

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

SCHEDULE 13D

INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT TO § 240.13d-1(a) AND AMENDMENTS THERETO FILED PURSUANT TO
240.13d-2(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934

AILERON THERAPEUTICS, INC.

(Name of Issuer)

Common Stock, Par Value \$0.001

(Title of Class of Securities)

00887A 10 5

(CUSIP Number)

Victoria A. Whyte
GlaxoSmithKline plc
980 Great West Road
Brentford, Middlesex TW8 9GS
England
Telephone: +44 (0)208 047 5000

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

June 28, 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 §240.13d-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.

1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

GlaxoSmithKline plc

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 BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

6. CITIZENSHIP OR PLACE OF ORGANIZATION

England and Wales

7. SOLE VOTING POWER

1,431,519

8. SHARED VOTING POWER

-0-

9. SOLE DISPOSITIVE POWER

1,431,519

10. SHARED DISPOSITIVE POWER

-0-

11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

1,431,519 shares of Common Stock

12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES

(see instructions)

13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

9.7% of the shares of Common Stock (1)

14. TYPE OF REPORTING PERSON (see instructions)

CO

Footnotes:

(1) Based on 14,710,208 shares of the Issuer's common stock outstanding as of July 5, 2017 upon the closing of the Issuer's initial public offering, as reported in the Issuer's prospectus dated June 28, 2017 (the "Final Prospectus") filed with the Securities and Exchange Commission (the "SEC") on June 29, 2017 pursuant to Rule 424(b)(4) of the Securities Act of 1933, as amended (the "Securities Act").

Item 1. Security and Issuer.

This statement on Schedule 13D (this "Statement") relates to the shares of common stock, par value \$0.001 per share (the "Common Stock"), of Aileron Therapeutics, Inc., a Delaware corporation (the "Issuer"). The Issuer's principal executive offices are located at 281 Albany Street, Cambridge, MA 02139.

Item 2. Identity and Background.

This Statement is being filed on behalf of GlaxoSmithKline plc, a public limited company incorporated under the laws of England and Wales. GlaxoSmithKline plc and its subsidiaries constitute a major global healthcare group engaged in the creation, discovery, development, manufacture and marketing of pharmaceutical and consumer health-related products with its principal offices located at 980 Great West Road, Brentford, Middlesex TW8 9GS, England. Set forth in Schedule 1 to this Statement are the name, business address and present principal occupation or employment and citizenship of each executive officer and director of GlaxoSmithKline plc. The Common Stock which is the subject of this Statement is held of record by S.R. One Limited ("S.R. One"), a wholly-owned indirect subsidiary of GlaxoSmithKline plc.

On September 30, 2016, GlaxoSmithKline plc agreed to a settlement with the SEC relating to an investigation into the commercial practices of certain subsidiaries of GlaxoSmithKline plc in China. The SEC's order found that GlaxoSmithKline plc violated the internal controls and books and records provisions of the U.S. Foreign Corrupt Practices Act (the "FCPA"). GlaxoSmithKline plc consented to the order without admitting or denying the findings, and agreed to pay a \$20 million civil penalty. GlaxoSmithKline plc also agreed to provide status reports to the SEC for the next two years on its remediation and implementation of anti-corruption compliance measures.

Other than as set forth above in this Item 2, during the last five years prior to the date hereof, neither GlaxoSmithKline plc nor, to the best knowledge of GlaxoSmithKline plc, any of the other persons with respect to whom information is given in response to this Item 2 has been convicted in a criminal proceeding or been a party to a civil proceeding ending in a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws, or finding any violation with respect to such laws.

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

GlaxoSmithKline plc, through its wholly-owned indirect subsidiary S.R. One, acquired from the Issuer 273,333 shares of Common Stock on July 5, 2017 in the Issuer's initial public offering (the "IPO") at the public offering price of \$15.00 per share. The total consideration paid by S.R. One for these shares was \$4,099,995, and such consideration was obtained from the working capital of S.R. One.

