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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): December 18, 2013

ORGANOVO HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Commission File Number: 001-35996

Delaware
(State or other jurisdiction
of incorporation)

27-1488943
(I.R.S. Employer
Identification No.)

**6275 Nancy Ridge Dr.,
San Diego, California 92121**
(Address of principal executive offices, including zip code)

(858) 550-9994
(Registrant's telephone number, including area code)

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
 - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
 - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
 - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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Item 7.01 Regulation FD Disclosure

Organovo Holdings, Inc. (the “Company”) released initial data at the American Society for Cell Biology (ASCB) meeting in New Orleans, Louisiana, on a NovoGen 3D bioprinted human breast cancer tissue for in vitro screening of therapeutics targeted against cancer progression. The data demonstrated that NovoGen bioprinted breast cancer tissues retain compartmentalized structures with interaction between stromal and cancer cells. Following bioprinting of the stromal compartment, formation of endothelial networks and differentiation of adipocytes were observed in these tissues. NovoGen 3D bioprinted constructs were demonstrated to be less susceptible to tamoxifen-induced toxicity than isolated 2D cancer cells when treated with the same dose of tamoxifen for the same duration, highlighting the potential utility of this model in identifying superior drugs with greater toxicity against complex, multicellular 3D tumor models.

The Company also released additional data on its NovoGen Bioprinted 3D Liver assay at the ASCB meeting. Additional evidence of the formation of tight junctions in the liver tissues was seen, evidenced by claudin staining by day 3 of tissue formation. NovoGen Bioprinted 3D Liver tissues also showed additional evidence of appropriate response to hepatotoxic insults from acetaminophen, acetaminophen in combination with ethanol, and diclofenac.

The information furnished on this Form 8-K shall not be deemed “filed” for purposes of Section 18 of the Exchange Act or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference into any other filing under the Securities Act of 1933 or the Securities Exchange Act of 1934, except as expressly set forth by specific reference in such a filing.

Forward-Looking Statements

The Company cautions you that the statements included in this Current Report on Form 8-K that are not a description of historical facts are forward-looking statements. These include statements regarding: the potential benefits and uses of the Company’s 3D tissues and the Company’s ability to successfully complete additional studies and development activities. Actual results may differ materially from those set forth in this Current Report on Form 8-K due to the risks and uncertainties inherent in the Company’s business. The factors that could cause the Company’s actual future results to differ materially from current expectations are identified and described in more detail in the Company’s filings with the SEC, including its prospectus supplement filed with the SEC on November 27, 2013, its report on Form 10-Q filed November 8, 2013 and its transition report on Form 10-KT filed with the SEC on May 24, 2013. You should not place undue reliance on these forward-looking statements, which speak only as of the date of this Current Report. These cautionary statements should be considered with any written or oral forward-looking statements that the Company may issue in the future. Except as required by applicable law, including the securities laws of the United States, we do not intend to update any of the forward-looking statements to conform these statements to reflect actual results, later events or circumstances or to reflect the occurrence of unanticipated events.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this Report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: December 18, 2013

ORGANOVO HOLDINGS, INC.

/s/ Keith Murphy

Keith Murphy

Chief Executive Officer