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

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**SCHEDULE 13D**

**Under the Securities Exchange Act of 1934  
(Amendment No. 3)\***

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**GENOCEA BIOSCIENCES, INC.**  
(Name of Issuer)

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

**372427104**  
(CUSIP Number)

**Polaris Partners**  
**One Marina Park Drive, 10<sup>th</sup> Floor**  
**Boston, MA 02210**  
**Attn: Max Eisenberg**  
**(855) 787-3500**

**Gunderson Dettmer Stough Villeneuve**  
**Franklin & Hachigian, LLP**  
**One Marina Park Drive, Suite 900**  
**Boston, MA 02210**  
**Attn: Jay K. Hachigian, Esq.**  
**(617) 648-9100**

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

**December 31, 2018**  
(Date of Event which Requires Filing of this Statement)

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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:

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**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.

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\* 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 (however, see the Notes).

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|---|---|--|
| 1.  | Names of Reporting Persons.<br>Polaris Venture Partners V, L.P. ("PVP V")   |  |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> |  |
| 3.  | SEC Use Only  |  |
| 4.  | Source of Funds (See Instructions)<br>WC  |  |
| 5.  | Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)<br><input type="checkbox"/>                             |  |
| 6.  | Citizenship or Place of Organization<br>Delaware  |  |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.  | Sole Voting Power<br><br>1,899,578 shares, except that (i) Polaris Venture Management Co. V, L.L.C. ("PVM V"), the general partner of PVP V, may be deemed to have sole power to vote these shares, and (ii) Jonathan A. Flint ("Flint"), a managing member of PVM V, may be deemed to have shared power to vote these shares, and Terrance G. McGuire ("McGuire"), a managing member of PVM V, may be deemed to have shared power to vote these shares. |
|   | 8.  | Shared Voting Power<br><br>See response to row 7.  |
|   | 9.  | Sole Dispositive Power<br><br>1,899,578 shares, except that (i) PVM V, the general partner of PVP V, may be deemed to have sole power to dispose of these shares, and (ii) Flint, a managing member of PVM V, may be deemed to have shared power to dispose of these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to dispose of these shares.   |
|   | 10.   | Shared Dispositive Power<br><br>See response to row 9.   |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br>1,899,578   |  |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)<br><input type="checkbox"/>                            |  |
| 13.   | Percent of Class Represented by Amount in Row (11)<br>2.2%  |  |
| 14.   | Type of Reporting Person (See Instructions)<br>PN   |  |

|   |   |  |
|---|---|--|
| 1.  | Names of Reporting Persons.<br>Polaris Venture Partners Entrepreneurs' Fund V, L.P. ("PVPE V")  |  |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> |  |
| 3.  | SEC Use Only  |  |
| 4.  | Source of Funds (See Instructions)<br>WC  |  |
| 5.  | Check if Disclosure of Legal Proceedings is Required Pursuant to Items 2(d) or 2(e)<br><input type="checkbox"/>                             |  |
| 6.  | Citizenship or Place of Organization<br>Delaware  |  |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.  | Sole Voting Power<br><br>37,019 shares, except that (i) PVM V, the general partner of PVPE V, may be deemed to have sole power to vote these shares, and (ii) Flint, a managing member of PVM V, may be deemed to have shared power to vote these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to vote these shares.                        |
|   | 8.  | Shared Voting Power<br><br>See response to row 7.  |
|   | 9.  | Sole Dispositive Power<br><br>37,019 shares, except that (i) PVM V, the general partner of PVPE V, may be deemed to have sole power to dispose of these shares, and (ii) Flint, a managing member of PVM V, may be deemed to have shared power to dispose of these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to dispose of these shares. |
|   | 10.   | Shared Dispositive Power<br><br>See response to Row 9.   |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br>37,019  |  |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)<br><input type="checkbox"/>                            |  |
| 13.   | Percent of Class Represented by Amount in Row (11)<br>0.0%  |  |
| 14.   | Type of Reporting Person (See Instructions)<br>PN   |  |

