,285 Units, subject to increase as described in the Prospectus Supplement, on the terms and subject to the conditions described in the Prospectus Supplement, at a subscription price of \$0.70 per Unit (the “Subscription Price”).

The Subscription Rights may be exercised at any time during the subscription period, which commences on February 15, 2018 and ends at 5:00 p.m., Eastern Time, on March 2, 2018, unless extended by the Company in its sole discretion (as it may be extended, the “Expiration Date”).

As described in the Prospectus Supplement, holders will receive one Subscription Right for every share of Common Stock held or underlying the participating warrant held on the Record Date, evidenced by non-transferable Subscription Rights certificates (the “Subscription Rights Certificates”). Each Subscription Right entitles the holder to purchase one Unit at the Subscription Price (the “Basic Subscription Right”).

Based on 80,072,900 shares of common stock and 21,608,333 participating warrant outstanding as of February 14, 2018, we would grant Subscription Rights to acquire 101,681,233 Units but will only accept subscriptions for 35,714,285 Units, subject to increase as described in the Prospectus Supplement. Accordingly, sufficient Units may not be available to honor your subscription in full. If exercises of Basic Subscription Rights exceed the number of Units available in the Rights Offering, we will allocate the available Units pro-rata among the record holders exercising the Basic Subscription Rights in proportion to the number of shares of our Common Stock held or underlying the participating warrants held each of those record holders, relative to the number of shares held or underlying the participating warrants held on the Record Date by all record holders exercising the Over-Subscription Privilege. If this pro-rata allocation results in any record holders receiving a greater number of Units than the record holder subscribed for pursuant to the exercise of the Basic Subscription Rights, then such record holder will be allocated only that number of Units for which the record holder subscribed, and the remaining Units will be allocated among all other record holders exercising their Basic Subscription Rights on the same pro rata basis described above. The proration process will be repeated until all Units have been allocated. If for any reason the amount of Units allocated to you is less than you have subscribed for, then the excess funds held by the Subscription Agent on your behalf will be returned to you, without interest or deduction within 10 business days after the Rights Offering has expired, and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected, and we will have no further obligations to you.

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The Company will not issue fractional shares. Fractional shares resulting from the exercise of the Basic Subscription Rights and the Over-Subscription Privileges will be eliminated by rounding down to the nearest whole Unit.

Enclosed are copies of the following documents:

1. Prospectus Supplement
2. Form of Beneficial Owner Election Form

THE MATERIALS ENCLOSED ARE BEING FORWARDED TO YOU AS THE BENEFICIAL OWNER OF COMMON STOCK OR PARTICIPATING WARRANTS HELD BY US IN YOUR ACCOUNT BUT NOT REGISTERED IN YOUR NAME. EXERCISES OF SUBSCRIPTION RIGHTS MAY BE MADE ONLY BY US AS THE RECORD OWNER AND PURSUANT TO YOUR INSTRUCTIONS.

Accordingly, we request instructions as to whether you wish us to elect to subscribe for any Units to which you are entitled pursuant to the terms and subject to the conditions set forth in the enclosed Prospectus Supplement and other materials. However, we urge you to read the Prospectus Supplement and other enclosed materials carefully before instructing us to exercise your Subscription Rights.

Your instructions to us should be forwarded as promptly as possible in order to permit us to exercise Subscription Rights on your behalf in accordance with the provisions of the Rights Offering. The Rights Offering will expire at 5:00 p.m., Eastern Time, on the Expiration Date. You are encouraged to forward your instructions to us before the Expiration Date to allow us ample time to act upon your instructions. A holder cannot revoke the exercise of a Subscription Right.

If you wish to have us, on your behalf, exercise the Subscription Rights for any Units to which you are entitled, please so instruct us by timely completing, executing, and returning to us the Beneficial Owner Election Form enclosed with this notice.

