

SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

SCHEDULE 13D

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

Akcea Therapeutics, Inc.

(Name of Issuer)

Common Stock

(Title of Class of Securities)

00972L 107

(CUSIP Number)

**Elizabeth L. Hougen
Ionis Pharmaceuticals, Inc.
2855 Gazelle Court
Carlsbad, CA 92010
(760) 931-9200**

(Name, Address and Telephone Number of Person
Authorized to Receive Notices and Communications)

July 19, 2017

(Date of Event Which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See Rule 13d-7 for other parties to whom copies are to be sent.

* 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 disclosures provided in a prior cover page.

The information required on 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).

CUSIP No. 00972L 107

13D

1. Name of Reporting Persons
Ionis Pharmaceuticals, Inc. ("Ionis")

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)
WC

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
Delaware

7. Sole Voting Power
45,447,879

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power

9. Sole Dispositive Power
45,447,879

10. Shared Dispositive Power

11. Aggregate Amount Beneficially Owned by Each Reporting Person
45,447,879

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row 11
68.3%(1)

14. Type of Reporting Person (See Instructions)
CO

(1) This percentage is calculated based upon 66,541,629 shares of the Issuer's Common Stock reported to be outstanding as of July 19, 2017, as disclosed in the Issuer's Prospectus filed with the Securities and Exchange Commission pursuant to Rule 424(b)(4) under the Securities Act of 1933, as amended, on July 14, 2017.

Item 1. Security and Issuer.

This Schedule 13D relates to shares of the Common Stock, \$0.001 par value per share ("Common Stock") of Akcea Therapeutics, Inc., a Delaware corporation (the "Issuer"). The principal executive offices of the Issuer are located at 55 Cambridge Parkway, Suite 100, Cambridge MA 02142.

Item 2. Identity and Background.

- (a) This Schedule 13D is being filed by Ionis Pharmaceuticals, Inc., a Delaware corporation ("Ionis" or the "Reporting Person").
- (b) The business address for the Reporting Person is 2855 Gazelle Court, Carlsbad, CA 92010.
- (c) Ionis is engaged in the business of biopharmaceuticals.

Set forth on Schedule A to this Schedule 13D are the present principal occupation or employment and name, principal business and address of any corporation or other organization in which such employment is conducted for the directors and executive officers of Ionis required to be listed on Schedule A.

- (d) During the past five years, neither the Reporting Person nor, to the best knowledge of the Reporting Person, any of the directors and executive officers identified on Schedule A to this Schedule 13D, have been convicted in any criminal proceeding (excluding traffic violations and similar

misdemeanors).

- (e) During the past five years, neither the Reporting Person nor, to the best knowledge of the Reporting Person, any of the directors and executive officers identified on Schedule A to this Schedule 13D, have been a party to any civil proceeding of a judicial or administrative body of competent jurisdiction which resulted in any judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violations with respect to such laws.
- (f) Reference is made to Rows 1 and 6 of the cover page for the name and citizenship or place of organization, respectively of the Reporting Person. All of the directors and executive officers of Ionis required to be listed on Schedule A are United States citizens.

Item 3. Source and Amount of Funds or Other Consideration.

The funds used by the Reporting Person to acquire the shares described herein were from the Reporting Person's working capital.

Item 4. Purpose of Transaction.

The Reporting Person received 28,884,540 shares of the Issuer's Common Stock upon the closing of the Issuer's initial public offering on July 19, 2017 (the "IPO") upon the conversion of Series A preferred stock of the Issuer acquired by the Reporting Person when the Issuer was a private company. The Reporting Person received 13,438,339 shares of the Issuer's Common Stock upon the closing of the IPO in satisfaction of the Issuer's obligations to the Reporting Person pursuant to a line of credit. The Reporting Person purchased 3,125,000 shares of the Issuer's Common Stock in the IPO at a purchase price of \$8.00 per share. The Reporting Person acquired the shares described herein for investment purposes. Neither the Reporting Person, nor any of the directors and executive officers identified on Schedule A to this Schedule 13D, have any plans or proposals that relate to or would result in any of the matters listed in Items 4(a) to 4(j) of Schedule 13D. The Reporting Person reserves the right to acquire additional securities of the Issuer, to dispose of such securities at any time, or to formulate other purposes, plans or proposals regarding the Issuer or any of its securities.

