

Via Facsimile and U.S. Mail
Mail Stop 6010

March 2, 2009

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

Re: Alnylam Pharmaceuticals, Inc.
Form 10-K for the Fiscal Year Ended December 31, 2007
File No. 000-50743

Dear Dr. Maraganore:

We have completed our review of your Form 10-K and have no further comments at this time.

Sincerely,

Carlton Tartar
Branch Chief