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

DIVISION OF
CORPORATION FINANCE

Mail Stop 4720

October 5, 2015

Via E-mail
Joseph A. Yanchik III
President and Chief Executive Officer
Aileron Therapeutics, Inc.
281 Albany Street
Cambridge, MA 02139

Re: Aileron Therapeutics, Inc.
Draft Registration Statement on Form S-1
Submitted September 10, 2015
CIK No. 0001420565

Dear Mr. Yanchik:

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. Please add to this section, if true, that to date neither your company nor any other company has received marketing approval to market therapeutics utilizing stapled peptides.

Risks Associated with Our Business, page 3

2. Please expand the first bullet on page 4 to clarify that you believe your cash, cash equivalents and investments as of June 30, 2015 will be sufficient to fund your operating expenses and capital expenditure requirements only through December 31, 2015.

Implications of Being an Emerging Growth Company, page 5

3. Please expand your disclosure to discuss the ways in which you may lose emerging growth company status.

Special Note Regarding Forward-Looking Statements and Industry Data, page 56

4. We note your statement on page 57 that you have not independently verified certain market and industry data included in your registration statement. This statement represents an inappropriate disclaimer of your responsibility for the accuracy and completeness of information presented in the prospectus. Accordingly, please revise your disclosure to remove this statement from the prospectus.

Management's Discussion and Analysis of Financial Condition and Results of Operations

Determination of Fair Value of Common Stock, page 74

5. We may have additional comments on your accounting for equity issuances including stock compensation and beneficial conversion features. Once you have an estimated offering price, please provide us an analysis explaining the reasons for the differences between recent valuations of your common stock leading up to the IPO and the estimated offering price.

Business, page 84

6. Please briefly clarify the status and current importance to your business of your other product candidates.

Overview, page 84

7. Please disclose all investigational new drug applications ("INDs") that you have submitted to the FDA as well as the indication(s) and sponsor(s) for any active INDs related to your product candidates. For clinical studies conducted outside of the United States, please indicate the countries in which specific studies occurred.

Preclinical Studies, page 92

8. Please explain the scientific term "nanomolar affinities" to enable a lay person to understand the meaning of such term.

In Vivo, page 94

9. Please provide a brief explanation of the terms "statistically significant" and "p-value" at first use.

Clinical Development of ALRN-6924, page 95

10. We note your statement that although your Phase 1 clinical trial "is not designed for a formal efficacy analysis," you "are also assessing clinical activity or response to ALRN-6924 through the use of both PD biomarkers and imaging assessment." Please clarify whether your analysis of clinical activity or response to ALRN-6924 in this Phase 1 trial will be submitted to and considered by the FDA or other comparable foreign regulatory authority when determining whether to grant marketing approval for your product candidate.

11. Please provide a brief explanation of the following scientific terms to enable a lay investor to understand the meaning of such terms:

    - "IWG criteria"
    - "thrombocytopenia"
    - "neutropenia"
    - "grade 4 neutropenia"
    - "grade 3 neutropenia"

General

12. Please confirm that the images included in your draft registration statement are all of the graphic, visual or photographic information you will be including. If you intend to use any additional images, please provide us proofs of such materials. Please note that we may have comments regarding this material.

13. 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.

You may contact Vanessa Robertson at (202) 551-3649 or Joel Parker at (202) 551-3651 if you have questions regarding comments on the financial statements and related matters. Please contact Christina De Rosa at (202) 551-3577, Dietrich King at (202) 551-3338 or me at (202) 551-3675 with any other questions.

Sincerely,

/s/ Dietrich A. King for

Suzanne Hayes
Assistant Director

cc: Joshua D. Fox, Esq.