

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