



DIVISION OF
CORPORATION FINANCE

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

May 11, 2011

Mr. Jonathan S. Wolfson
Chief Executive Officer
Solazyme, Inc.
225 Gateway Boulevard
South San Francisco, CA 94080

**Re: Solazyme, Inc.
Amendment No. 3 to Registration Statement on Form S-1
Filed May 4, 2011
File No. 333-172790**

Dear Mr. Wolfson:

We have reviewed your registration statement 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 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.

General

1. We note your responses to comment one of our letter dated April 7, 2011 and comment two of our letter dated April 27, 2011. In your responses, you state that the timing of your Algenist product launch and of the Food Navigator USA reporter's visit to your facility were not planned to coincide with the timing of your initial public offering. Additionally, you state, among other things, that the articles do not refer to the offering. Please note that restrictions on communications during the quiet period should be observed regardless of when the communications were originally scheduled to take place and regardless of whether they were intended to coincide with the offering. Please confirm your understanding. In addition, your responses do not address whether the publicity received by the company in these and other articles, many of which are included on your website, conditions the market such that the articles should be considered offers within the meaning of Section 2(a)(3) of the Securities Act of 1933, as amended. Please provide us with a supplemental legal analysis that addresses this issue. In the alternative, please file the articles as free writing prospectuses on EDGAR in compliance with

Securities Act Rule 433, or tell us why you are not required to do so. We note that some of the information in these pieces does not appear to have been previously included in your registration statement. Finally, please remove the articles from your website, or tell us why you do not believe such removal is necessary. Refer to Securities Act Rule 433(e). Please note that we may have additional comments after reviewing your response.

2. We note that throughout the registration statement, you deleted references to the joint venture agreement with Therabotronics, LLC. However, references to Therabotronics still appear on pages 56, F-9, and F-10. Please advise, or revise your registration statement accordingly.

Risk Factors, page 11

Risks Related to Our Business and Industry, page 11

We may not be able to obtain regulatory approval . . . , page 21

3. In the third paragraph, we note your statement that you “are applying for FDA confirmation of [y]our GRAS self affirmations for algal oil and algal flour, but there can be no assurance that [you] will receive it.” According to information we found on the FDA’s website, it appears as if the FDA engages in a voluntary notification program with respect to GRAS self affirmations rather than confirming such self affirmations. We found this information under Questions 10 and 11 under “Guidance for Industry: Frequently Asked Questions About GRAS” at www.fda.gov. Please consider whether your disclosure about the steps you have taken or plan to take with the FDA is consistent with the FDA procedure applicable to GRAS self affirmations.

Significant Partner Agreements, page 46

4. You disclose that, in May 2011, you granted Bunge Limited a warrant to purchase 1,000,000 shares of your common stock at an exercise price of \$13.50 per share. Please tell us how you plan to account for these warrants and the applicable accounting literature supporting your accounting.

Management’s Discussion and Analysis . . . , page 48

5. Please amend your filing to quantify the expected stock compensation amortization expense for 2011 and 2012. Refer to Section 501.04 of the Financial Reporting Codification for guidance.

Stock Based Compensation, page 52

6. You disclose on pages 56 and 57 that, for the options issued on December 15, 2010, February 22, 2011, and March 7, 2011, the value was indicated by a private sale of shares of common stock from one stockholder to another stockholder. For each transaction, please identify the parties involved, date of the transaction, number and price of shares exchanged, and consideration received. Additionally, please tell us the number of options held by the parties involved for each transaction noted above.

Consolidated Financial Statements, page F-1

7. Please update your financial statements pursuant to Rule 3-12 of Regulation S-X.

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.

Mr. Jonathan S. Wolfson
Solazyme, Inc.
May 11, 2011
Page 4

You may contact Tracey McKoy at (202) 551-3772 or Alfred Pavot at (202) 551-3738 if you have questions regarding comments on the financial statements and related matters. Please contact Jessica Dickerson at (202) 551-3749 or me at (202) 551-3765 with any other questions.

Sincerely,

Pamela Long
Assistant Director

cc: Alan F. Denenberg
Davis Polk & Wardwell LLP
via facsimile at (650) 752-3604