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

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**FORM S-8  
REGISTRATION STATEMENT**  
*UNDER  
THE SECURITIES ACT OF 1933*

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**AKCEA THERAPEUTICS, INC.**

(Exact name of registrant as specified in its charter)

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**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**47-2608175**  
(I.R.S. Employer  
Identification No.)

**22 Boston Wharf Road, 9th Floor  
Boston, Massachusetts 02210**  
(Address of principal executive offices) (Zip code)

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**2017 Employee Stock Purchase Plan**  
(Full titles of the plans)

**Paula Soteropoulos  
Chief Executive Officer  
Akcea Therapeutics, Inc.  
22 Boston Wharf Road, 9th Floor  
Boston, Massachusetts 02210  
(617) 207-0202**  
(Name, address, including zip code, and telephone number, including area code, of agent for service)

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*Copies to:*

**Nicole C. Brookshire  
Cooley LLP  
500 Boylston Street  
Boston, Massachusetts 02116  
(617) 937-2300**

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Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Non-accelerated filer

Accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

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**CALCULATION OF REGISTRATION FEE**

Title of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee
Common Stock, par value \$0.001 per value	500,000 shares (3)	\$21.55	\$10,775,000	\$1,305.93

- (1) Pursuant to Rule 416(a) of the Securities Act of 1933, as amended (the “*Securities Act*”), this Registration Statement shall also cover any additional shares of the Registrant’s common stock, par value \$0.001 per share (the “*Common Stock*”) that become issuable under the Akcea Therapeutics, Inc. 2017 Employee Stock Purchase Plan (the “*2017 ESPP*”) by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of the Registrant’s outstanding shares of Common Stock.
- (2) Estimated in accordance with Rules 457(c) and (h) of the Securities Act solely for the purpose of calculating the registration fee based on the average of the high and low prices of the Registrant’s Common Stock as reported on the Nasdaq Global Market on May 14, 2019.
- (3) Represents 500,000 shares of Common Stock that were automatically added to the shares authorized for issuance under the 2017 ESPP on January 1, 2019, pursuant to an “evergreen” provision contained in the 2017 ESPP. Pursuant to such provision, on January 1 of each year from 2018 until (and including) 2027, the number of shares authorized for issuance under the 2017 ESPP is automatically increased by a number equal to the amount equal to the lesser of (1) 1% of the total number of shares of Common Stock outstanding on December 31st of the preceding calendar year, (2) 500,000 shares of Common Stock or (3) a number of shares determined by the Registrant’s board of directors that is less than (1) and (2).

## INCORPORATION OF DOCUMENTS BY REFERENCE

This Registration Statement is being filed for the purpose of increasing the number of securities of the same class as other securities for which a Registration Statement of the Registrant on Form S-8 relating to the same employee benefit plan is effective. The Registrant previously registered shares of its Common Stock for issuance under the 2017 ESPP under Registration Statements on Form S-8 filed with the Securities and Exchange Commission (the "*Commission*") on [July 14, 2017](#) (File No. 333-219290) and [June 19, 2018](#) (File No. 333-225730). Pursuant to General Instruction E to Form S-8, this Registration Statement hereby incorporates by reference the contents of the Registration Statements referenced above.

### PART II

#### INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

##### ITEM 8. EXHIBITS.

<u>Exhibit Number</u>	<u>Description</u>
4.1(1)	<a href="#">Amended and Restated Certificate of Incorporation of the Registrant, as amended and as currently in effect.</a>
4.2(2)	<a href="#">Amended and Restated Bylaws of the Registrant, as currently in effect.</a>
4.3(3)	<a href="#">Specimen Common Stock Certificate.</a>
5.1	<a href="#">Opinion of Cooley LLP.</a>
23.1	<a href="#">Consent of Independent Registered Public Accounting Firm.</a>
23.2	<a href="#">Consent of Cooley LLP. Reference is made to Exhibit 5.1.</a>
24.1	<a href="#">Power of Attorney. Reference is made to the signature page hereto.</a>
99.1(4)	<a href="#">2017 Employee Stock Purchase Plan.</a>

- (1) Previously filed as Exhibit 3.1 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-38137), originally filed with the Commission on May 7, 2018, and incorporated herein by reference.
- (2) Previously filed as Exhibit 3.2 to the Registrant's Current Report on Form 8-K (File No. 001-38137), originally filed with the Commission on July 19, 2017, and incorporated herein by reference.
- (3) Previously filed as Exhibit 4.1 to the Registrant's Registration Statement on Form S-1/A (File No. 333-216949), originally filed with the Commission on June 20, 2017, as amended, and incorporated herein by reference.
- (4) Previously filed as Exhibit 10.3 to the Registrant's Registration Statement on Form S-1/A (File No. 333-216949), originally filed with the Commission on June 20, 2017, as amended, and incorporated herein by reference.