|   |   |   |
|---|---|---|
| 1.  | Names of Reporting Persons.<br>Polaris Venture Partners Founders' Fund V, L.P. ("PVPFF V")  |   |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> |   |
| 3.  | SEC Use Only  |   |
| 4.  | Source of Funds (See Instructions)<br>WC  |   |
| 5.  | Check if Disclosure of Legal Proceedings is Required Pursuant to Items 2(d) or 2(e)<br><input type="checkbox"/>                             |   |
| 6.  | Citizenship or Place of Organization<br>Delaware  |   |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.  | Sole Voting Power<br>13,012 shares, except that (i) PVM V, the general partner of PVPFF V, may be deemed to have sole power to vote these shares, and (ii) Flint, a managing member of PVM V, may be deemed to have shared power to vote these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to vote these shares.                        |
|   | 8.  | Shared Voting Power<br>See response to row 7.   |
|   | 9.  | Sole Dispositive Power<br>13,012 shares, except that (i) PVM V, the general partner of PVPFF V, may be deemed to have sole power to dispose of these shares, and (ii) Flint, a managing member of PVM V, may be deemed to have shared power to dispose of these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to dispose of these shares. |
|   | 10.   | Shared Dispositive Power<br>See response to Row 9.  |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br>13,012  |   |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)<br><input type="checkbox"/>                            |   |
| 13.   | Percent of Class Represented by Amount in Row (11)<br>0.0%  |   |
| 14.   | Type of Reporting Person (See Instructions)<br>PN   |   |

|   |   |  |
|---|---|--|
| 1.  | Names of Reporting Persons.<br>Polaris Venture Partners Special Founders' Fund V, L.P. ("PVPSFF V")   |  |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> |  |
| 3.  | SEC Use Only  |  |
| 4.  | Source of Funds (See Instructions)<br>WC  |  |
| 5.  | Check if Disclosure of Legal Proceedings is Required Pursuant to Items 2(d) or 2(e)<br><input type="checkbox"/>                             |  |
| 6.  | Citizenship or Place of Organization<br>Delaware  |  |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.  | Sole Voting Power<br>18,997 shares, except that (i) PVM V, the general partner of PVPSFF V, may be deemed to have sole power to vote these shares, and (ii) Flint, a managing member of PVM V, may be deemed to have shared power to vote these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to vote these shares.                        |
|   | 8.  | Shared Voting Power<br>See response to row 7.  |
|   | 9.  | Sole Dispositive Power<br>18,997 shares, except that (i) PVM V, the general partner of PVPSFF V, may be deemed to have sole power to dispose of these shares, and (ii) Flint, a managing member of PVM V, may be deemed to have shared power to dispose of these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to dispose of these shares. |
|   | 10.   | Shared Dispositive Power<br>See response to row 9.   |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br>18,997  |  |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)<br><input type="checkbox"/>                            |  |
| 13.   | Percent of Class Represented by Amount in Row (11)<br>0.0%  |  |
| 14.   | Type of Reporting Person (See Instructions)<br>PN   |  |

|   |   |
|---|---|
| 1.  | Names of Reporting Persons.<br>Polaris Venture Management Co. V, L.L.C. ("PVM V")   |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>   |
| 3.  | SEC Use Only  |
| 4.  | Source of Funds (See Instructions)<br>AF  |
| 5.  | Check if Disclosure of Legal Proceedings is Required Pursuant to Items 2(d) or 2(e)<br><input type="checkbox"/>   |
| 6.  | Citizenship or Place of Organization<br>Delaware  |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7. Sole Voting Power<br>1,968,606 shares, of which 1,899,578 shares are directly owned by PVP V, 37,019 shares are directly owned by PVPE V, 13,012 shares are directly owned by PVPFF V and 18,997 shares are directly owned by PVPSFF V, except that Flint, a managing member of PVM V (which is the general partner of PVP V, PVPE V, PVPFF V and PVPSFF V and may be deemed to have sole power to vote these shares), may be deemed to have shared power to vote these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to vote these shares.                        |
|   | 8. Shared Voting Power<br>See response to row 7.  |
|   | 9. Sole Dispositive Power<br>1,968,606 shares, of which 1,899,578 shares are directly owned by PVP V, 37,019 shares are directly owned by PVPE V, 13,012 shares are directly owned by PVPFF V and 18,997 shares are directly owned by PVPSFF V, except that Flint, a managing member of PVM V (which is the general partner of PVP V, PVPE V, PVPFF V and PVPSFF V and may be deemed to have sole power to dispose of these shares), may be deemed to have shared power to dispose of these shares, and McGuire, a managing member of PVM V, may be deemed to have shared power to dispose of these shares. |
|   | 10. Shared Dispositive Power<br>See response to row 9.  |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br>1,968,606   |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)<br><input type="checkbox"/>  |
| 13.   | Percent of Class Represented by Amount in Row (11)<br>2.3%  |
| 14.   | Type of Reporting Person (See Instructions)<br>OO   |

