

Mail Stop 4720

May 29, 2009

Jeffrey L. Wade, J.D.  
Executive Vice President and General Counsel  
Lexicon Pharmaceuticals, Inc.  
8800 Technology Forest Place  
The Woodlands, Texas 77381

**Re: Lexicon Pharmaceuticals, Inc.  
Preliminary Proxy Statement on Schedule 14A  
Filed May 22, 2009  
File No. 000-30111**

Dear Mr. Wade:

This is to advise you that we have limited our review of the above proxy statement to the issue identified below. We will make no further review of this filing.

Where indicated, we think you should revise your document in response to this comment. 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. After reviewing your response, we may or may not raise additional comments.

Preliminary Proxy Statement filed on May 22, 2009

Proposed Amendment to Our Certificate of Incorporation, page 4

1. Please expand your disclosure on page 4 to state the price at which the shares under the securities purchase agreement will be issued and the number of shares that could be issued under the agreement.

\* \* \*

As appropriate, please revise your proxy statement in response to this comment. You may wish to provide us with a marked copy of the revised document to expedite our review. Please furnish a response letter that keys your response to our comment. Detailed cover letters greatly facilitate our review. Please file your cover letter on EDGAR under the form type label CORRESP. Please understand that we may have additional comments after reviewing your amendment and response to our comment.

Jeffrey L. Wade, J.D.  
Executive Vice President and General Counsel  
Lexicon Pharmaceuticals, Inc.  
May 29, 2009  
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We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filings reviewed by the staff to be certain that they have provided all information investors require. 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.

In connection with responding to our comment, please provide, in writing, a statement from the company acknowledging that

- the company is responsible for the adequacy and accuracy of the disclosure in the filings;
- staff comments or changes to disclosure in response to staff comments in the filings reviewed by the staff do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments 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 our review of your filing or in response to our comments on your filing.

Please contact Jennifer Riegel at (202) 551-3575 with any questions.

Sincerely,

Jeffrey Riedler  
Assistant Director