



DIVISION OF
CORPORATION FINANCE

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

September 15, 2010

Mr. Peter Wirth
Executive Vice President, Legal and Corporate Development
Genzyme Corporation
Genzyme Center
500 Kendall Street
Cambridge, MA 02142

**Re: Genzyme Corporation
Registration Statement on Form S-4
Filed September 7, 2010
File No. 333-169257**

Dear Mr. Wirth:

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.

Registration Statement on Form S-4

1. We note that you are registering the exchange notes in reliance on our position enunciated in Exxon Capital Holdings Corp., SEC No-Action Letter (April 13, 1988). See also Morgan Stanley & Co. Inc., SEC No-Action Letter (June 5, 1991) and Shearman & Sterling, SEC No-Action Letter (July 2, 1993). Accordingly, please provide us with a supplemental letter stating that you are registering the exchange offer in reliance on our position contained in these letters and include the representations contained in the Morgan Stanley and Shearman & Sterling no-action letters.

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.

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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.

You may contact Rose Zukin, Staff Attorney at (202) 551-3239 or me at (202) 551-3710 with any questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Paul Kinsella
Ropes & Gray LLP
One International Place
Boston, MA 02110