UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

Mail Stop 4720

June 2, 2016

Paula Soteropoulos
President and Chief Executive Officer
Akcea Therapeutics, Inc.
55 Cambridge Parkway, Suite 100
Cambridge, MA 02142

Re: Akcea Therapeutics, Inc.
Draft Registration Statement on Form S-1
Submitted May 6, 2016
CIK No. 0001662524

Dear Ms. Soteropoulos:

We have reviewed your draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

Prospectus Summary
Overview, page 1

1. At its first use, please explain what is an orphan disorder or disease, and disclose in the summary the number of estimated patients for the relevant disorders.

2. We refer to your disclosures on page 3 indicating that you are currently conducting Phase 3 trials for Volanesorsen and planning to start Phase 2/3 studies of AKCEA-APO(a)-L_{RX}. Please revise the figure on page 2 to show that you are in the midst of Phase 3 trials for Volanesorsen and that your trials for AKCEA-APO(a)-L_{RX} are in Phase 2 rather than having completed Phase 2. Please make conforming changes to the graphic on page 83..

3. We note your disclosure that you are planning to begin a Phase 2/3 study of AKCEA-APO(a)-LRX. Please disclose the requirements for a clinical trial to be considered a Phase 2/3 and tell us whether the FDA has given you any assurance or guidance as to whether you can file an NDA if the endpoints of the trial are met.

Clinical pipeline, page 2

4. Please explain the meanings of "atherogenic" and "thrombogenic" at their first use.

Benefits of our relationship with Ionis, page 5

5. Please balance the discussion of the benefits of your relationship with Ionis by providing a similarly prominent discussion the risks related to your relationship with Ionis including:
   - Certain of your directors and officers may have conflicts of interest because of their positions with Ionis:
   - The development and regulatory strategies for your drugs is set by mutual agreement through the Joint Steering Committee. The Committee's failure to agree to development and regulatory strategies may lead to delays.
   - The agreements with Ionis do not prevent Ionis from developing and commercializing drugs targeting the same indications.

Implications of being an emerging growth company, page 7

6. Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications.

Risk factors
Certain of our directors may have actual or potential conflicts of interest. . . , page 25

7. Please expand the disclosure to include Elizabeth Hougen, as it appears that she will continue to be an employee of Ionis following the offering. Alternatively, please explain why this disclosure is not necessary.

Special note regarding forward-looking statements and industry data, page 46

8. Your statements cautioning investors not to give undue weight to industry estimates regarding the size of the market and your statements that you have not verified the accuracy or completeness of the third party information implies a disclaimer of responsibility with respect to the third party information. Please either delete these statements or specifically state that you are liable for the information related to the estimated size of the markets.

Use of Proceeds, page 49

9. With respect to each of the indicated uses, please clarify whether you expect the allocated proceeds will be sufficient to complete the indicated study or activity.

Management's Discussion and Analysis of Financial Condition and Results of Operations.
Components of Our Results of Operations
Critical Accounting Policies

Fair Value of Stock-Based Compensation, page 70

10. Please clarify how both the market and income valuation approach were used to determine the fair value of your common stock. If different valuation methods were used for different periods, please clarify that fact. In addition, please disclose the nature of material assumptions used for each method.

11. Once you have an estimated offering price or range, please explain to us how you determined the fair value of the common stock underlying your equity issuances and the reasons for any differences between the recent valuations of your common stock leading up to the IPO and the estimated offering price. This information will help facilitate our review of your accounting for equity issuances including stock compensation and beneficial conversion features.

Business
Integrated Development, page 77

12. Please include a narrative discussion explaining the graphic on page 78.

Clinical pipeline
Volanesorsen, page 83

13. Please disclose the secondary endpoint of the Phase 2 study described on page 85. Please also disclose the secondary endpoints for the APPROACH FCS study, the BROADEN FPL study and the COMPASS study described on page 90.

AKCEA-APO(a)-L_R, page 91

14. Please disclose the secondary endpoint for your Phase 2/3 study for patients with CAVS described on page 95.

Government Regulation and Approval, page 105

15. Please expand the discussion of the clinical trial phases on page 108 to describe the requirements for a clinical trial to be considered a Phase 1/2 or a 2/3.

Notes to Financial Statements
Basis of presentation, page F-8

16. Please disclose in the filing the nature of any allocation methods used, such as occupancy costs, and include a statement indicating that management believes the methods used are reasonable. Refer to Staff Accounting Bulletin 1:B.

You may contact James Peklenk at 202-551-3661 or Mary Mast at 202-551-3613 if you have questions regarding comments on the financial statements and related matters. Please contact Dorrie Yale at 202-551-8776 or me at 202-551-3675 with any other questions.

Sincerely,

/s/ Suzanne Hayes

Suzanne Hayes
Assistant Director
Office of Healthcare and Insurance

cc: Nicole Brookshire – Cooley LLP