



DIVISION OF
CORPORATION FINANCE

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

December 11, 2013

Via E-mail

William Clark
Chief Executive Officer
Genocea Biosciences, Inc.
100 Acorn Park Drive, 5th Floor
Cambridge, MA 02140

**Re: Genocea Biosciences, Inc.
Amendment No. 1 to Draft Registration Statement on Form S-1
Submitted November 27, 2013
CIK No. 0001457612**

Dear Mr. Clark:

We have reviewed your draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

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1. We note your response to our prior comment 13. Please advise us of the indication and filing date for each of the INDs submitted for GEN-003 and GEN-004.
2. We note your response to our prior comments 19-23. For each of your in-license agreements and other collaboration agreements on pages 99-103, please disclose the total aggregate milestone payments to be paid, as well as the aggregate milestone payments paid to date.

If you intend to respond to these comments with an amended draft registration statement, please submit it and any associated correspondence in accordance with the guidance we provide in the Division's October 11, 2012 announcement on the SEC website at <http://www.sec.gov/divisions/corpfin/cfannouncements/drsfilingprocedures101512.htm>.

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Please keep in mind that we may publicly post filing review correspondence in accordance with our December 1, 2011 policy (<http://www.sec.gov/divisions/corpfin/cfannouncements/edgarcorrespondence.htm>). If you intend to use Rule 83 (17 CFR 200.83) to request confidential treatment of information in the correspondence you submit on EDGAR, please properly mark that information in each of your confidential submissions to us so we do not repeat or refer to that information in our comment letters to you.

You may contact Ibolya Ignat at (202) 551-3656 or Lisa Vanjoske at (202) 551-3614 if you have questions regarding comments on the financial statements and related matters. Please contact Matthew Jones at (202) 551-3786, John Krug at (202) 551-3862 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Daniel Greenspan for

Jeffrey P. Riedler
Assistant Director

cc: Marc Rubenstein, Esq.
Ropes & Gray LLP
Prudential Tower
800 Boylston Street
Boston, MA 02199