



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

Mail Stop 4546

September 15, 2016

Paolo Pucci
Chief Executive Officer
ArQule, Inc.
One Wall Street
Burlington, Massachusetts 01803

**Re: ArQule, Inc.
Registration Statement on Form S-3
Filed September 2, 2016
File No. 333-213456**

Dear Mr. Pucci:

We have limited our review of your registration statement to those issues we have addressed in our 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 by amending your registration statement and providing the requested information. 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 registration statement and the information you provide in response to these comments, we may have additional comments.

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1. It appears that the aggregate market value of your voting and non-voting common equity held by non-affiliates during the 60 days prior to the date of filing of the registration statement may not have exceeded \$75 million, as required by General Instruction I.B.1 of Form S-3. If you believe that you are eligible to register securities on Form S-3 in reliance on General Instruction I.B.6, please comply with Instruction 7 to the General Instruction. Otherwise, please advise us as to how you determined that the aggregate market value of your voting and non-voting common equity held by non-affiliates is \$75 million or more.

Incorporation of Certain Documents by Reference, page 18

2. Please amend this section to include the current reports on Form 8-K filed on February 29, 2016 and March 4, 2016 among the documents you are incorporating by reference. See Item 12(a)(2) of Form S-3.

Exhibit 5.1

3. Please file an opinion of counsel that includes an opinion that the warrants will be binding obligations of the registrant. Please refer to Section II.B.1.f of Staff Legal Bulletin No. 19.

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 Act of 1933 and all applicable Securities 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.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement, please provide a written statement from the company 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.

Please refer to Rules 460 and 461 regarding requests for acceleration. 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. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Paolo Pucci
ArQule, Inc.
September 15, 2016
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Please contact Scot Foley at (202) 551-3383 or Mary Beth Breslin at (202) 551-3625 with any questions.

Sincerely,

/s/ Mary Beth Breslin for

Suzanne Hayes
Assistant Director
Office of Healthcare and Insurance

cc: Richard E. Baltz, Esq.