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## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Boston, Commonwealth of Massachusetts, on May 20, 2019.

### AKCEA THERAPEUTICS, INC.

By: /s/ Paula Soteropoulos  
Paula Soteropoulos  
*Chief Executive Officer*

## POWER OF ATTORNEY

**KNOW ALL PERSONS BY THESE PRESENTS**, that each person whose signature appears below constitutes and appoints Paula Soteropoulos and Michael MacLean, and each or any one of them, her/his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for her/him and in her/his name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as she/he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or her/his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
<u>/s/ Paula Soteropoulos</u> Paula Soteropoulos	Chief Executive Officer and Director <i>(Principal Executive Officer)</i>	May 20, 2019
<u>/s/ Michael MacLean</u> Michael MacLean	Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>	May 20, 2019
<u>/s/ Sarah Boyce</u> Sarah Boyce	President, Director	May 20, 2019
<u>/s/ Christopher Gabrieli</u> Christopher Gabrieli	Chairman of the Board of Directors	May 20, 2019
<u>/s/ Edward Fitzgerald</u> Edward Fitzgerald	Director	May 20, 2019
<u>/s/ Elaine Hochberg</u> Elaine Hochberg	Director	May 20, 2019
<u>/s/ Damien McDevitt, Ph.D.</u> Damien McDevitt, Ph.D.	Director	May 20, 2019
<u>/s/ Richard A. Moscicki, M.D.</u> Richard A. Moscicki, M.D.	Director	May 20, 2019
<u>/s/ B. Lynne Parshall, J.D.</u> B. Lynne Parshall, J.D.	Director	May 20, 2019
<u>/s/ Sandford D. Smith</u> Sandford D. Smith	Director	May 20, 2019



Nicole C. Brookshire  
T: +1 617 937 2357  
nbrookshire@cooley.com

May 20, 2019

Akcea Therapeutics, Inc.  
22 Boston Wharf Road, 9th Floor  
Boston, MA 02210

Ladies and Gentlemen:

You have requested our opinion with respect to certain matters in connection with the filing by Akcea Therapeutics, Inc., a Delaware corporation (the "Company") of a Registration Statement on Form S-8 (the "Registration Statement") with the Securities and Exchange Commission covering the offering of up to 500,000 shares of the Company's Common Stock, \$0.001 par value (the "Shares"), pursuant to the Company's 2017 Employee Stock Purchase Plan (the "Plan").

In connection with this opinion, we have examined the Registration Statement and related Prospectus, your Certificate of Incorporation and Bylaws, as amended, and such other documents, records, certificates, memoranda and other instruments as we deem necessary as a basis for this opinion. We have assumed the genuineness and authenticity of all documents submitted to us as originals, the conformity to originals of all documents submitted to us as copies thereof, and the due execution and delivery of all documents where due execution and delivery are a prerequisite to the effectiveness thereof. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not sought independently to verify such matters.

Our opinion herein is expressed solely with respect to the General Corporation Law of the State of Delaware. We express no opinion to the extent that any other laws are applicable to the subject matter hereof and express no opinion and provide no assurance as to compliance with any federal or state securities law, rule or regulation.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued in accordance with the Plan, the Registration Statement and related Prospectus, will be validly issued, fully paid, and nonassessable (except as to shares issued pursuant to certain deferred payment arrangements, which will be fully paid and nonassessable when such deferred payments are made in full).

Our opinion is limited to the matters stated herein and no opinion is implied or may be inferred beyond the matters expressly stated and is based on those laws as in effect on the date hereof, and we disclaim any obligation to advise you of facts, circumstances, events or developments which hereafter may be brought to our attention and which may alter, affect or modify the opinion expressed herein.

500 BOYLSTON STREET, BOSTON, MA 02116-3736 T: (617) 937-2300 F: (617) 937-2400 WWW.COOLEY.COM



Akcea Therapeutics, Inc.  
May 20, 2019  
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We consent to the filing of this opinion as an exhibit to the Registration Statement.

Very truly yours,

COOLEY LLP

By: /s/ Nicole C. Brookshire  
Nicole C. Brookshire

500 BOYLSTON STREET, BOSTON, MA 02116-3736 T: (617) 937-2300 F: (617) 937-2400 WWW.COOLEY.COM

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the 2017 Employee Stock Purchase Plan of Akcea Therapeutics, Inc. of our report dated March 1, 2019, with respect to the consolidated financial statements of Akcea Therapeutics, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2018, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Boston, Massachusetts  
May 20, 2019