

Mail Stop 4720

November 2, 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 October 19, 2009  
File No. 333-161930**

Dear Mr. Truex:

We have reviewed your amended filing together with the response letter sent by your counsel dated October 19, 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.

Form S-1/A

Graphics

1. We note you are finalizing your plans for a Phase 2b clinical trial for A-623 for the treatment of Systemic Lupus Erythematosus and plan to initiate the study in the second half of 2010. Do you have an active IND for this clinical trial? If you

do not, please clarify that you do not have an active IND and explain why you must do to obtain an active IND.

Use of Proceeds, page 35

2. We note your response to our prior comment 12. It is not clear from your disclosure whether you expect to complete the identified phase of development for each product candidate using the proceeds of this offering or if you expect to move beyond the identified level of testing. For example, with respect to A-002, please clarify whether you expect to complete the VISTA-16 study using the proceeds from this offering. If you anticipate that you will do additional phase 3 studies, please state whether proceeds from this offering will be used for additional clinical trials.

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

Critical Accounting Policies and Estimates

Share-Based Compensation, page 47

3. In your responses to prior comments 13 and 15, 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 these comments at that time.
4. Please refer to prior comment 14. Your response does not describe or quantify the significant assumptions underlying the fair value determinations for your common stock by the Board of Directors. Also, it does not describe the methods and assumptions used to value the preferred stock rights (e.g. liquidation preferences) and to allocate enterprise value to your common stock. Please disclose this information for each grant date valuation through October 13, 2009. Ensure that your revised disclosure quantifies the impact on your enterprise value of the specific positive and negative factors described on page 49.

Compensation

Compensation Discussion and Analysis, page 105

Equity Incentive Compensation, page 108

5. We note your response to our prior comment 19 and your statement that your corporate goals focused on: 1) developing and implementing an adjusted clinical development plan and 2) obtaining additional financing. Additionally, we note your discussion on page 109 relating to equity incentive grants. That discussion

- states that corporate goals include milestones relating to your preclinical and clinical studies and fundraising. To the extent your corporate goals relating to preclinical and clinical milestones and financing needs were more specifically defined to your executive officers, they should be in turn more specifically described in the context of both of these discussions. If they were not more specifically defined, please explain the reference to milestones on page 109 and how these milestones were intended to be used.
6. We note your response to prior comment 21. Your discussion of the equity incentive grants states that your compensation committee considers “individual performance, based on informal goals (which focus on the individual’s contribution to our corporate goals, which generally include milestones related to our preclinical and clinical studies and fundraiser) and input from management.” This disclosure implies that there were actual goals identified for each named executive officer. Please describe these goals and discuss the level of individual achievement, including how such level of achievement was used to determine the equity incentive grant for each officer. Alternatively, if the compensation committee used its discretion in awarding equity incentive grants, please discuss the factors that the committee considered in granting equity awards to each named executive officer.
  7. Please identify the specific factors your board of directors considered when it determined that the fair value of the option grants made in October 2009 was \$4.50 per share. To the extent that these factors differed from the historical ones the board employed in making earlier fair value determinations, please distinguish them in your disclosure.

#### Notes to Financial Statements

##### 1. Organization and Description of Business, Page F-8

8. Please revise the reference to ASC 910 or explain to us how it refers to FASB Statement No. 7.

##### 8. Stock Options, page F-23

9. Please refer to prior comment 24(b). Your response that the independent valuations were contemporaneous with the grant dates is inconsistent with the disclosure on page 48, which states that the most recent independent valuation was as of October 15, 2008. Please explain this apparent inconsistency and revise your disclosure accordingly. Ensure that your revised disclosure explains the factors that you considered in extrapolating from the fair value per share reflected in the October 15, 2008 valuation to the October 13, 2009 fair value of \$4.50 per share.

\* \* \*

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.

Paul F. Truex  
Anthera Pharmaceuticals, Inc.  
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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.

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.  
Goodwin Procter LLP  
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