

| OMB APPROVAL                                 |           |
|--|-----------|
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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

**STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP**

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

|   |   |  |
|---|---|--|
| 1. Name and Address of Reporting Person*<br><u>Vaishnav Akshay</u><br><hr/> (Last) (First) (Middle)<br>300 THIRD STREET<br><hr/> (Street)<br>CAMBRIDGE MA 02139<br><hr/> (City) (State) (Zip) | 2. Issuer Name and Ticker or Trading Symbol<br><u>ALNYLAM PHARMACEUTICALS, INC.</u><br>[ ALNY ] | 5. Relationship of Reporting Person(s) to Issuer<br>(Check all applicable)<br>Director 10% Owner<br>Officer (give title below) Other (specify below)<br>X EVP, R&D |
|   | 3. Date of Earliest Transaction (Month/Day/Year)<br>12/20/2017                                  |  |
| 4. If Amendment, Date of Original Filed (Month/Day/Year)  |   |  |

**Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned**

| 1. Title of Security (Instr. 3) | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) |   | 4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) |            |       | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Indirect Beneficial Ownership (Instr. 4) |
|---------------------------------|--------------------------------------|--|--------------------------------|---|---|------------|-------|---|--|---|
|                                 |                                      |  | Code                           | V | Amount  | (A) or (D) | Price |   |  |   |
| Common Stock                    | 12/19/2017                           |  | G                              | V | 320   | D          | \$0   | 11,215  | D  |   |
| Common Stock                    |                                      |  |                                |   |   |            |       | 338   | I  | by Managed Account <sup>(1)</sup>                     |

**Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)**

| 1. Title of Derivative Security (Instr. 3)         | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) |   | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) |     | 6. Date Exercisable and Expiration Date (Month/Day/Year) |                 | 7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4) | 8. Price of Derivative Security (Instr. 5) | 9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4) | 10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 11. Nature of Indirect Beneficial Ownership (Instr. 4) |
|--|--|--------------------------------------|--|--------------------------------|---|--|-----|--|-----------------|---|--|--|---|--|
|  |  |                                      |  | Code                           | V | (A)  | (D) | Date Exercisable   | Expiration Date |   |  |  |   |  |
| Performance Based Stock Option 2016 (right to buy) | \$42.22  | 12/20/2017                           |  | A <sup>(2)</sup>               |   | 6,250  |     | 12/20/2017   | 12/20/2026      | Common Stock  | \$0  | 6,250  | D   |  |

**Explanation of Responses:**

- The reporting person owns 338 shares of ALNY common stock under the ALNY 401(k) plan as a result of the ALNY 401(k) matching contribution program.
- On December 20, 2016, the reporting person was granted a performance based stock option to purchase shares of ALNY common stock. One quarter of the shares subject to the option will vest upon the achievement of each of four specific clinical development, regulatory or commercial events, as approved by our compensation committee. Effective December 20, 2017, the compensation committee of the Company determined the first performance criterion had been met and the option vested as to one-quarter of the shares.

/s/ Michael P. Mason,  
Attorney-in-Fact for Akshay 12/21/2017  
K. Vaishnav

\*\* Signature of Reporting Person Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

\* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).

\*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

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