

Via Facsimile and U.S. Mail
Mail Stop 4720

December 16, 2009

Peter S. Lawrence
President and Chief Operating Officer
ArQule, Inc.
19 Presidential Way
Woburn, MA 01801

**Re: ArQule, Inc.
Definitive Proxy Statement filed April 10, 2009
File No. 000-21429**

Dear Mr. Lawrence:

We have reviewed your filing and have the following comment. In our comment, we ask you to provide us with information to better understand your disclosure. Where it requests you to revise disclosure, the information you provide should show us what the revised disclosure will look like and identify the annual or quarterly filing, as applicable, in which you intend to first include it. If you do not believe that revised disclosure is necessary, explain the reason in your response. After reviewing the information provided, we may raise additional comments and/or request that you amend your filing.

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 comment or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Definitive Proxy Statement filed April 10, 2009

Compensation Discussion and Analysis, page 12

The Compensation Committee's Process, page 13

1. You state that your Compensation Committee benchmarks total compensation for all of your employees to the median compensation of employees performing similar job functions at biotechnology companies nationally, adjusted for differences in company size, stage of development, location, and performance. You have disclosed the survey from which it appears that your benchmarked companies were derived and provided the names of "some of the individual biotechnology companies whose published executive compensation data the Compensation Committee has used." Please provide us with draft disclosure for

your 2010 proxy statement which provides the specific selection criteria used in the database to select the companies in your benchmark group. Alternatively, if no specific selection criteria can be used in the database to re-create the list, please revise to provide all the names of the companies.

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Please respond to this comment within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter that keys your response to our comment and provide any requested information. Detailed letters greatly facilitate our review. Please file your letter on EDGAR under the form type label CORRESP.

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 Exchange Act of 1934 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.

In connection with responding to our comment, please provide, in your letter, a 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.

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 comment on your filing.

Peter S. Lawrence
ArQule, Inc.
December 16, 2009
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Please contact Jennifer Riegel at (202) 551-3575 or me at (202) 551-3715 with any questions.

Sincerely,

Jeffrey Riedler
Assistant Director