

Vaishnaw Akshay
 Form 4
 September 12, 2012

FORM 4 UNITED STATES SECURITIES AND EXCHANGE COMMISSION
 Washington, D.C. 20549

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 OF SECURITIES

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

(Print or Type Responses)

1. Name and Address of Reporting Person *
 Vaishnaw Akshay

2. Issuer Name and Ticker or Trading Symbol
 ALNYLAM
 PHARMACEUTICALS, INC.
 [ALNY]

5. Relationship of Reporting Person(s) to Issuer

(Check all applicable)

____ Director
 Officer (give title below) _____ Other (specify below)
 EVP, Chief Medical Officer

(Last) (First) (Middle)
 300 THIRD STREET
 (Street)

3. Date of Earliest Transaction (Month/Day/Year)
 09/10/2012

4. If Amendment, Date Original Filed(Month/Day/Year)

6. Individual or Joint/Group Filing(Check Applicable Line)
 Form filed by One Reporting Person
 Form filed by More than One Reporting Person

CAMBRIDGE, MA 02139

(City) (State) (Zip)

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 Ownership (Instr. 4) |
|---------------------------------|--------------------------------------|--|--------------------------------|---|---|--|-----------------------------------|
| | | | Code | V Amount (A) or (D) Price | | | |
| Common Stock | 09/10/2012 | | M ⁽¹⁾ | 1,334 A \$ 9.3 | 13,922 | D | |
| Common Stock | 09/10/2012 | | S ⁽¹⁾ | 1,334 D \$ 19 | 12,588 | D | |
| Common Stock | 09/12/2012 | | M ⁽¹⁾ | 4,916 A \$ 9.3 | 17,504 | D | |
| Common Stock | 09/12/2012 | | S ⁽¹⁾ | 4,916 D \$ 19 | 12,588 | D | |
| Common Stock | | | | | 2,395 | I | By Managed |

Account ⁽²⁾

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

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(9-02)

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 Underlying Securities (Instr. 3 and 4) | 8. Amount or Number of Shares |
|--|--|--------------------------------------|--|--------------------------------|---|--|---|-------------------------------|
| Stock Option (Right to Buy) | \$ 9.3 | 09/10/2012 | | M ⁽¹⁾ | 1,334 | ⁽³⁾ 06/09/2021 | Common Stock | 1,334 |
| Stock Option (Right to Buy) | \$ 9.3 | 09/12/2012 | | M ⁽¹⁾ | 4,916 | ⁽³⁾ 06/09/2021 | Common Stock | 4,916 |

Reporting Owners

| Reporting Owner Name / Address | Relationships | | | |
|--|---------------|-----------|----------------------------|-------|
| | Director | 10% Owner | Officer | Other |
| Vaishnaw Akshay 300 THIRD STREET CAMBRIDGE, MA 02139 | | | EVP, Chief Medical Officer | |

Signatures

/s/ Michael P. Mason For: Akshay K. Vaishnaw

09/12/2012

**Signature of Reporting Person

Date

Explanation of Responses:

- * 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).
- (1) The sales reported on this Form 4 were made pursuant to a Rule 10b5-1 trading plan adopted by the reporting person on March 20, 2012.
- (2) The reporting person owns 2,395 shares of ALNY common stock under the ALNY 401(k) plan as a result of the ALNY 401(k) matching contribution program.
- (3) The stock option vests as to 25% of the shares on the 1st anniversary of the date of the stock option grant and as to an additional 6.25% of the shares each successive three month period thereafter.

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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