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

DIVISION OF
CORPORATION FINANCE

Mail Stop 4546

May 12, 2017

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

Re: Aileron Therapeutics, Inc.
Amendment No. 3 to Draft Registration Statement on Form S-1
Submitted April 17, 2017
CIK No. 0001420565

Dear Mr. Yanchik:

We have reviewed your amended draft registration statement and have the following comments. In 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.

Overview, page 1

1. We refer to the first sentence in the second paragraph of the Summary. Please revise to explain briefly the basis for your disclosure that ALRN-6924 "has been generally well tolerated" by patients in your clinical trials in light of your disclosures on pages 19 and 98 concerning the frequency of adverse events. Also, revise your disclosures on page 1, 19, and 98 to clarify whether the conclusion concerning tolerability represents the company's assessment of the trial results or that of the "trial's investigators." To the extent that it is the latter, please identify the investigators and provide their consent. Refer to Rule 436.

2. Please revise the disclosure on page 2 to explain briefly the meaning of the term "equipotently."

Our Development Pipeline, page 4

3. Please revise your development pipeline chart on page 4 to remove the program that is in the discovery phase. Because you have not identified a product candidate for these programs, it is premature to highlight this program in your development table.

4. Please include a column for Phase 3 in your development pipeline chart on pages 4 and 87.

5. We refer to your disclosure on page 2 indicating that you are currently conducting a Phase 1 All-comers trials. Please revise the development pipeline chart on pages 4 and 87 to show that you are in the midst of this Phase 1 trial. In this regard, we note that your current presentation in the chart suggests that you have reached the end of this trial.

Use of Proceeds, page 61

6. Please revise to disclose the approximate amounts intended to be used for each of the ALRN-6924 indications that you highlight in the pipeline chart presented on page 4 of the Summary. Disclose the sufficiency of the allocated funds to advance though the present stage and/or subsequent stages of development. If you will need additional funding to complete a particular stage of development, please disclose this point.

In Vitro, page 103

7. We note your disclosure that all but two of the 207 mutant p53 cells had no discernable effect and "nearly all of the 105 WT p53 cell lines showed tumor cell death" and that "[m]ost WT p53 cell lines that did not show tumor cell death were derived from HPV-related cancers." Accordingly, please revise to disclose the number of cell lines that showed tumor cell death and the number of cell lines that did not show tumor cell death.

Management, page 133

8. Please revise to clarify the business experience during the past five years for Kira A. Nelson. In this regard, please revise to identify the consultancy where she was employed as well as the companies where she served as director of accounting and finance. Refer to Item 401(e)(1) of Regulation S-K.

You may contact Vanessa Robertson at (202) 551-3649 or James Rosenberg at (202) 551-3679 if you have questions regarding comments on the financial statements and related matters. Please contact Jeffrey Gabor at (202) 551-2544 or Joseph McCann at (202) 551-6262 with any other questions.

Sincerely,

/s/ Joseph McCann for

Suzanne Hayes
Assistant Director
Office of Healthcare and Insurance

cc: Stuart M. Falber, Esq.
Wilmer Cutler Pickering Hale and Dorr LLP