



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

DIVISION OF
CORPORATION FINANCE

Mail Stop 4546

October 7, 2016

Joshua R. Disbrow
Chief Executive Officer
Aytu BioScience, Inc.
373 Inverness Parkway
Suite 206
Englewood, Colorado 80112

**Re: Aytu BioScience, Inc.
Registration Statement on Form S-1
Filed September 21, 2016
File No. 333-213738**

Dear Mr. Disbrow:

We have limited our review of your registration statement to those issues we have addressed in our comment.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comment applies 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 this comment, we may have additional comments.

Exhibit 5.1

1. We note that the opinion is qualified to the Delaware General Corporation Law. Given that the warrants you intend to offer are governed by the laws of the State of New York pursuant to Section 9.5 of the warrant agreement filed as Exhibit 4.6, please provide an opinion of counsel that the warrants constitute binding obligations under New York law. For guidance, please refer to Section II.B.1.f of Staff Legal Bulletin No. 19, available on the Commission's website.

We remind you that the company and its management are responsible for the accuracy and adequacy of their disclosures, notwithstanding any review, comments, action or absence of action by the staff.

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

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: Alexander M. Donaldson, Esq.