

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

SCHEDULE 14A

Proxy Statement Pursuant to Section 14(a) of  
the Securities Exchange Act of 1934

Filed by the Registrant

Filed by a Party other than the Registrant

Check the appropriate box:

- Preliminary Proxy Statement
- Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material under §240.14a-12

**Genocea Biosciences, Inc.**

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(Name of Registrant as Specified In Its Charter)

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(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- No fee required.
- Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
  - (1) Title of each class of securities to which transaction applies:
  - (2) Aggregate number of securities to which transaction applies:  
Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):
  - (3) Proposed maximum aggregate value of transaction:
  - (5) Total fee paid:
- Fee paid previously with preliminary materials.  
Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.
- (1) Amount Previously Paid:
  - (2) Form, Schedule or Registration Statement No.:
  - (3) Filing Party:
  - (4) Date Filed:

GENOCEA BIOSCIENCES, INC.  
 100 ACORN PARK, DRIVE, 5TH FLOOR  
 ATTN: CORPORATE CONTROLLER  
 CAMBRIDGE, MA 02140

**VOTE BY INTERNET - www.proxyvote.com**

Use the Internet to transmit your voting instructions and for electronic delivery of information up until 11:59 P.M. Eastern Time the day before the cut-off date or meeting date. Have your proxy card in hand when you access the web site and follow the instructions to obtain your records and to create an electronic voting instruction form.

**ELECTRONIC DELIVERY OF FUTURE PROXY MATERIALS**

If you would like to reduce the costs incurred by our company in mailing proxy materials, you can consent to receiving all future proxy statements, proxy cards and annual reports electronically via e-mail or the Internet. To sign up for electronic delivery, please follow the instructions above to vote using the Internet and, when prompted, indicate that you agree to receive or access proxy materials electronically in future years.

**VOTE BY PHONE - 1-800-690-6903**

Use any touch-tone telephone to transmit your voting instructions up until 11:59 P.M. Eastern Time the day before the cut-off date or meeting date. Have your proxy card in hand when you call and then follow the instructions.

**VOTE BY MAIL**

Mark, sign and date your proxy card and return it in the postage-paid envelope we have provided or return it to Vote Processing, c/o Broadridge, 51 Mercedes Way, Edgewood, NY 11717.

TO VOTE, MARK BLOCKS BELOW IN BLUE OR BLACK INK AS FOLLOWS:

KEEP THIS PORTION FOR YOUR RECORDS  
 DETACH AND RETURN THIS PORTION ONLY

THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.

The Board of Directors recommends you vote FOR the following: 1. Election of Class II Directors Nominees 01 Katrina Bosley      02 Michael Higgins      03 Dr. Stephen Hoffman		For All <input type="checkbox"/> Withhold All <input type="checkbox"/> For All Except <input type="checkbox"/>	To withhold authority to vote for any items except the ones indicated, check the "Withhold" box and write the number(s) of the item(s) on the line below.
The Board of Directors recommends you vote FOR the following proposal: 2. Ratify the appointment of Ernst & Young LLP as the independent registered public accounting firm for fiscal year 2016. NOTE: Such other business as may properly come before the meeting or any adjournment thereof.		For <input type="checkbox"/> Against <input type="checkbox"/> Abstain <input type="checkbox"/>	
For address change/comments, mark here. (see reverse for instructions)		<input type="checkbox"/>	
Please sign exactly as your name(s) appear(s) hereon. When signing as attorney, executor, administrator, or other fiduciary, please give full title as such. Joint owners should each sign personally. All holders must sign. If a corporation or partnership, please sign in full corporate or partnership name by authorized officer.			
Signature [PLEASE SIGN WITHIN BOX]      Date		Signature (Joint Owners)      Date	

**Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting:**  
 The Notice and Proxy Statement and Annual Report are available at [www.proxyvote.com](http://www.proxyvote.com)

**PROXY**

THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS OF GENOCEA BIOSCIENCES, INC.

The undersigned hereby appoints William Clark and Jonathon Poole, and each of them, with power to act without the other and with power of substitution, as proxies and attorneys-in-fact and hereby authorizes them to represent and vote, as provided on the other side, all the shares of GENOCEA BIOSCIENCES, INC. Common Stock which the undersigned is entitled to vote and, in their discretion, to vote upon such other business as may properly come before the Annual Meeting of Shareowners of the Company to be held on Tuesday, June 7, 2016 at 9:00 A.M. EDT or any adjournment thereof, with all powers which the undersigned would possess if present at the Meeting.

**THIS PROXY CARD, WHEN PROPERLY EXECUTED, WILL BE VOTED IN THE MANNER DIRECTED HEREIN BY THE UNDERSIGNED. IF NO DIRECTION IS MADE BUT THE CARD IS SIGNED, THIS PROXY CARD WILL BE VOTED FOR THE ELECTION OF ALL NOMINEES UNDER PROPOSAL 1 AND FOR PROPOSAL 2 AND IN THE DISCRETION OF THE PROXIES WITH RESPECT TO SUCH OTHER BUSINESS AS MAY PROPERLY COME BEFORE THE MEETING.**

Address Changes/Comments:

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 \_\_\_\_\_

(If you noted any Address Changes and/or Comments above, please mark corresponding box on the reverse side.)

**Continued and to be signed on reverse side**

**Voting Items**

The Board of Directors recommends you vote FOR the following:

1. Election of Class II Directors

Nominees

01 Katrine Bosley      02 Michael Higgins      03 Dr. Stephen Hoffman

The Board of Directors recommends you vote FOR the following proposal:

2 Ratify the appointment of Ernst & Young LLP as the independent registered public accounting firm for fiscal year 2016.

NOTE: Such other business as may properly come before the meeting or any adjournment thereof.

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