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Item 5. Interest in Securities of the Issuer.

The following information with respect to the ownership of the Common Stock of the Issuer by the Reporting Person filing this Schedule 13D is provided as of July 19, 2017:

- (a) The Reporting Person beneficially owns 45,447,879 shares of the Common Stock of the Issuer, or approximately 68.3% of the Issuer's outstanding Common Stock.
- (b) Ionis has sole power to vote and dispose of the securities of the Issuer held by it.
- (c) The Reporting Person has not effected any other transactions in the Issuer's Common Stock within the past sixty days, except as provided herein.
- (d) Not applicable.
- (e) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer.

None.

Item 7. Material to Be Filed as Exhibits.

None.

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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: July 27, 2017

IONIS PHARMACEUTICALS, INC.

By: /s/ Elizabeth L. Hougen
Elizabeth L. Hougen
Chief Financial Officer

The original statement shall be signed by each person on whose behalf the statement is filed or his authorized representative. If the statement is signed on behalf of a person by his authorized representative (other than an executive officer or general partner of the filing person), evidence of the representative's authority to sign on behalf of such person shall be filed with the statement: provided, however, that a power of attorney for this purpose which is already on file with the Commission may be incorporated by reference. The name and any title of each person who signs the statement shall be typed or printed beneath his signature.

Attention:

**SCHEDULE A
DIRECTORS AND EXECUTIVE OFFICERS OF IONIS**

The following table sets forth the name, business address, present principal occupation or employment and material occupations, positions, offices or employment of each of the directors and executive officers of Ionis. All directors and executive officers listed below are citizens of the United States unless otherwise noted herein.

DIRECTORS

Name	Current Principal Affiliation	Business Address
Stanley T. Crooke, M.D., Ph.D.	Chief Executive Officer, Ionis Pharmaceuticals, Inc.	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
B. Lynne Parshall, Esq.	Chief Operating Officer, Ionis Pharmaceuticals, Inc.	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
Spencer R. Berthelsen, M.D.	Chairman and Managing Director, Kelsey-Seybold Clinic	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
Breaux Castleman	President and Chief Executive Officer, Syntiro Healthcare Services, Inc.	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
Joseph Klein, III	Managing Director, Gauss Capital Advisors, LLC	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
Joseph Loscalzo, M.D., Ph.D.	Head of Department of Medicine and Physician-in-Chief, Brigham & Woman's Hospital, Harvard Medical School	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
Frederick T. Muto, Esq.	Partner, Cooley LLP	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
Joseph H. Wender	Senior Consultant, Goldman Sachs & Co.	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010

OFFICERS

Name	Position	Business Address
Stanley T. Crooke, M.D., Ph.D.	Chief Executive Officer	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
B. Lynne Parshall, Esq.	Chief Operating Officer	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
Elizabeth Hougen	Senior Vice President, Finance and Chief Financial Officer	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010

Sarah Boyce	Chief Business Officer	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
C Frank Bennett	Senior Vice President, Research	c/o Ionis Pharmaceuticals, Inc. 2855 Gazelle Court Carlsbad, CA 92010
Richard S. Geary, Ph.D.	Senior Vice President, Development	c/o Ionis Pharmaceuticals, Inc.

2855 Gazelle Court
Carlsbad, CA 92010

Brett P. Monia, Ph.D.

Senior Vice President, Antisense Drug Discovery

c/o Ionis Pharmaceuticals, Inc.
2855 Gazelle Court
Carlsbad, CA 92010

Patrick R. O'Neil, Esq.

Senior Vice President, Legal and General Counsel

c/o Ionis Pharmaceuticals, Inc.
2855 Gazelle Court
Carlsbad, CA 92010