

Mail Stop 4720

December 1, 2009

Paul F. Truex
President and Chief Executive Officer
Anthera Pharmaceuticals, Inc.
25801 Industrial Boulevard, Suite B
Hayward, California 94545

**Re: Anthera Pharmaceuticals, Inc.
Registration Statement on Form S-1/A
Filed November 16, 2009
File No. 333-161930**

Dear Mr. Truex:

We have reviewed your amended filing together with the response letter sent by your counsel dated November 16, 2009 and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

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

Critical Accounting Policies and Estimates

Share-Based Compensation, page 49

1. In your response to prior comment three, you acknowledge that you will provide the requested disclosure when the estimating offering price has been established.

We will finalize our evaluation of the issues incorporated in this comment at that time.

Compensation

Compensation Discussion and Analysis, page 109

Equity Incentive Compensation, page 112

2. We note your response to prior comment six. Please include in your disclosure the individual contributions to your corporate goals made by each named executive officer and, to the extent possible, how these contributions were weighted by the compensation committee in awarding equity incentive grants.

Notes to Financial Statements

8. Stock Options, page F-24

3. Please refer to prior comments four and nine. We continue to believe that your disclosure does not allow investors a sufficient understanding of the factors underlying the increase in fair value of your common stock from \$1.51 per share at April 15, 2009 to \$7.70 per share at October 13, 2009. Please revise your disclosure to describe and quantify the key assumptions used in your most recent valuation, particularly the expected timing of the A-002 commercialization and the future revenues and operating profits that you expect this product candidate will generate. Also, please quantify the impact of each factor on your enterprise value at October 13, 2009 and disclose the methods and assumptions used to allocate enterprise value to your common stock at this date.

* * *

As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

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You may contact Frank Wyman at (202) 551-3660 or Lisa Vanjoske at (202) 551-3614 if you have questions regarding comments on the financial statements and related matters. Please contact Scot Foley at (202) 551-3383, Suzanne Hayes at (202) 551-3675 or me at (202) 551- 3715 with any other questions.

Sincerely,

Jeffrey Riedler
Assistant Director

cc: Bradley A. Bugdanowitz, Esq.
Mitzi Chang, Esq.
Seth D. Greenstein, Esq.
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