

Mail Stop 6010

July 17, 2007

Arthur T. Sands, M.D., Ph.D.
President and Chief Executive Officer
Lexicon Pharmaceuticals, Inc.
8800 Technology Forest Place
The Woodlands, Texas 77381

**Re: Lexicon Pharmaceuticals, Inc.
Correspondence Submitted July 17, 2007 for Schedule 14A
File No. 0-30111**

Dear Dr. Sands:

We have limited our review of your filing to those issues we have addressed in our comment. Where indicated, we think you should revise your document in response to the 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.

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.

1. We note the proposed revisions to your Use of Proceeds disclosure. You now provide more information about your plans and strategy, but it is still unclear how you plan to allocate the proceeds from the financing. You state you plan to spend \$165 million on research and development and \$33 million on “other general corporate purposes such as general and administrative expenses and capital expenditures to support [your] research and development efforts.” Please break up these figures further by doing the following:
 - Please specify what is involved in “research and development,” and state an approximate amount for each use that falls within this category. We note that the three bullet points in your revised disclosure might be what you are referring to. To the extent the research and development efforts will involve

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specific product candidates, you should (a) identify each product candidate you plan to research and develop with the funds from the financing, (b) state how much funds you plan to spend on each candidate, and (c) identify the stage of the development process to which you anticipate the funds will carry each candidate.

- Please be more specific in describing your plans for the \$33 million. For example, state how much you plan to spend on G&A expenses and how much you plan to spend on capital expenditures. Also identify any other uses that are currently described as “other general corporate purposes,” and state an approximate amount for each.

* * *

As appropriate, please amend your filing and respond to this comment within 10 business days or tell us when you will provide us with a response. You may wish to provide us with a marked copy of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your response to our comment 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 response to our comment.

Please contact Greg Belliston at (202) 551-3861 or me at (202) 551-3715 with any questions.

Sincerely,

Jeffrey Riedler
Assistant Director

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