

ALNYLAM PHARMACEUTICALS, INC.

Form 4

August 15, 2008

**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

OMB  
Number: 3235-0287  
Expires: January 31,  
2005  
Estimated average  
burden hours per  
response... 0.5

(Print or Type Responses)

1. Name and Address of Reporting Person \*  
Greene Barry E

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

5. Relationship of Reporting Person(s) to  
Issuer

(Check all applicable)

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

President and COO

300 THIRD STREET

(Street)

3. Date of Earliest Transaction  
(Month/Day/Year)  
08/13/2008

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

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

CAMBRIDGE, MA 02142

(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 Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price
Common Stock	08/13/2008		S <sup>(1)</sup>		4,551	D	\$ 33.915
Common Stock	08/13/2008		M <sup>(2)</sup>		30,889	A	\$ 0.95
Common Stock	08/13/2008		S <sup>(1)</sup>		30,889	D	\$ 33.9402
Common Stock							717

by  
Managed  
Account  
(3)

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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 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)
				Code	V (A) (D)	Date Exercisable Expiration Date	Title Amount or Number of Shares
Incentive Stock Option (right to buy)	\$ 0.95	08/13/2008		M <sup>(2)</sup>	30,889	11/06/2004 11/06/2013	Common Stock 30,889

## Reporting Owners

Reporting Owner Name / Address	Relationships
	Director 10% Owner Officer Other
Greene Barry E 300 THIRD STREET CAMBRIDGE, MA 02142	President and COO

## Signatures

By: /s/ Patricia L. Allen, Attorney-in-Fact For: Barry E. Greene 08/15/2008

\_\_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 June 23, 2008.
- (2) This exercise is pursuant to a 10b5-1 plan put in place by the reporting person.
- (3) The reporting person owns 717 shares of ALNY common stock under the ALNY 401(k) plan as a result of the ALNY 401(k) matching contribution program.

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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