**ANY QUESTIONS OR REQUESTS FOR ASSISTANCE CONCERNING THE RIGHTS OFFERING SHOULD BE DIRECTED TO BROADRIDGE CORPORATE ISSUER SOLUTIONS, INC., THE INFORMATION AGENT, TOLL-FREE AT (855) 793-5068.**

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**FORM OF  
BENEFICIAL OWNER ELECTION FORM  
ACTINIUM PHARMACEUTICALS, INC.**

The undersigned acknowledge(s) receipt of your letter and the enclosed materials referred to therein relating to the rights offering (the "Rights Offering") by Actinium Pharmaceuticals, Inc., a Delaware corporation (the "Company"), of non-transferable subscription rights (the "Subscription Rights") to purchase units (the "Units"), each such Unit comprised of a share of the Company's Common Stock, \$0.001 par value ("Common Stock"), 0.25 Series A Warrants, and 0.75 Series B Warrants. Each Series A Warrant and Series B Warrant will be exercisable for one share of the Company's Common Stock.

This will instruct you whether to exercise Subscription Rights to purchase Units distributed with respect to the shares of Common Stock or participating warrants held by you for the account of the undersigned, pursuant to the terms and subject to the conditions set forth in the prospectus supplement, dated February 15, 2018 (as it may be amended from time to time, the "Prospectus Supplement"). (Check the applicable boxes and provide all required information.)

- Please DO NOT EXERCISE SUBSCRIPTION RIGHTS for Units.
- Please EXERCISE SUBSCRIPTION RIGHTS for Units as set forth below:

	<u>No. of Units</u>		<u>Per Unit Subscription Price</u>	=	<u>Payment</u>
Basic Subscription Right	[ ]	X	\$0.70	=	\$[ ]
Over-Subscription Privilege	[ ]	X	\$0.70	=	\$[ ]
Total Payment Required					\$[ ]

If you spoke with a broker who solicited such exercise, please indicate the name and contact information of the person you spoke with: \_\_\_\_\_.

- Payment in the following amount is enclosed \$\_\_\_\_\_ (must match Total Payment Required above)
- Please deduct payment from the following account maintained by you as follows:

Type of Account:

Account No.:

Amount to be deducted: \$

I (we) on my (our) own behalf, or on behalf of any person(s) on whose behalf, or under whose directions, I am (we are) signing this form:

- irrevocably elect to purchase the number of Units indicated above upon the terms and conditions specified in the Prospectus Supplement; and
- agree that if I (we) fail to pay for the shares I (we) have elected to purchase, the exercise will be invalid.

Signature:

Name:

Title:

Address:

Telephone:

Date: \_\_\_\_\_, 2018

**FORM OF  
NOMINEE HOLDER CERTIFICATION  
ACTINIUM PHARMACEUTICALS, INC.**

The undersigned, a bank, broker, dealer, trustee, depository, or other nominee of non-transferable subscription rights (the "Subscription Rights") to purchase units ("Units") of Actinium Pharmaceuticals, Inc. (the "Company"), said Units each comprised of one share of Common Stock, 0.25 Series A Warrants, and 0.75 Series B Warrants pursuant to the Subscription Rights offering described and provided for in the Company's Prospectus Supplement dated February 15, 2018, hereby certifies to the Company and Broadridge Corporate Issuer Solutions, Inc., as Subscription Agent for such Rights Offering, that (1) the undersigned has exercised, on behalf of the beneficial owners thereof (which may include the undersigned), the number of Subscription Rights on the terms and subject to the conditions set forth in the Prospectus Supplement specified below pursuant to the Basic Subscription Right (as defined in the Prospectus Supplement) and, on behalf of beneficial owners of Subscription Rights who have subscribed for the purchase of additional Units pursuant to the Over-Subscription Privilege (as defined in the Prospectus Supplement), the number of Units specified below, listing separately below each such exercised Basic Subscription Right and the corresponding Over-Subscription Privilege (without identifying any such beneficial owner), and (2) to the extent a beneficial owner has elected to subscribe for Units pursuant to the Over-Subscription Privilege, each such beneficial owner's Basic Subscription Right has been exercised in full:

<b>Number of Shares Owned on the Record Date</b>	<b>Individual Soliciting Broker (if any)</b>	<b>Number of Units Subscribed for Pursuant to the Basic Subscription Right</b>	<b>Number of Units Subscribed for Pursuant to the Over-Subscription Privilege</b>
1.			
2.			
3.			
4.			
5.			
6.			
7.			

