
**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): March 16, 2018

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 Drive, Suite 110
San Diego, CA 92121**
(Address of principal executive offices, including zip code)

(858) 224-1000
(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:

- 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))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (17 CFR §230.405) or Rule 12b-2 of the Securities Exchange Act of 1934 (17 CFR §240.12b-2). Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Item 1.01 Entry into Material Definitive Agreement.

On March 16, 2018, Organovo Holdings, Inc. (the “Company”) entered into a Sales Agreement (the “Sales Agreement”) with H.C. Wainwright & Co., LLC and JonesTrading Institutional Services LLC (each an “Agent” and together, the “Agents”), pursuant to which the Company may offer and sell, from time to time through the Agents, shares of its common stock in “at the market” sales transactions having an aggregate offering price of up to \$50,000,000 (the “Shares”). Any Shares offered and sold will be issued pursuant to the Company’s Shelf Registration Statement on Form S-3 (Registration No. 333-222929) and the related prospectus previously declared effective by the Securities and Exchange Commission (the “SEC”) on February 22, 2018, as supplemented by a prospectus supplement, dated March 16, 2018.

Under the Sales Agreement, the Agents may each sell Shares by any method permitted by law and deemed to be an “at the market offering” as defined in Rule 415(a)(4) promulgated under the Securities Act of 1933, as amended.

The Company is not obligated to make any sales of Shares under the Sales Agreement, and if it elects to make any sales, it can set a minimum sales price for the Shares. The offering of Shares pursuant to the Sales Agreement will terminate upon the sale of an aggregate of \$50,000,000 of Shares pursuant to the Sales Agreement. In addition, the Sales Agreement may be individually terminated by the Agents or the Company, as permitted therein.

The Company will pay the Agents a commission rate of up to 3.0% of the aggregate gross proceeds from each sale of Shares, if any, and has agreed to provide the Agents with customary indemnification and contribution rights. The Company will also reimburse the Agents for certain specified expenses in connection with entering into the Sales Agreement.

The Company intends to use discretion in initiating sales, if any, under the Sales Agreement and believes that it is in the best interests of its stockholders to have the flexibility to raise additional capital under favorable market conditions to support its efforts to build long-term stockholder value. There are a number of potential benefits to raising funds through the Sales Agreement, including minimizing dilution by avoiding share price discounts, greater banking fees and the potential for share price degradation that can result from raising capital through private or public underwritten offerings.

The Company currently intends to use the net proceeds from the sale of the securities for operating costs, research and development and for general corporate purposes, including working capital. It may also use a portion of the net proceeds to invest in or acquire businesses or technologies that it believes are complementary to its own, although the Company has no current plans, commitments or agreements with respect to any acquisitions as of the date hereof.

The foregoing description of the Sales Agreement is not complete and is qualified in its entirety by reference to the full text of such agreement, a copy of which is filed as Exhibit 10.1 to this Current Report on Form 8-K and is incorporated herein by reference. The opinion of the Company’s counsel regarding the validity of the Shares that will be issued pursuant to the Sales Agreement is also filed herewith as Exhibit 5.1.

This Current Report on Form 8-K shall not constitute an offer to sell or the solicitation of an offer to buy the Shares, nor shall there be any offer, solicitation, or sale of the Shares in any state in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state.

Item 1.02 Termination of a Material Definitive Agreement.

Effective March 16, 2018 the Company terminated that certain Controlled Equity OfferingSM Sales Agreement, dated December 30, 2014, by and between the Company and Cantor Fitzgerald & Co., in accordance with the terms of such agreement.

Item 9.01 Financial Statements and Exhibits.

<u>Exhibit No.</u>	<u>Description</u>
5.1	Opinion of Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP.
10.1	Sales Agreement, dated March 16, 2018, by and among the Company, H.C. Wainwright & Co., LLC and JonesTrading Institutional Services LLC.

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: March 16, 2018

ORGANOVO HOLDINGS, INC.

By: /s/ Craig Kussman
Name: Craig Kussman
Title: Chief Financial Officer

SILICON VALLEY
ANN ARBOR
BEIJING
BOSTON
LOS ANGELES
NEW YORK
SAN DIEGO
SAN FRANCISCO
SINGAPORE



March 16, 2018

Organovo Holdings, Inc.
6275 Nancy Ridge Drive, Suite 110
San Diego, CA 92121

Ladies and Gentlemen:

We have acted as counsel to Organovo Holdings, Inc., a Delaware corporation (the “**Company**”), and you have requested our opinion with respect to certain matters in connection with the offering by the Company of the number of authorized but unissued shares having aggregate sale proceeds of up to \$50 million (the “**Shares**”) of the Company’s common stock, par value \$0.001 (the “**Common Stock**”), to be issued pursuant to the Registration Statement on Form S-3 (File No. 333-222929) originally filed with the Securities and Exchange Commission (the “**Commission**”) under the Securities Act of 1933, as amended (the “**Act**”), on February 8, 2018 (the “**Registration Statement**”), the related prospectus dated February 22, 2018, included in the Registration Statement (the “**Base Prospectus**”), and the prospectus supplement to be filed with the Commission pursuant to Rule 424(b) of the rules and regulations of the Act (the “**Prospectus Supplement**”). The Base Prospectus and the Prospectus Supplement are collectively referred to as the “**Prospectus**.” The Shares are to be sold by the Company in accordance with a Common Stock Sales Agreement (the “**Sales Agreement**”), dated March 16, 2018, by and among the Company and H.C. Wainwright & Co., LLC and JonesTrading Institutional Services LLC, as described in the Prospectus Supplement.

