

Vaishnaw Akshay  
Form 4  
September 12, 2012

**FORM 4**

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

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

## OMB APPROVAL

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(Print or Type Responses)

1. Name and Address of Reporting Person \*  
Vaishnaw Akshay

(Last) (First) (Middle)

300 THIRD STREET

(Street)

CAMBRIDGE, MA 02139

(City) (State) (Zip)

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

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

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

5. Relationship of Reporting Person(s) to  
Issuer

(Check all applicable)

\_\_\_\_ Director \_\_\_\_ 10% Owner  
\_\_\_\_X\_\_\_\_ Officer (give title below) \_\_\_\_ Other (specify below)

EVP, Chief Medical Officer

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

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

| 1. Title of<br>Security<br>(Instr. 3) | 2. Transaction Date<br>(Month/Day/Year) | 2A. Deemed<br>Execution Date, if<br>any<br>(Month/Day/Year) | 3.<br>Code<br>(Instr. 8) | 4. Securities<br>Acquired (A) or<br>Disposed of (D)<br>(Instr. 3, 4 and 5) | 5. Amount of<br>Securities<br>Beneficially<br>Owned<br>Following<br>Reported<br>Transaction(s)<br>(Instr. 3 and 4) | 6. Ownership<br>Form: Direct<br>(D) or<br>Indirect (I)<br>(Instr. 4) | 7. Nature of<br>Indirect<br>Beneficial<br>Ownership<br>(Instr. 4) |
|---------------------------------------|-----------------------------------------|-------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------|
| Common<br>Stock                       | 09/10/2012                              |                                                             | M <sup>(1)</sup>         | 1,334 A                                                                    | \$ 9.3 13,922                                                                                                      | D                                                                    |                                                                   |
| Common<br>Stock                       | 09/10/2012                              |                                                             | S <sup>(1)</sup>         | 1,334 D                                                                    | \$ 19 12,588                                                                                                       | D                                                                    |                                                                   |
| Common<br>Stock                       | 09/12/2012                              |                                                             | M <sup>(1)</sup>         | 4,916 A                                                                    | \$ 9.3 17,504                                                                                                      | D                                                                    |                                                                   |
| Common<br>Stock                       | 09/12/2012                              |                                                             | S <sup>(1)</sup>         | 4,916 D                                                                    | \$ 19 12,588                                                                                                       | D                                                                    |                                                                   |
| Common<br>Stock                       |                                         |                                                             |                          |                                                                            | 2,395                                                                                                              | I                                                                    | By<br>Managed                                                     |

Account <sup>(2)</sup>

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

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SEC 1474  
(9-02)

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

| 1. Title of<br>Derivative<br>Security<br>(Instr. 3) | 2. Conversion<br>or Exercise<br>Price of<br>Derivative<br>Security | 3. Transaction Date<br>(Month/Day/Year) | 3A. Deemed<br>Execution Date, if<br>any<br>(Month/Day/Year) | 4. Transaction<br>Code<br>(Instr. 8) | 5. Number<br>of Derivative<br>Securities<br>Acquired<br>(A) or<br>Disposed of<br>(D)<br>(Instr. 3, 4,<br>and 5) | 6. Date Exercisable and<br>Expiration Date<br>(Month/Day/Year) | 7. Title and Amount of<br>Underlying Securities<br>(Instr. 3 and 4) | 8. Amount<br>or<br>Number<br>of<br>Shares |
|-----------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------|
| Stock<br>Option<br>(Right to<br>Buy)                | \$ 9.3                                                             | 09/10/2012                              |                                                             | M <sup>(1)</sup>                     | 1,334                                                                                                           | <sup>(3)</sup> 06/09/2021                                      | Common<br>Stock                                                     | 1,334                                     |
| Stock<br>Option<br>(Right to<br>Buy)                | \$ 9.3                                                             | 09/12/2012                              |                                                             | M <sup>(1)</sup>                     | 4,916                                                                                                           | <sup>(3)</sup> 06/09/2021                                      | Common<br>Stock                                                     | 4,916                                     |

## Reporting Owners

| Reporting Owner Name / Address                             | Relationships                    |
|------------------------------------------------------------|----------------------------------|
|                                                            | Director 10% Owner Officer Other |
| Vaishnaw Akshay<br>300 THIRD STREET<br>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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