

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Schedule 13G

Under the Securities Exchange Act of 1934
(Amendment No.: 9)*

Name of issuer: Ionis Pharmaceuticals Inc.

Title of Class of Securities: Common Stock

CUSIP Number: 462222100

Date of Event Which Requires Filing of this Statement: **December 31, 2021**

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- Rule 13d-1(b)
- Rule 13d-1(c)
- Rule 13d-1(d)

*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

(Continued on the following page(s))

CUSIP No.: 462222100

1. NAME OF REPORTING PERSON
I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

The Vanguard Group - 23-1945930

2. CHECK THE APPROPRIATE [LINE] IF A MEMBER OF A GROUP

A. B.

3. SEC USE ONLY

4. CITIZENSHIP OF PLACE OF ORGANIZATION

Pennsylvania

(For questions 5-8, report the number of shares beneficially owned by each reporting person with:)

5. SOLE VOTING POWER

0

6. SHARED VOTING POWER

79,445

7. SOLE DISPOSITIVE POWER

11,806,525

8. SHARED DISPOSITIVE POWER

200,551

9. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

12,007,076

10. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES

N/A

11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9

8.50%

12. TYPE OF REPORTING PERSON

IA

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Washington, D.C. 20549

Schedule 13G
Under the Securities Act of 1934

Item 1(a) - Name of Issuer:

Ionis Pharmaceuticals Inc.

Item 1(b) - Address of Issuer's Principal Executive Offices:

2855 Gazelle Court
Carlsbad, CA 92010

Item 2(a) - Name of Person Filing:

The Vanguard Group - 23-1945930

Item 2(b) - Address of Principal Business Office or, if none, residence:

100 Vanguard Blvd.
Malvern, PA 19355

Item 2(c) - Citizenship:

Pennsylvania

Item 2(d) - Title of Class of Securities:

Common Stock

Item 2(e) - CUSIP Number

462222100

Item 3 - Type of Filing:

This statement is being filed pursuant to Rule 13d-1. An investment adviser in accordance with §240.13d-1(b)(1)(ii)(E).

Item 4 - Ownership:

(a) Amount Beneficially Owned:

(b) Percent of Class:

(c) Number of shares as to which such person has:

(i) sole power to vote or direct to vote:

(ii) shared power to vote or direct to vote:

(iii) sole power to dispose of or to direct the disposition of:

(iv) shared power to dispose of or to direct the disposition of:

Comments:

The responses to questions 5 through 9 and 11 on the cover page(s) are incorporated by reference into this Item 4.

Item 5 - Ownership of Five Percent or Less of a Class:

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than 5 percent of the class of securities, check the following

Item 6 - Ownership of More Than Five Percent on Behalf of Another Person:

The Vanguard Group, Inc.'s clients, including investment companies registered under the Investment Company Act of 1940 and other managed accounts, have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the securities reported herein.

No one other person's interest in the securities reported herein is more than 5%.

Item 7 - Identification and Classification of the Subsidiary Which Acquired The Security Being Reported on by the Parent Holding Company:

Not applicable

Item 8 - Identification and Classification of Members of Group:

Not applicable

Item 9 - Notice of Dissolution of Group:

Not applicable

Item 10 - Certification:

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired in connection with or as a participant in any transaction having that purpose or effect, other than activities solely in connection with a nomination under §240.14a-11.

Signature

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Date: February 9, 2022

By /s/ Christine M. Buchanan
Name: Christine M. Buchanan
Title: Principal