Mail Stop 4720

October 13, 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
Filed September 15, 2009
File No. 333-161930

Dear Mr. Truex:

We have reviewed your filing 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

General

1. Please provide us proofs of all graphic, visual, or photographic information you will provide in the prospectus prior to its use. Please note, we may have comments regarding these materials.

2. Prior to effectiveness, please have a FINRA representative call the Staff, to confirm that FINRA has completed its review of the transaction.

3. Please note that comments relating to your confidential treatment request will be sent under separate cover.

Prospectus Summary, page 1

4. As currently written, your summary focuses on the benefits and advantages of your company without addressing any disadvantages. Please revise your summary to discuss your losses and accumulated deficit, your expected additional losses over the next several years, your negative working capital, and your lack of operating revenues. This disclosure should be quantified and be presented as prominently as your disclosure relating to the positive attributes of your business.

5. We note your statement on page 3 that the Phase 1 clinical trials of A-623 showed the candidate was safe and effective in selecting modulating and reducing B-cells in lupus patients. Please note that the FDA determines safety and efficacy. You may state that the product was well tolerated and that it appeared to achieve the trials endpoints. Please revise accordingly here and throughout your filing.

6. To the extent that you include statements about the product candidate's success in achieving endpoints, you should state whether the results were statistically significant, include the p values and explain what the p values mean.

Our Strategy, page 4

7. The discussion of the risks and uncertainties should be as prominent as your discussion of your strategy. Please expand the discussion to provide more details of the identified risks and include a more prominent heading.

Risk Factors, page 8

8. Please delete the reference to additional risks and uncertainties that are not presently known to you. It is not appropriate to warn against risks that are not identified in your registration statement.

"We will need substantial additional capital in the future . . .," page 9

9. Please revise your risk factor heading to state that the auditors have issued a going concern opinion. Additionally, please revise the discussion to state that you had negative working capital of $7,453,556 as of June 30, 2009.

"The timing of the milestone and royalty payments we are required to make…," page 10

10. We note that you have requested confidential treatment of the individual milestone payments required in your agreements with Eli Lilly and Shionogi and Amgen. Please disclose the aggregate milestone payments pursuant to each of these agreements. While we are willing to consider the confidential treatment request for each individual amount payable pursuant to each agreement, we consider the aggregate amount payable pursuant to each agreement to be material. Similarly, provide this information in the "Licenses" discussion.

Use of Proceeds, page 33

11. If you expect to pay any of the amounts owed to Amgen using proceeds from this offering, please revise to disclose this information. If you do not expect to use proceeds from this offering to pay any of the amounts owed to Amgen, please revise the risk factor titled "Our ability to develop A-623 depends on our ability to make payment or agree to alternative payment terms with Amgen regarding an unpaid license fee" to disclose that you do not plan to use proceeds from this offering to pay amounts owed to Amgen.

12. Please indicate the stage of development you expect to achieve for each product candidate with the proceeds from this offering.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 41

Critical Accounting Policies and Estimates, page 44

Share-Based Compensation, page 45

13. If you do not have an estimated offering price in your next filing, we will defer our evaluation of stock-based compensation until your estimated offering price is specified. Please continue to provide us with updates to the requested analysis for all equity related transactions through the effectiveness date of your registration statement.

14. Please expand your disclosure to explain and quantify the difference between the cash price of the most recently sold preferred stock to the estimated fair value of the common stock at each valuation date. Explain the causes of changes in fair value of the common stock (significant milestones achieved, etc) and disclose all significant assumptions. It is not clear why the common stock would be valued at such a large discount to the preferred in 2009, 2008 and 2007. You should consider a tabular format to explain the changes in fair value of the common stock

over time. Clarify the date the valuation was finalized and the date for which the value was determined, e.g., on October 31, 2008 the value of the common stock as of September 30, 2008 was determined.

15. Please disclose the intrinsic value of outstanding vested and unvested options based on the estimated IPO price and the options outstanding as of the most recent balance sheet date presented in the registration statement.

Business, page 54

Historical Clinical Studies, page 63

16. Please explain the meaning of the p values.

Licenses, page 81

17. We note that you have requested confidential treatment of the milestone payments and royalty rates in your agreements with Eli Lilly and Shionogi and Amgen. While we are willing to consider your request for confidential treatment of individual milestone payments and the actual royalty rates, we consider the aggregate milestone payments pursuant to each agreement and a royalty range to be material information. Since your royalty payments obligations are tiered based on net sales, it would be sufficient to provide a range and explain how the rate changes as net sales change. For example, state that the royalty rate is in the high single digits but decreases to the low single digits once net sales of a certain threshold are achieved.

Manufacturing and Supply, page 83

18. We note your statement that you believe there are alternative sources of supply that can satisfy your clinical study requirements without significant delay or material additional costs. This statement appears to contradict the information discussed in the risk factor titled “Any failure by our third-party manufacturers on which we rely to produce our preclinical and clinical drug supplies…” on page 21. Please explain the apparent contradiction. If you are substantially dependent on any agreements with manufacturers, you should identify these manufacturers, identify which product candidates they manufacture, describe the material terms of any agreements with these manufacturers and file the agreements as exhibits. If you believe you are not substantially dependent on these agreements, please explain the basis for your belief.

Compensation, page 99

Compensation Discussion and Analysis, page 100

19. We note your discussion on page 102 that you did not pay any bonuses based on corporate goals in 2008. Please note that the corporate and individual goals should be identified regardless of whether bonuses were paid based on the achievement of these goals. Please specify the individual performance goals for each of your Named Executive Officers and the corporate, or operational, goals that were in place in 2008. To the extent that these goals were quantified, your discussion should also be quantified. Please be as specific as possible.

20. We note that equity incentive grant guidelines for your named executive officers range from 1% to 2.75%. Please clarify whether there is a target grant set for each named executive officer or whether the range is applicable to all named executive officers.

21. To the extent that equity incentive grants are made at the discretion of the board of directors and the recommendation of the compensation committee, you should describe the factors that were considered in determining these equity incentive grants, including the informal goals.

Principal Stockholders, page 122

22. Please clarify who or what individual(s) or entities Dr. James Healy shares voting and investment power with regarding the shares held by Soffinova Venture Partners VI, L.P.

23. Please clarify whether Dr. A. Rachel Leheny has investment and/or dispositive power in addition to voting power with respect to the shares held by Caxton Advantage Life Sciences Fund, L.P.

Financial Statements

Note 8. Stock Options, page F-23

24. Please disclose the following information for equity instruments granted during the twelve months prior to June 30, 2009:

    a. For each grant date, the number of options or shares granted, the exercise price, the fair value of the common stock, and the intrinsic value, if any, per option (the number of options may be aggregated by moth or quarter and the information presented as weighted average per-share amounts); and

b. Whether the valuation used to determine the fair value of the equity instruments was contemporaneous or retrospective

* * *

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.

You may contact Frank Wyman at (202) 551-3660 if you have questions regarding comments on the financial statements and related matters. Please contact Scot Foley at (202) 551-3383 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
Three Embarcadero Center, 24th Floor
San Francisco, California 94111-4003