



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

DIVISION OF
CORPORATION FINANCE

Mail Stop 3561

May 5, 2017

Via E-mail

Randal J. Kirk
Chief Executive Officer
Intrexon Corporation
20374 Seneca Meadows Parkway
Germantown, Maryland 20876

**Re: Intrexon Corporation
Supplemental Response to the Registration Statement on Form S-4
Submitted May 4, 2017
File No. 333-216808**

Dear Mr. Lehr:

We have reviewed your supplemental response to the amended 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 amending your registration statement and providing the requested information. 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 any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments. Unless we note otherwise, our references to prior comments are to comments in our April 13, 2017 letter.

Material U.S. federal income tax consequences of the merger, page 87

1. We note your proposed disclosure on page 12 and 87 stating that "Intrexon and GenVec anticipate that sufficient qualifying merger consideration will ultimately be issued such that the control test will be satisfied and that the merger will qualify as a reorganization." We also note your proposed disclosure that "Intrexon and GenVec anticipate that the merger should satisfy the other technical requirements to qualify as a 'reorganization' within the meaning of Section 368(a)(2)(E) of the Code" Your proposed disclosure appears to continue to include representations as to the tax consequences of the merger. Please file a tax opinion as an exhibit to your registration statement.

Randal Kirk
Intrexon Corporation
May 5, 2017
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Please contact Michael Killoy at (202) 551- 7576 or David Link at (202) 551-3356 with any questions.

Sincerely,

/s/ David Link for

John Reynolds
Assistant Director
Office of Beverages, Apparel,
and Mining

cc: Corby J. Baumann
Thompson Hine LLP