

☐ 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

OMB APPROVAL

OMB Number: 3235-0287

Estimated average burden hours per response: 0.5

1. Name and Address of Reporting Person* <u>Greenstreet Yvonne</u> (Last) (First) (Middle) <u>675 WEST KENDALL STREET</u> <u>HENRI A. TERMEER SQUARE</u> (Street) <u>CAMBRIDGE MA 02142</u> (City) (State) (Zip)	2. Issuer Name and Ticker or Trading Symbol <u>ALNYLAM PHARMACEUTICALS, INC.</u> [<u>ALNY</u>]	5. Relationship of Reporting Person(s) to Issuer (Check all applicable) <input checked="" type="checkbox"/> Director 10% Owner <input checked="" type="checkbox"/> Officer (give title below) Other (specify below) <u>Chief Executive Officer</u>
	3. Date of Earliest Transaction (Month/Day/Year) <u>08/03/2022</u>	
	4. If Amendment, Date of Original Filed (Month/Day/Year)	6. Individual or Joint/Group Filing (Check Applicable Line) <input checked="" type="checkbox"/> 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 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	08/03/2022		A ⁽¹⁾		5,083	A	\$0.0	18,985	D	
Common Stock	08/03/2022		A ⁽²⁾		4,153	A	\$0.0	23,138	D	
Common Stock	08/03/2022		A ⁽³⁾		3,859	A	\$0.0	26,997	D	
Common Stock	08/04/2022		F ⁽⁴⁾		5,433	D	\$189.76	21,564	D	
Common Stock	08/04/2022		F ⁽⁴⁾		195	D	\$209.83	21,369	D	
Common Stock	08/04/2022		F ⁽⁴⁾		194	D	\$209.85	21,175	D	
Common Stock	08/04/2022		F ⁽⁴⁾		180	D	\$210.25	20,995	D	
Common Stock								407	I	by Managed Account ⁽⁵⁾

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)
						Date Exercisable	Expiration Date	Title	Amount or Number of Shares			

Explanation of Responses:

1. On February 26, 2020, the reporting person was granted performance-based stock units (PSU) in connection with the 2019 year-end compensation review. One third of the PSU award vests upon the achievement of each of three specific clinical development, regulatory or commercial events. The People, Culture and Compensation Committee of the Board determined that the second performance criterion was met and the second one-third of the PSU award vested as of August 3, 2022.
2. On October 7, 2020, the reporting person was granted a one-time strategic performance-based stock unit (PSU) award. The People, Culture and Compensation Committee of the Board determined that the performance criterion was met and the PSU award vested as of August 3, 2022.
3. On February 24, 2021, the reporting person was granted performance-based stock units (PSU) in connection with the 2020 year-end compensation review. One quarter of the PSU award vests upon the achievement of each of four specific clinical development, regulatory or commercial events. The People, Culture and Compensation Committee of the Board determined that the first performance criterion was met and the first quarter of the PSU award vested as of August 3, 2022.
4. Represents shares automatically sold by the Company on behalf of the reporting person pursuant to a mandatory sell-to-cover provision in the award agreement required to cover minimum statutory tax withholding obligations that became due upon the vesting event.
5. Reflects shares of ALNY common stock acquired by the reporting person under the ALNY 401(k) plan as a result of the ALNY 401(k) matching contribution program.

By: /s/ Mary Beth DeLena,
Attorney-in-Fact For: Yvonne 08/05/2022
Greenstreet

** 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.

Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.