



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