

Via Facsimile and U.S. Mail

August 5, 2010

James B. Murphy
Vice President and Chief Financial Officer
OXiGENE, Inc.
701 Gateway Boulevard, Suite 210
South San Francisco, CA 94080

**Re: OXiGENE, Inc.
Form 10-K for the Fiscal Year Ended December 31, 2009
Filed March 16, 2010
File No. 000-21990**

Dear Mr. Murphy:

We have reviewed your filing and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by amending your filing, by providing the requested information, or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your filing and the information you provide in response to these comments, we may have additional comments.

Research and Development and Collaborative Agreements, page 10

1. Elsewhere in your disclosure you make reference to your Research Collaboration and License Agreement with Bristol-Myers Squibb Company, which you have filed as an exhibit to your annual report. Please revise your disclosure to include the material terms of this agreement. If you believe this disclosure is unnecessary, please provide us with the basis for this belief.
2. Please revise the disclosure concerning your two license agreements to state the range of royalties that may be paid to Arizona State University and to Baylor University. An acceptable royalty range is as follows: "single-digits," "teens,"

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“twenties,” etc. Please also state the duration and termination provisions of the agreement with Baylor University.

Patents and Trade Secrets, page 19

3. Please expand your disclosure concerning your patents and proprietary rights to identify the material patents you own or license by jurisdiction, duration and the product to which each patent relates.

* * * *

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 the information the Securities Exchange Act of 1934 and all applicable Exchange Act rules 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 responding to our comments, please provide a written statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments 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.

Please contact Scot Foley at (202) 551-3383 or me at (202) 551-3715 with any questions.

Sincerely,

Jeffrey Riedler
Assistant Director