Name of Nominee Holder

By:

Name:

Title:

Phone Number:

Fax Number:

Dated:

Provide the following information, if applicable:

DTC Participant Number

DTC Participant

By:

Name:

Title:

DTC Basic Subscription

Confirmation Number(s)

Dated:

**FORM OF  
NOTICE OF IMPORTANT TAX INFORMATION  
ACTINIUM PHARMACEUTICALS, INC.**

The tax information is provided in connection with the prospectus of Actinium Pharmaceuticals, Inc. ("Actinium") dated February 15, 2018 (the "Prospectus Supplement").

Under the U.S. federal income tax laws, dividend payments (including constructive dividends) that may be made by Actinium on shares of its Common Stock acquired through the exercise of the Subscription Rights or exercise of the Series A Warrants or Series B Warrants, themselves issued through the exercise of the Subscription Rights, may be subject to backup withholding. Generally such payments will be subject to backup withholding unless the holder (i) is exempt from backup withholding or (ii) furnishes the payer with its correct taxpayer identification number ("TIN") and certifies, under penalties of perjury, that the number provided is correct and provides certain other certifications. Each holder that exercises Subscription Rights and wants to avoid backup withholding must, unless an exemption applies, provide the Subscription Agent, as Actinium's agent in respect of the exercised Subscription Rights, with such holder's correct TIN (or with a certification that such holder is awaiting a TIN) and certain other certifications by completing the enclosed Form W-9 (Request for Taxpayer Identification Number and Certification).

Certain holders (including, among others, corporations and certain foreign individuals) are exempt from these backup withholding and reporting requirements. In general, in order for a foreign holder to qualify as an exempt recipient, that holder must, in the case of a foreign individual, submit a properly completed Form W-8BEN, Certificate of Foreign Status of Beneficial Owner for United States Tax Withholding and Reporting (Individuals) or, in the case of a foreign corporation, Form W-8BEN-E, Certificate of Status of Beneficial Owner for United States Tax Withholding and Reporting (Entities) or other appropriate form (instead of a Form W-9), signed under the penalties of perjury, attesting to such holder's foreign status. Such Form W-8BEN or Form W-8BEN-E may be obtained from the Subscription Agent. Although a foreign holder may be exempt from backup withholding, payments of dividends may be subject to withholding tax, currently at a 30% rate (or, if certain tax treaties apply, such applicable lower rate) or withholding tax at a rate of 30% under FATCA unless an exemption from FATCA withholding is certified. Exempt U.S. holders should indicate their exempt status on Form W-9 to avoid possible erroneous backup withholding. See the enclosed Form W-9 (Request for Taxpayer Identification Number and Certification) for additional instructions. Holders are urged to consult their own tax advisors to determine whether they are exempt from withholding and reporting requirements.

If backup withholding applies, Actinium or the Subscription Agent, as the case may be, will be required to withhold (currently at a 24% rate) on any dividend payments made to a holder that exercises Subscription Rights. Backup withholding is not an additional tax. Rather, the amount of backup withholding can be credited against the U.S. federal income tax liability of the holder subject to backup withholding, provided that the required information is provided to the Internal Revenue Service ("IRS"). If backup withholding results in an overpayment of taxes, a refund may be obtained.

A holder that exercises Subscription Rights is required to give the Subscription Agent the TIN of the record owner of the Subscription Rights. If such record owner is an individual, the TIN is generally the taxpayer's social security number. For most other entities, the TIN is the employer identification number. If the Subscription Rights are in more than one name or are not in the name of the actual owner, consult the enclosed Form W-9 (Request for Taxpayer Identification Number and Certification) for additional guidelines on which number to report. If the Subscription Agent is not provided with the correct TIN in connection with such payments, the holder may be subject to a penalty imposed by the IRS.