



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

DIVISION OF
CORPORATION FINANCE

August 10, 2010

Michael S. Wyzga
Chief Financial Officer
Genzyme Corporation
500 Kendall Street
Cambridge, MA 02142

**Re: Genzyme Corporation
Form 10-K for Fiscal Year Ended December 31, 2009
Filed March 1, 2010
File No. 000-14680**

Dear Mr. Wyzga:

We have completed our review of your filings and do not have any further comments at this time.

Sincerely,

Jeffrey Riedler
Assistant Director

cc: Andrew J. Sung
Ropes & Gray LLP
One International Place
Boston, MA 02110-2624