In connection with this opinion, we have examined and relied upon the Registration Statement, the Prospectus, the Company’s Certificate of Incorporation and Bylaws, as currently in effect, and the originals or copies certified to our satisfaction of such other documents, records, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. With your consent, we have relied upon certificates and other assurances of officers of the Company as to factual matters without having independently verified such factual matters. We have assumed the genuineness and authenticity of all documents submitted to us as originals, and the conformity to originals of all documents submitted to us as copies thereof and the due execution and delivery by all parties other than the Company of all documents where due execution and delivery are a prerequisite to the effectiveness thereof.

This opinion is being furnished in connection with the requirements of Item 601(b)(5) of Regulation S-K under the Act, and no opinion is expressed herein as to any matter pertaining to the contents of the Registration Statement or the Prospectus, other than as expressly stated herein with respect to the issue of the Shares. Our opinion is limited to the matters stated herein and no opinion is implied or may be inferred beyond the matters expressly stated. Our opinion herein is expressed solely with respect to the General Corporation Law of the State of Delaware and we express no opinion with respect to any other laws. Our opinion is based on these laws as in effect on the date hereof, and we disclaim any obligation to advise you of facts, circumstances, events or developments which hereafter may be brought to our attention and which may alter, affect or modify the opinion expressed herein.

Subject to the foregoing and the other matters set forth herein, it is our opinion that, when the Shares to be issued and sold by the Company are issued and paid for in accordance with the terms of the Sales Agreement, such Shares will be validly issued, fully paid and nonassessable.

GUNDERSON DETTMER STOUGH VILLENEUVE FRANKLIN & HACHIGIAN, LLP
3570 CARMEL MOUNTAIN ROAD, SUITE 200, SAN DIEGO, CA 92130 / PHONE: 858.436.8000 / FAX: 877.881.9192

Organovo Holdings, Inc.
March 16, 2018
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We consent to the reference to our firm under the caption “Legal Matters” in the Prospectus Supplement and to the filing of this opinion as an exhibit to a Current Report of the Company on Form 8-K. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Very truly yours,

/s/ Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP

GUNDERSON DETTMER STOUGH VILLENEUVE FRANKLIN & HACHIGIAN, LLP

ORGANOVO HOLDINGS, INC.COMMON STOCKSALES AGREEMENT

March 16, 2018

H.C. Wainwright & Co., LLC
430 Park Avenue
New York, NY 10022

JonesTrading Institutional Services LLC
757 Third Avenue, 23rd Floor
New York, NY 10017

Ladies and Gentlemen:

Organovo Holdings, Inc., a Delaware corporation (the “**Company**”), confirms its agreement (this “**Agreement**”) with H.C. Wainwright & Co., LLC (“**HCW**”) and JonesTrading Institutional Services LLC (“**JonesTrading**”), each of HCW and JonesTrading individually an “**Agent**” and collectively, the “**Agents**”), as follows:

1. **Issuance and Sale of Placement Shares.** The Company agrees that, from time to time during the term of this Agreement, on the terms and subject to the conditions set forth herein, and in its sole discretion, it may issue and sell through the Agents, shares (the “**Placement Shares**”) of the Company’s common stock, \$0.001 par value per share (the “**Common Stock**”); *provided however*, that in no event shall the Company issue or sell through the Agents such number of Placement Shares that (a) exceeds the number of shares or dollar amount of Common Stock registered on the effective Registration Statement (as defined below) pursuant to which the offering is being made, or (b) exceeds the number of shares or dollar amount registered on the Prospectus Supplement (as defined below) (the lesser of (a) or (b), the “**Maximum Amount**”). Notwithstanding anything to the contrary contained herein, the parties hereto agree that compliance with the limitations set forth in this **Section 1** on the number of Placement Shares issued and sold under this Agreement shall be the sole responsibility of the Company and that the Agents shall have no obligation in connection with such compliance. The issuance and sale of Placement Shares through the Agents will be effected pursuant to the Registration Statement (as defined below), although nothing in this Agreement shall be construed as requiring the Company to use the Registration Statement to issue any Placement Shares.