S.R. One also acquired 1,158,186 shares of Common Stock on June 28, 2017 upon conversion of (i) 6,781,770 shares of Series D Preferred Stock of the Issuer (the "Series D Preferred") into 682,476 shares of Common Stock, (ii) 1,471,551 shares of Series E-2 Preferred Stock of the Issuer (the "Series E-2 Preferred") into 148,088 shares of Common Stock, (iii) 1,276,389 shares of Series E-3 Preferred Stock of the Issuer (the "Series E-3 Preferred") into 128,448 shares of Common Stock; (iv) 1,979,188 shares of Series F Preferred Stock of the Issuer (the "Series F Preferred" and, together with the Series D Preferred, the Series E-2 Preferred and the Series E-3 Preferred, the "Preferred Stock") into 199,173 shares of Common Stock. The conversion ratio was one share of Common Stock for every 9.937 shares of Preferred Stock. The conversion of the Preferred Stock into shares of Common stock occurred automatically upon the closing of the Issuer's initial public offering without payment of consideration. The consideration for each of the Series D Preferred, Series E-2 Preferred, Series E-3 Preferred and Series F Preferred was obtained from the working capital of S.R. One.

Item 4. Purpose of Transaction.

S.R. One appointed Brian M. Gallagher, Jr., Ph.D., a Partner and Vice President at S.R. One and an employee of GlaxoSmithKline LLC, an indirect, wholly-owned subsidiary of GlaxoSmithKline plc, to the board of the Issuer in December 13, 2010. Dr. Gallagher continues to serve on the board of directors of the Issuer.

On December 23, 2016, the Issuer, S.R. One and certain other investors of preferred stock entered into the Seventh Amended and Restated Investor Rights Agreement (the "Investor Rights Agreement"), a copy of which is attached hereto as Exhibit 1. Pursuant to the Investor Rights Agreement, S.R. One (i) has the right to require the Issuer to register the shares of Common Stock held by it under the Securities Act under specified circumstances and subject to certain limitations, (ii) has piggyback registration rights, subject to specified exceptions, if the Issuer proposes to file a registration statement to register any of its securities under the

Securities Act, either for the Issuer's own account or for the account of any of its stockholders that are not holders of registrable securities under the Investor Rights Agreement, on a form that would also permit registration of the shares of Common Stock held by S.R. One and (iii) the Issuer is required to pay all registration expenses, including registration fees, printing expenses, fees and disbursements of the Issuer's counsel and accountants and reasonable fees and disbursements of one counsel representing any selling stockholders, other than any underwriting discounts and commissions, related to any demand or piggyback registration.

In connection with the Issuer's initial public offering, S.R. One entered into a lock-up agreement (the "Lock-Up Agreement"), a copy of which is attached hereto as Exhibit 2, with Merrill Lynch, Pierce, Fenner & Smith Incorporated and Jefferies LLC (in their capacity as representatives of several underwriters for the IPO) (the "Representatives"). Pursuant to the Lock-Up Agreement, S.R. One has agreed that for a period of 180 days following the date of the underwriting agreement with the Representatives related to the IPO, subject to specified exceptions, it will not, without the prior written consent of the Representatives, offer, sell, contract to sell, pledge, or otherwise dispose of (or enter into any transaction or device that is designed to, or might reasonably be expected to, result in the disposition (whether by actual disposition or effective economic disposition due to cash settlement or otherwise) by S.R. One or any of its affiliates or any person in privity with S.R. One or its affiliates), directly or indirectly, including the filing (or participation in the filing) of a registration statement with the SEC in respect of, or establish or increase a put equivalent position or liquidate or decrease a call equivalent position within the meaning of Section 16 of the Securities Exchange Act of 1934, as amended, and the rules and regulations of the SEC promulgated thereunder with respect to, any shares of capital stock of the Issuer or any securities convertible into or exercisable or exchangeable for such capital stock, or publicly announce an intention to effect any such transaction.