|   |   |  |
|---|---|--|
| 1.  | Names of Reporting Persons.<br>Jonathan A. Flint  |  |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> |  |
| 3.  | SEC Use Only  |  |
| 4.  | Source of Funds (See Instructions)<br>AF  |  |
| 5.  | Check if Disclosure of Legal Proceedings is Required Pursuant to Items 2(d) or 2(e)<br><input type="checkbox"/>                             |  |
| 6.  | Citizenship or Place of Organization<br>USA   |  |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.  | Sole Voting Power<br><br>1,968,606 shares, of which 1,899,578 shares are directly owned by PVP V, 37,019 shares are directly owned by PVPE V, 13,012 shares are directly owned by PVPFF V and 18,997 shares are directly owned by PVPSFF V, except that PVM V, as the general partner of PVP V, PVPE V, PVPFF V and PVPSFF V, may be deemed to have sole power to vote PVP V's, PVPE V's, PVPFF V's and PVPSFF V's shares (collectively, the "Fund V Shares"), and McGuire, as a managing member of PVM V, may be deemed to have shared power to vote the Fund V Shares. |
|   | 8.  | Shared Voting Power<br><br>See response to row 7.  |
|   | 9.  | Sole Dispositive Power<br><br>1,968,606 shares, of which 1,899,578 shares are directly owned by PVP V, 37,019 shares are directly owned by PVPE V, 13,012 shares are directly owned by PVPFF V and 18,997 shares are directly owned by PVPSFF V, except that PVM V, as general partner of PVP V, PVPE V, PVPFF V and PVPSFF V, maybe deemed to have sole power to dispose of the Fund V Shares, and McGuire, as a managing member of PVM V, may be deemed to have shared power to dispose of the Fund V Shares.  |
|   | 10.   | Shared Dispositive Power<br><br>See response to row 9.   |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br><br>1,968,606   |  |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)<br><input type="checkbox"/>                            |  |
| 13.   | Percent of Class Represented by Amount in Row (11)<br><br>2.3%  |  |
| 14.   | Type of Reporting Person (See Instructions)<br><br>IN   |  |

|   |   |  |
|---|---|--|
| 1.  | Names of Reporting Persons.<br>Terrance G. McGuire  |  |
| 2.  | Check the Appropriate Box if a Member of a Group (See Instructions)<br>(a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> |  |
| 3.  | SEC Use Only  |  |
| 4.  | Source of Funds (See Instructions)<br>AF  |  |
| 5.  | Check if Disclosure of Legal Proceedings is Required Pursuant to Items 2(d) or 2(e)<br><input type="checkbox"/>                             |  |
| 6.  | Citizenship or Place of Organization<br>USA   |  |
| Number of Shares Beneficially Owned by Each Reporting Person With | 7.  | Sole Voting Power<br><br>1,968,606 shares, of which 1,899,578 shares are directly owned by PVP V, 37,019 shares are directly owned by PVPE V, 13,012 shares are directly owned by PVPF V and 18,997 shares are directly owned by PVPSFF V, except that PVM V, as the general partner of PVP V, PVPE V, PVPF V and PVPSFF V, may be deemed to have sole power to vote the Fund V Shares, and Flint, as a managing member of PVM V, may be deemed to have shared power to vote the Fund V Shares.              |
|   | 8.  | Shared Voting Power<br><br>See response to row 7.  |
|   | 9.  | Sole Dispositive Power<br><br>1,968,606 shares, of which 1,899,578 shares are directly owned by PVP V, 37,019 shares are directly owned by PVPE V, 13,012 shares are directly owned by PVPF V and 18,997 shares are directly owned by PVPSFF V, except that PVM V, as general partner of PVP V, PVPE V, PVPF V and PVPSFF V, may be deemed to have sole power to dispose of the Fund V Shares, and Flint, as a managing member of PVM V, may be deemed to have shared power to dispose of the Fund V Shares. |
|   | 10.   | Shared Dispositive Power<br><br>See response to row 9.   |
| 11.   | Aggregate Amount Beneficially Owned by Each Reporting Person<br><br>1,968,606   |  |
| 12.   | Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)<br><input type="checkbox"/>                            |  |
| 13.   | Percent of Class Represented by Amount in Row (11)<br><br>2.3%  |  |
| 14.   | Type of Reporting Person (See Instructions)<br><br>IN   |  |



**SCHEDULE 13D**

This Amendment No. 3 (this “Amendment No. 3”) amends and supplements the Schedule 13D originally filed with the Securities and Exchange Commission (the “SEC”) on February 14, 2014 (the “Original Schedule 13D”), as amended by Amendment No. 1 filed on May 14, 2015 and Amendment No. 2 filed on February 16, 2016, together with the “Original Schedule 13D” and this Amendment No. 3, the “Schedule 13D”) by the Flint, McGuire, PVP V, PVPE V, PVPFF V, PVPSFF V and PVM V (collectively, the “Reporting Persons”), with respect to shares of Common Stock beneficially owned by the Reporting Persons. This Amendment No. 3 is being filed to report the fact that as of the date hereof the Reporting Persons have ceased to be the beneficial owner of more than 5% of the class of securities. Except as amended or supplemented in this Amendment No. 3, all other information in the Schedule 13D is as set forth therein. Information given in response to each item shall be deemed incorporated by reference to all other items, as applicable. Capitalized terms used herein but not defined shall have the meanings ascribed thereto in the Schedule 13D.

