



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

DIVISION OF
CORPORATION FINANCE

August 23, 2013

Via E-mail

Federico Pignatelli
Chief Executive Officer
Biolase, Inc.
4 Cromwell
Irvine, California 92618

**Re: Biolase, Inc.
Amendment No. 2 to Registration Statement on Form S-3
Filed August 14, 2013
File No. 333-190158**

Dear Mr. Pignatelli:

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. Where 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.

Fee Table

1. We note your response to prior comment 1 and your retained reference on your prospectus cover to "combinations of securities." Please tell us what you mean by that phrase, and provide us your analysis of whether it refers to a separate security that should be included in the fee table.
2. We note your response to prior comment 2; however, if you have an existing rights plan, the rights must be registered on this registration statement as a separate security. See the Division of Corporation Finance's Securities Act Forms Compliance and Disclosure Interpretation 116.16 available on the Commission's web site. It is unclear whether you have an existing rights plan because, while you refer to a plan on page 2, on page 6 you do not incorporate the description of your classes of securities contained in a registration statement filed under the Exchange Act as required by Form S-3 Item 12 (a)(3). Please revise your fee table and incorporation by reference disclosure as appropriate.

Prospectus

3. Please provide us your analysis of whether the operating and financial matters mentioned in the press release attached to your Form 8-K dated August 19, 2013 represent developments or are driven by trends that should be addressed in your prospectus per Item 11 of Form S-3.

Exhibit 5.1

4. We note your response to prior comment 6; however, the last sentence of the penultimate paragraph of the exhibit appears to exclude laws applicable to the opinions required by Regulation S-K Item 601(b)(5). Likewise, given the statement in this exhibit that the “opinion [is] subject to” the list of laws identified on the last page of the opinion, it is unclear whether you have filed an opinion that states whether the common and preferred stock will, when sold, be non-assessable; if the opinion is “subject to” laws providing creditors’ rights, does counsel mean that the stock might be assessable? Please advise or file a revised opinion. Also, please note that we are not making any determination at this time regarding whether the qualifications, conditions, assumptions or exclusions currently in this exhibit would be appropriate for the opinion that you must file at the time of each takedown; see for example Section II.B.2.a of Staff Legal Bulletin No. 19 (October 14, 2011), available on the Commission’s web site.

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.

Federico Pignatelli
Biolase, Inc.
August 23, 2013
Page 3

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.

Please contact Jay Mumford at 202-551-3637 or me at 202-551-3617 with any questions.

Sincerely,

/s/ Russell Mancuso

Russell Mancuso
Branch Chief

cc (via e-mail): Michael C. Carroll Esq.