



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

DIVISION OF
CORPORATION FINANCE

Mail Stop 4720

December 23, 2015

VIA E-mail

John M. Maraganore, Ph. D.
Chief Executive Officer
Alnylam Pharmaceuticals, Inc.
300 Third Street,
Cambridge, MA 02142

Re: Alnylam Pharmaceuticals, Inc.
Form 10-K for Fiscal Year Ended December 31, 2014
Filed February 13, 2015
File No. 001-36407

Dear Dr. Maraganore:

We have completed our review of your filing. We remind you that our comments or changes to disclosure in response to our comments do not foreclose the Commission from taking any action with respect to the company or the filing and the company 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. We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing include the information the Securities Exchange Act of 1934 and all applicable rules require.

Sincerely,

/s/ Jim B. Rosenberg

Jim B. Rosenberg
Senior Assistant Chief Accountant
Office of Healthcare and Insurance