



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

DIVISION OF
CORPORATION FINANCE

September 18, 2013

Via Email

Sergio Traversa
Chief Executive Officer
Actinium Pharmaceuticals, Inc.
501 Fifth Avenue, 3rd Floor
New York, NY 10017

**Re: Actinium Pharmaceuticals, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed August 22, 2013
File No. 333-187313**

Dear Mr. Traversa:

We have reviewed the above-referenced filing and your response letter, and have the following comments. Where we reference prior comments, we are referring to our April 11, 2013 letter.

Description of Business

Our Corporate History and Background

Acquisition of Actinium, page 36

1. We note your response to prior comment 18, in which you advise that you are seeking to register the resale of certain shares of your common stock with respect to which Actinium Corporation shareholders had not provided signed share exchange agreements as of the initial filing of the registration statement. As previously requested, please provide us with your legal analysis of whether the share exchange was completed on the date you initially filed your registration statement. In other words, provide a legal analysis under applicable state law discussing at what point you believe Actinium Corporation shareholders became, or will become, irrevocably bound to exchange the shares subject only to conditions outside their control (e.g., upon the December 28, 2013 "closing date" by virtue of the September 2012 shareholder vote approving the exchange, or upon each shareholder's execution of the Share Exchange Agreement, or upon the occurrence of some other event(s)). Please cite to relevant law that supports your conclusions. We again refer you for guidance to Question 139.06 of the Division of Corporation Finance's Compliance and Disclosure Interpretations of Securities Act Sections.

Corporate History of Actinium, page 37

2. We note your disclosure that “Tomab™-b has completed a Phase I/II design trial.” Please tell us whether this trial was conducted in any way with humans. Additionally, please confirm whether this trial was conducted in the United States. Further, it is unclear from the disclosure whether you have applied to the FDA for an IND for this drug. Please advise. If you do not have an IND for this drug, please specifically state so in your disclosure, and provide an estimated timeline for your IND application.

Management’s Discussion and Analysis of Financial Condition and Results of Operations

Recent Debt and Equity Offerings, page 49

3. We note your revised disclosure in response to prior comment 22. Please discuss possible proceeds that you may receive from the exercise of consulting firm and placement agent warrants. Additionally, you indicate that you intend to conduct offerings of either stock and/or debt and engage in licensing activities to meet your capital needs beyond 2013. Revise to quantify the amount of funds you need to raise beyond 2013 to continue to fund your operating needs for the next twelve months. As initially requested, in your plan of operations, please include a more detailed discussion of the extent to which you will be able to implement your business plan, and describe the individual stages of the plan that you will be able to complete if none, 25%, 50% or 75% of these funds are raised. Finally, ensure this disclosure is consistent with your disclosure throughout your registration statement and/or you clearly disclose the period your disclosure is referencing. In this regard, we note you cite differing amounts on pages 6 and 15 (\$4.6 million and \$25 million, respectively).

Changes in Registrant’s Certifying Accountant, page 52

4. We note that the disclosure provided in response to prior comment 2 references subsequent periods through September 30, 2012. Please revise this date to be through December 28, 2012, as Item 304 requires the disclosure to relate to the “subsequent interim period preceding such resignation, declination or dismissal” and is intended to be the date of the change of accountants rather than the most recent interim period for financial reporting purposes.

Directors and Executive Officers, page 53

5. We note from the revised disclosure provided on page 53 in response to prior comment 23 that Messrs. Traversa and Seth were appointed as directors pursuant to the Company’s charter by your former Series E preferred stockholders. Please advise as to the identity of the Series E preferred stockholders.

Security Ownership of Certain Beneficial Owners and Management, page 59

6. We note the revisions made to footnote 5 in response to prior comment 30. Please identify the natural person or persons who have sole or shared voting and/or investment power over the securities beneficially owned by Actinium Holdings Ltd. Alternatively, tell us why you do not believe you are required to do so.

Part II

Indemnification of Directors and Officers, page 71

7. We acknowledge your response to prior comment 1 advising that you are now incorporated in Delaware. We note, however, that you continue to state here that you are a Nevada corporation and discuss Nevada law in this section. Please revise.

Signatures, page 74

8. We acknowledge your response to prior comment 36 and we reissue the comment. The registration statement must be signed by your controller or principal accounting officer in addition to your principal executive officer, principal financial officer, and a majority of the board of directors. Any person who occupies more than one of the specified positions that must sign on behalf of the registrant must indicate each capacity in which they sign. Please revise.

Exhibit Index, page 75

9. In response to prior comment 37, you indicate that you have not filed your transaction management agreement with Jamess Capital Group, LLC, as an exhibit to the registration statement because it was terminated on March 31, 2013. It appears, however, that it may nonetheless be an agreement defining the rights of security holders under Item 601(b)(4) of Regulation S-K or a material agreement under Item 601(b)(10). We note in this regard your disclosure stating that you are seeking to register the resale of shares of common stock underlying warrants issued pursuant to the transaction management agreement with James Capital Group. Please file the agreement, or provide us with legal analyses to support your conclusion that you are not required to file this agreement by Item 601(b)(4) or (10). In this regard, please advise whether the company has any material ongoing rights and obligations under the agreement.

Sergio Traversa
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Page 4

You may contact Melissa Feider, Staff Accountant, at (202) 551-3379 or Kathleen Collins, Accounting Branch Chief, at (202) 551-3499 if you have questions regarding comments on the financial statements and related matters. Please contact Luna Bloom, Staff Attorney, at (202) 551-3194 or me at (202) 551-3483 with any other questions. Should you require further assistance, you may contact Barbara C. Jacobs, Assistant Director, at (202) 551-3730.

Sincerely,

/s/ Katherine Wray

Katherine Wray
Attorney-Advisor

cc: Via E-Mail
Thomas Slusarczyk
Hiscock & Barclay, LLP