



DIVISION OF
CORPORATION FINANCE

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

April 20, 2010

Via Facsimile (617) 951-7050 and US Mail

Henri A. Termeer
Chairman & Chief Executive Officer
Genzyme Corporation
500 Kendall Street
Cambridge, MA 02142

**Re: Genzyme Corporation
 Amendment No. 3 to Preliminary Proxy Statement on
 Schedule 14A**

Filed April 16, 2010

File No. 0-14680

Dear Mr. Termeer:

We have reviewed your amended filing and response letter and have the following comments.

General

1. Please supplementally advise us of the basis for concluding that Biogen Idec's Rituxan is a competitor product to the Genzyme drugs listed. For example, as of December 31, 2009, were there any approved competitive indications for any Biogen Idec products that competed with Genzyme products? Has the Food & Drug Administration provided an updated list of approved competitive indications? Please provide such information supplementally.
2. We refer to response 2 of your letter dated April 16, 2010. Please provide supplementally the specific source of data regarding the revenue of Genzyme's competitive products and Biogen Idec's competitive product to further support the conclusion that competitive indications were well in excess of the thresholds referenced. Where the basis of support is other documents such as the market data you reference, please provide either complete copies of the documents or sufficient pages of information so that we can assess the context of the information upon which you rely. Mark any supporting documents provided to identify the specific information relied upon, such as quoted statements, financial statement line items, press releases, and mathematical computations, and identify the sources of all data utilized.
3. We note your responses to prior comments 1 and 2. Support for each statement or assertion of opinion or belief must be self-evident, disclosed in the proxy materials, or provided to the staff on a supplemental basis. Please confirm that the company and/or its representatives will set forth the basis for any statements they make in future communications, whether oral or written, if such soliciting communications allege the possible applicability of Section 8 the Clayton Act.

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Please respond to the above comments promptly and comply with our comments when disseminating information in the future. If you believe that compliance with our comments is not appropriate, please provide the basis for your view in your response letter filed via EDGAR and tagged as "CORRESP". You should be aware, however, that we may have additional comments based on your supplemental response.

We urge all persons who are responsible for the accuracy and adequacy of the

Mr. H. Termeer
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disclosure in the filings to be certain that the filing includes all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. 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.

In connection with responding to our comments, please provide, in writing, a statement from the participants acknowledging that:

- the participants are responsible for the adequacy and accuracy of the disclosure in the filings;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filings; and
- the participants may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filings or in response to our comments on your filings.

Please direct any questions to me at (202) 551-3757. You may also contact me via facsimile at (202) 772-9203. Please send all correspondence to us at the following ZIP code: 20549-3628.

Sincerely,

Mellissa Campbell Duru
Special Counsel
Office of Mergers and Acquisitions

Cc (via facsimile): Paul Kinsella, Esq.