The following Items of the Schedule 13D are hereby amended as follows:

**Item 2. Identity and Background.**

The principal business address of each of the Reporting Persons is c/o Polaris Partners, One Marina Park Drive, 10th Floor, Boston, MA 02210.

**Item 5. Interest in Securities of the Issuer.**

Items 5(a), (b) and (c) of the Original Schedule 13D are hereby amended and restated in their entirety as follows:

The information below is based on a total of 86,625,975 shares of Common Stock outstanding as of October 31, 2018 as reported on the Issuer’s Quarterly Report on Form 10-Q, as filed with the Securities and Exchange Commission of November 1, 2018.

(a) – (b) PVP V directly beneficially owns 1,899,578 shares of Common Stock, or approximately 2.2% of the Common Stock outstanding. PVPE V directly beneficially owns 37,019 shares of Common Stock, or approximately 0.0% of the Common Stock outstanding. PVPFF V directly beneficially owns 13,012 shares of Common Stock, or approximately 0.0% of the Common Stock outstanding. PVPSFF V directly beneficially owns 18,997 shares of Common Stock, or approximately 0.0% of the Common Stock outstanding. PVM V, as the general partner of PVP V, PVPE V, PVPFF V and PVPSFF V, may be deemed to indirectly beneficially own the securities owned by PVP V, PVPE V, PVPFF V and PVPSFF V.

(c) Except as described in this statement, none of the Reporting Persons has effected any transactions in the Common Stock in the 60 days prior to the date of this statement.

(e) The Reporting Persons have ceased to be the beneficial owner of more than 5% of the class of securities due to dilution resulting from increases in the total number of shares of Common Stock outstanding.

**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: February 13, 2019

POLARIS VENTURE PARTNERS V, L.P.

By: Polaris Venture Management Co. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

POLARIS VENTURE PARTNERS ENTREPRENEURS' FUND  
V, L.P.

By: Polaris Venture Management Co. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

POLARIS VENTURE PARTNERS FOUNDERS' FUND V, L.P.

By: Polaris Venture Management Co. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

POLARIS VENTURE PARTNERS SPECIAL FOUNDERS'  
FUND V, L.P.

By: Polaris Venture Management Co. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

POLARIS VENTURE MANAGEMENT CO. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

JONATHAN A. FLINT

By: \* \_\_\_\_\_  
Jonathan A. Flint

TERRANCE G. MCGUIRE

By: \* \_\_\_\_\_  
Terrance G. McGuire

\*By: /s/ Max Eisenberg  
Name: Max Eisenberg  
Attorney-in-Fact

[This Schedule 13D was executed pursuant to a Power of Attorney. Note that copies of the applicable Powers of Attorney are already on file with the appropriate agencies.]

**Exhibit A**

AGREEMENT REGARDING THE JOINT FILING OF  
SCHEDULE 13D

The undersigned, being duly authorized thereunto, hereby execute this agreement as an exhibit to this Schedule 13D to evidence the agreement of the below-named parties, in accordance with the rules promulgated pursuant to the Securities Exchange Act of 1934, to file this Schedule jointly on behalf of each such party.

Date: February 13, 2019

POLARIS VENTURE PARTNERS V, L.P.

By: Polaris Venture Management Co. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

POLARIS VENTURE PARTNERS ENTREPRENEURS' FUND  
V, L.P.

By: Polaris Venture Management Co. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

POLARIS VENTURE PARTNERS FOUNDERS' FUND V, L.P.

By: Polaris Venture Management Co. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

POLARIS VENTURE PARTNERS SPECIAL FOUNDERS'  
FUND V, L.P.

By: Polaris Venture Management Co. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

POLARIS VENTURE MANAGEMENT CO. V, L.L.C.

By: \* \_\_\_\_\_  
Managing Member

JONATHAN A. FLINT

By: \* \_\_\_\_\_  
Jonathan A. Flint

TERRANCE G. MCGUIRE

By: \* \_\_\_\_\_  
Terrance G. McGuire

\*By: /s/ Max Eisenberg  
Name: Max Eisenberg  
Attorney-in-Fact

[This Schedule 13D was executed pursuant to a Power of Attorney. Note that copies of the applicable Powers of Attorney are already on file with the appropriate agencies.]