



DIVISION OF
CORPORATION FINANCE

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

January 8, 2018

Michael P. Mason
Vice President of Finance and Treasurer
Alnylam Pharmaceuticals, Inc.
300 Third Street
Cambridge, MA 02142

Re: ALNYLAM PHARMACEUTICALS, INC.
Form 10-K for Fiscal Year Ended December 31, 2016
Filed February 15, 2017
File No. 001-36407

Dear Mr. Mason:

We have reviewed your December 11, 2017 response to our comment letter and have the following comment. In our comment, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to the comment within ten business days by providing the requested information or advise us as soon as possible when you will respond. If you do not believe our comment applies to your facts and circumstances, please tell us why in your response.

After reviewing your response to the comment, we may have additional comments.

Notes to Consolidated Financial Statements

3. Significant Agreements, page 97

1. We acknowledge the information provided in your response to our prior comment 1 of our November 27, 2017 comment letter. As required by ASC 730-20-50-1b, please confirm to us that you will disclose herein the costs incurred for each of your significant agreements. We would expect the amount disclosed to include the costs you provided in your response and your reasonable estimate of other costs incurred albeit for which you may not track separately for each agreement. In this regard, it would appear that a reasonable estimate would be attainable, given that you track hours incurred for the purpose of billing your counterparties. Finally, we believe additional disclosure in your research and development expense discussion of your MD&A of the nature and amount of research and development costs incurred related to your agreements would be

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informative.

You may contact Frank Wyman at 202-551-3660 or Jim Rosenberg at 202-551-3679 with any questions.

Division of Corporation Finance
Office of Healthcare & Insurance