

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

**SCHEDULE 13G**

Under the Securities Exchange Act of 1934

**Genocea Biosciences, Inc.**

(Name of Issuer)

Common Stock, \$0.001 par value per share  
(Title of Class of Securities)

372427104  
(CUSIP Number)

February 14, 2019  
(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- Rule 13d-1(b)  
 Rule 13d-1(c)  
 Rule 13d-1(d)

\*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 the disclosures provided in a prior cover page.

The information required in 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 (however, see the Notes).

**Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB control number.**

---

CUSIP No. 372427104

## 1. Names of Reporting Persons.

GlaxoSmithKline plc

## 2. Check the Appropriate Box if a Member of a Group

(a) (b) 

## 3. SEC Use Only

## 4. Citizenship or Place of Organization

England and Wales

## 5. Sole Voting Power

14,557,004 <sup>(1)</sup>

Number of Shares

Beneficially

Owned by

Each Reporting

Person With:

## 6. Shared Voting Power

0

## 7. Sole Dispositive Power

14,557,004 <sup>(1)</sup>

## 8. Shared Dispositive Power

0

## 9. Aggregate Amount Beneficially Owned by Each Reporting Person

14,557,004 <sup>(1)</sup>10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares 

## 11. Percent of Class Represented by Amount in Row (9)

12.7% <sup>(2)</sup>

## 12. Type of Reporting Person

CO

<sup>(1)</sup> Includes 2,487,067 shares of Common Stock (as defined below) underlying a Warrant (as defined below)<sup>(2)</sup> Based on (i) 86,771,175 shares of Common Stock outstanding as of December 31, 2018, as represented by the Company (as defined below) in a Subscription Agreement dated February 11, 2019, with a closing date of February 14, 2019 (the "Subscription Agreement"), (ii) 25,599,979 shares of Common Stock issued by the Company pursuant to the Subscription Agreement, as reported by the Company in its Current Report on Form 8-K filed with the Securities and Exchange Commission on February 12, 2019 and (iii) 2,487,067 shares of Common Stock underlying a Warrant held by the Reporting Person.

CUSIP No. 372427104

**ITEM 1.**

(a) Name of Issuer:  
Genocea Biosciences, Inc. (the "Company")

(b) Address of Issuer's Principal Executive Offices:  
100 Acorn Park Drive  
Cambridge, Massachusetts 02140

**ITEM 2.**

(a) Name of Person Filing:  
GlaxoSmithKline plc.

(b) Address of Principal Business Office, or if None, Residence:  
980 Great West Road  
Brentford  
Middlesex  
TW8 9GS  
England

(c) Citizenship:  
England and Wales

(d) Title of Class of Securities:  
Common Stock, par value \$0.001 (the "Common Stock")

(e) CUSIP Number:  
372427104

**ITEM 3. IF THIS STATEMENT IS FILED PURSUANT TO SS.240.13d-1(b) OR 240.13d-2(b) OR (c), CHECK WHETHER THE PERSON FILING IS A:**

Not Applicable

**ITEM 4. OWNERSHIP.**

(a) Amount beneficially owned:  
As of the close of business on February 14, 2019, the Reporting Person beneficially owned 14,557,004 shares of Common Stock (which includes 2,487,067 shares of Common Stock underlying a Warrant). The Warrant has an expiration date of February 14, 2024 and an exercise price of \$0.5656 (the "Warrant"). Upon the satisfaction of certain conditions, the Company may call for a second closing under the Subscription Agreement (the "Second Closing"). The expiration date of the Warrant will be accelerated if S.R. One Limited does not purchase a number of common shares of the Company specified in the Subscription Agreement in the Second Closing.

The information in items 1 and 5 through 11 on the cover page of this Schedule 13G is hereby incorporated by reference.

---

CUSIP No. 372427104

**ITEM 5. OWNERSHIP OF FIVE PERCENT OR LESS OF A CLASS.**

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following [ ].

**ITEM 6. OWNERSHIP OF MORE THAN FIVE PERCENT ON BEHALF OF ANOTHER PERSON.**

S.R. One, Limited\* 14,557,004 12.7%

\*Shares held directly by S.R. One Limited, an indirect wholly-owned subsidiary of Reporting Person.

**ITEM 7. IDENTIFICATION AND CLASSIFICATION OF THE SUBSIDIARY WHICH ACQUIRED THE SECURITY BEING REPORTED ON BY THE PARENT HOLDING COMPANY.**

Not Applicable

**ITEM 8. IDENTIFICATION AND CLASSIFICATION OF MEMBERS OF THE GROUP.**

Not Applicable

**ITEM 9. NOTICE OF DISSOLUTION OF GROUP.**

Not Applicable

---

CUSIP No. 372427104

**ITEM 10. CERTIFICATIONS.**

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having such purpose or effect, other than activities solely in connection with a nomination under § 240.14a-11.

**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.

February 25, 2018

(Date)

/s/ Victoria A. Whyte

(Signature)

Victoria A. Whyte, SVP & Company Secretary

(Name/Title)

The original statement shall be signed by each person on whose behalf the statement is filed or his authorized representative. If the statement is signed on behalf of a person by his authorized representative other than an executive officer or general partner of the filing person, evidence of the representative's authority to sign on behalf of such person shall be filed with the statement, provided, however, that a power of attorney for this purpose which is already on file with the Commission may be incorporated by reference. The name and any title of each person who signs the statement shall be typed or printed beneath his signature.