

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
(Amendment No. 2)*

SPERO THERAPEUTICS, INC.

(Name of Issuer)

Common Stock, Par Value \$0.001

(Title of Class of Securities)

84833T 10 3

(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)

August 14, 2018

(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

1,934,006

 8. SHARED VOTING POWER

-0-

 9. SOLE DISPOSITIVE POWER

1,934,006

 10. SHARED DISPOSITIVE POWER

-0-

 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

1,934,006 shares of Common Stock (1)

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

(see instructions)

 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

10.6% of the shares of Common Stock (2)

 TYPE OF REPORTING PERSON (see instructions)

CO

(1) Common Stock are held of record by S.R. One, Limited ("SR One"), an indirect, wholly-owned subsidiary of GlaxoSmithKline plc.

(2) Based on 18,168,429 shares of the Issuer's common stock outstanding as of August 6, 2018, upon the closing of the Issuer's public offering as reported in the Issuer's quarterly report for the quarterly period ended June 30, 2018 on Form 10-Q filed with the Securities and Exchange Commission on August 9, 2018.

Explanatory Note

This Amendment No. 2 to Schedule 13D (this “Statement”) amends and supplements the statement on Schedule 13D originally filed on November 16, 2017 and amended on July 17, 2018 with respect to the shares of common stock, par value \$0.001 per share, of Spero Therapeutics, Inc., a Delaware corporation (the “Issuer”).

This Statement is filed to disclose that on August 14, 2018, the Issuer announced that its board of directors (the “Board”) appointed John C. Pottage, Jr., M.D. to the Board effective immediately prior to the next regularly scheduled meeting of the Board on September 21, 2018. Mr. Pottage also serves as Senior Vice President and Chief Scientific and Medical Officer of ViiV Healthcare, a joint venture between the GlaxoSmithKline plc (the “Reporting Person”), Pfizer and Shionogi in which the Reporting Person holds a controlling interest.

Mr. Pottage will be serving on the Board in his personal capacity and not as a representative of the Reporting Person. Mr. Pottage was not appointed to the Board as a result of any agreement or understanding between the Reporting Person and the Issuer. The Reporting Person will not discuss its holding in the Issuer with Mr. Pottage and has instructed Mr. Pottage not to share any information he learns as a member of the Board of the Issuer with the Reporting Person or any of its employees or affiliates.

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: September 19, 2018

GLAXOSMITHKLINE PLC

By: /s/ Victoria A. Whyte

Name: Victoria A. Whyte

Title: Authorized Signatory