



DIVISION OF
CORPORATION FINANCE

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

March 13, 2012

Via E-Mail

Keith Murphy

Chairman of the Board, Chief Executive Officer, and President

Organovo Holdings, Inc.

5871 Oberlin Drive, Suite 150

San Diego, CA 92121

**Re: Organovo Holdings, Inc.
Form 8-K
Filed February 13, 2012
File No. 333-169928**

Dear Mr. Murphy:

We have reviewed your filing 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 within ten business days by amending your filing, by providing the requested information, or by advising us when you will provide the requested response. 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 filing and the information you provide in response to these comments, we may have additional comments.

General

1. We note that you filed a confidential treatment request, in conjunction with the filing of this Form 8-K, on February 14, 2012. We will not be able to clear our review of your Form 8-K filing until we have also completed our review of that accompanying confidential treatment request.

The Novogen MMX Bioprinter, page 15

2. You disclose that your NovoGen MMX Bioprinter™ is manufactured for you by Invetech Pty., of Melbourne, Australia. Please advise us whether you have an agreement with Invetech Pty. If so, please file a copy of this agreement as an exhibit and expand your disclosure to disclose all the material terms of the agreement. Alternatively, provide us with a detailed analysis that supports your conclusion that your business is not substantially dependent upon this agreement.

Collaborative Agreements, page 17

3. Given your financial position it appears that the collaborative agreements you disclose are material to your company. Please expand your disclosure here to include all the material terms of your agreements with both Pfizer and Unither, including, but not limited to material payment terms, aggregate amounts paid to date, material obligations that must be met by both parties to keep the agreement in place and termination provisions. In addition, please file each of these collaboration agreements as an exhibit to your next amendment. Alternatively, provide us with a detailed analysis that supports your conclusion that your business is not substantially dependent upon these agreements.

Intellectual Property, page 19

4. We note your disclosure here of your license agreements with University of Missouri-Columbia, Medical University of South Carolina and Clemson University. Regardless of the confidential treatment that was filed in conjunction with this Form 8-K, please expand your disclosure to include the aggregate milestone payments due under each agreement, a range of the royalty rates due under each agreement, aggregate amounts paid to date, material obligations that must be met by both parties to keep the agreement in place, duration and termination provisions. Please also file the agreement with Medical University of South Carolina as an exhibit to your next amendment.
5. Please disclose the expiration date of each of the material patents that you discuss.

Executive Compensation, page 54

6. Please expand your disclosure here to include all the material terms of Mr. Murphy's employment agreement, and please file the agreement as an exhibit to your next amendment, as you have for Mr. Michaels and Ms. Presnell.

Exhibits, page 70

7. We note that for several agreements listed in this exhibit list you note that they are to be filed by amendment. Please promptly file all missing agreements with your next amendment.

Financial Statements for the Period Ended September 30, 2011

1. Summary of Significant Accounting Policies, page F-26

8. Please disclose your accounting policy for "prepaid expenses and other current assets" and "other assets." Disclose the nature of the items included in these line items and to the extent any of the items included in "prepaid expenses and other current assets" and "other assets" exceeds 5% of the current assets and total assets, respectively, separately quantify it in accordance with Rule 5-02 of Regulation S-X.

9. You state on page 25 that you have collaborative research agreements with Pfizer and Unither and will seek to enter additional collaborations. You also disclose on page F-10 that you recognize revenues from collaboration agreements. Please disclose all of your collaboration agreements as required under ASC 808-10-50.

7. Licensing Agreements, page F-35

10. Please disclose the amount of prior patent costs you are required to reimburse, the gross carrying amount and accumulated amortization of the license agreements, the aggregate amortization expense for the periods presented, the weighted average amortization period, and the estimated aggregate amortization expense for each of the five succeeding fiscal years. Refer to ASC 350-30-50.

Unaudited Pro Forma Condensed Combined Balance Sheet, page F-41

11. Please disclose the terms that require the warrants to be classified as a liability and the assumptions used to determine the value of the warrants.

Notes to Unaudited Pro Forma Combined Financial Statements, page F-44

12. Please ensure that the disclosures provided on page F-45 are complete and include appropriate dates.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Exchange Act of 1934 and all applicable Exchange Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In responding to our comments, please provide a written statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Keith Murphy
Organovo Holdings, Inc.
March 13, 2012
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You may contact Keira Ino at 202-551-3659 or Gustavo Rodriguez at 202-551-3752 if you have questions regarding comments on the financial statements and related matters. Please contact Michael Rosenthal at 202-551-3674, Jennifer Riegel at 202-551-3575 or me at 202-551-3715 with any other questions.

Sincerely,

/s/ Jennifer Riegel for

Jeffrey Riedler
Assistant Director