Other than as described above, S.R. One has no plans or proposals that would result in:

- a. the acquisition by any person of additional securities of the Issuer, or the disposition of securities of the Issuer;
- b. an extraordinary corporate transaction, such as a merger, reorganization or liquidation, involving the Issuer or any of its subsidiaries;
- c. a sale or transfer of a material amount of assets of the Issuer or any of its subsidiaries;
- d. any change in the present board of directors or management of the Issuer, including any plans or proposals to change the number or term of directors or to fill any existing vacancies on the board;
- e. any material change in the present capitalization or dividend policy of the Issuer;
- f. any other material change in the Issuer's business or corporate structure including but not limited to, if the Issuer is a registered closed-end investment company, any plans or proposals to make any changes in its investment policy for which a vote is required by Section 13 of the Investment Company Act of 1940;
- g. changes in the Issuer's charter, bylaws or instruments corresponding thereto or other actions which may impede the acquisition of control of the Issuer by any person;
- h. causing a class of securities of the Issuer to be delisted from a national securities exchange or to cease to be authorized to be quoted in an inter-dealer quotation system of a registered national securities association;
- i. a class of equity securities of the Issuer becoming eligible for termination of registration pursuant to Section 12(g)(4) of the Act; or
- j. any action similar to any of those enumerated above.

S.R. One expects to review from time to time its investment in the Issuer and may, depending on the Issuer's business, assets, operations, financial condition, prospects and other factors, as well as (and subject to) the terms of the contracts described in Item 6 of this Schedule: (i) purchase additional shares of Common Stock, options or other securities of the Issuer in the open market, in privately negotiated transactions or otherwise; (ii) sell all or a portion of the shares of Common Stock, options or other securities now beneficially owned or hereafter acquired by it; (iii) propose one or more directors for the Issuer's board of directors; (iv) engage in discussions, negotiations or enter into other transactions with a view to obtaining direct or indirect control of the Issuer; (v) acquire assets of the Issuer and its subsidiaries; and (vii) engage in such other proposals as S.R. One may deem appropriate under the circumstances, including plans or proposals which may relate to, or could result in, any of the matters referred to in clauses (a) through (j), above.

Also, consistent with its investment intent, S.R. One may engage in communications with, without limitation, one or more shareholders of the Issuer, one or more officers of the Issuer and/or one or more members of the board of directors of the Issuer regarding the Issuer, including but not limited to its operations, governance and control.

Item 5. Interest in Securities of the Issuer.

- a. GlaxoSmithKline plc beneficially owns 1,431,519 shares of Common Stock, which represents 9.7% of the 14,710,208 shares of Common Stock outstanding based on 14,710,208 shares of Common Stock outstanding as of July 5, 2017 upon the closing of the Issuer's initial public offering, as reported in the Final Prospectus;
- b. GlaxoSmithKline plc has the sole power to vote or direct the vote, and the sole power to dispose or to direct the disposition of all 1,431,519 shares of Common Stock described in Item 5a above.
- c. Except as described herein, no transaction in shares of Common Stock were effected during the past 60 days by GlaxoSmithKline plc.
- d. No person, other than GlaxoSmithKline plc, is known to have the right to receive or the power to direct the receipt of dividends from, or any proceeds from the sale of, the shares of Common Stock beneficially owned by GlaxoSmithKline plc.
- e. Not applicable.

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

Except as disclosed in Item 4 of this Statement, there are no contracts, arrangements, understandings or relationships (legal or otherwise) between GlaxoSmithKline plc or S.R. One and any other person with respect to any securities of the Company.

Item 7. Material to Be Filed as Exhibits.

Descriptions of documents set forth on this Schedule are qualified in their entirety by reference to the exhibits listed in this Item 7.

Exhibit	Name
1	Seventh Amended and Restated Investor Rights Agreement by and among the Issuer and the parties listed therein dated as of December 23, 2016, a copy of which is incorporated herein by reference from Exhibit 4.2 to the registration statement on Form S-1 originally filed by the Issuer on June 2, 2017, as amended.
2	Lock-Up Agreement, dated as of March 23, 2017, entered into by and between the Representatives and S.R. One.

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 10, 2017

GLAXOSMITHKLINE PLC

By: /s/ Victoria A. Whyte

Name: Victoria A. Whyte

Title: Authorized Signatory