The Company has filed, in accordance with the provisions of the Securities Act of 1933, as amended, and the rules and regulations thereunder (the “**Securities Act**”), with the Securities and Exchange Commission (the “**Commission**”), a registration statement on Form S-3 (File No. 333-222929), including a base prospectus, relating to certain securities to be issued from time to time by the Company, and which incorporates by reference documents that the Company has

filed or will file in accordance with the provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder (the "**Exchange Act**"). The Company has prepared a prospectus supplement to the base prospectus included as part of the registration statement, which prospectus supplement relates to the Placement Shares to be issued from time to time by the Company pursuant to this Agreement (the "**Prospectus Supplement**"). The Company will furnish to the Agents, for use by the Agents, copies of the base prospectus included as part of such registration statement, as supplemented by the Prospectus Supplement, relating to the Placement Shares to be issued from time to time by the Company. The Company may file, if necessary, one or more additional registration statements from time to time that will contain a base prospectus and related prospectus or prospectus supplement, if applicable (which shall be a Prospectus Supplement), with respect to the Placement Shares. Except where the context otherwise requires, such registration statement(s) and any post-effective amendment thereto, including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus (as defined below) subsequently filed with the Commission pursuant to Rule 424(b) under the Securities Act or deemed to be a part of such registration statement(s) pursuant to Rule 430B of the Securities Act, or any subsequent registration statement on Form S-3 filed pursuant to Rule 415(a)(6) under the Securities Act by the Company to cover any Placement Shares, is herein called the "**Registration Statement**." The base prospectus or base prospectuses, including all documents incorporated or deemed incorporated therein by reference, included in the Registration Statement, as it may be supplemented by the Prospectus Supplement, in the form in which such prospectus or prospectuses and/or Prospectus Supplement have most recently been filed by the Company with the Commission pursuant to Rule 424(b) under the Securities Act, together with the then issued Issuer Free Writing Prospectus(es), is herein called the "**Prospectus**."

Any reference herein to the Registration Statement, the Prospectus or any amendment or supplement thereto shall be deemed to refer to and include any documents deemed incorporated by reference therein (pursuant to the Securities Act or the Exchange Act) (the "**Incorporated Documents**"), and any reference herein to the terms "amend," "amendment" or "supplement" with respect to the Registration Statement or the Prospectus shall be deemed to refer to and include the filing after the execution hereof of any Incorporated Document. For purposes of this Agreement, all references to the Registration Statement, to the Prospectus, to the Incorporated Documents or to any amendment or supplement thereto shall be deemed to include the most recent copy filed with the Commission pursuant to its Electronic Data Gathering Analysis and Retrieval System, or if applicable, the Interactive Data Electronic Application system when used by the Commission (collectively, "**EDGAR**").

2. **Placements.** Each time that the Company wishes to issue and sell Placement Shares hereunder (each, a "**Placement**"), it will notify an Agent (the "**Designated Agent**") by email notice from a person identified on **Schedule 2** (or other method mutually agreed to in writing by the parties) (a "**Placement Notice**") containing the parameters in accordance with which it desires the Placement Shares to be sold, which shall at a minimum include the number of Placement Shares to be issued, the time period during which sales are requested to be made, any limitation on the number of Placement Shares that may be sold in any one Trading Day (as defined in **Section 3**) and any minimum price below which sales may not be made, a form of which containing such minimum sales parameters necessary is attached hereto as **Schedule 1**. The Placement Notice shall originate from any of the individuals from the Company set forth on

Schedule 2 (with a copy to each of the other individuals from the Company listed on such schedule), and shall be addressed to each of the individuals from the Designated Agent set forth on **Schedule 2**, as such **Schedule 2** may be amended from time to time. The receipt of each Placement Notice shall promptly be acknowledged by the Designated Agent by providing email notice to the Company to a person designated on **Schedule 2**. The Placement Notice shall be effective upon receipt by the Designated Agent unless and until (i) in accordance with the notice requirements set forth in **Section 4**, the Designated Agent declines to accept the terms contained therein for any reason, in its sole discretion, (ii) the entire amount of the Placement Shares included in the Placement Notice have been sold thereunder, (iii) in accordance with the notice requirements set forth in **Section 4**, the Company suspends or terminates the Placement Notice, (iv) the Company issues a subsequent Placement Notice with parameters superseding those on the earlier dated Placement Notice, or (v) this Agreement has been terminated under the provisions of **Section 11**. The amount of any discount, commission or other compensation to be paid by the Company to the Designated Agent in connection with the sale of the Placement Shares shall be calculated in accordance with the terms set forth in **Schedule 3**. It is expressly acknowledged and agreed that neither the Company nor the Designated Agent will have any obligation whatsoever with respect to a Placement or any Placement Shares unless and until the Company delivers a Placement Notice to the Designated Agent and the Designated Agent does not decline such Placement Notice pursuant to the terms set forth above, and then only upon the terms specified therein and herein. In the event of a conflict between the terms of this Agreement and the terms of a Placement Notice, the terms of the Placement Notice will control.

3. Sale of Placement Shares by the Designated Agent.

(a) Subject to the terms and conditions herein set forth, upon the Company's delivery of a Placement Notice, and unless the sale of the Placement Shares described therein has been declined, suspended, or otherwise terminated in accordance with the terms of this Agreement, the Designated Agent, for the period specified in the Placement Notice, will use its commercially reasonable efforts consistent with its normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of the Nasdaq Global Market (the "**Exchange**") to sell such Placement Shares up to the amount specified, and otherwise in accordance with the terms of such Placement Notice. The Designated Agent will provide written confirmation to the Company (including by email correspondence to each of the individuals of the Company set forth on **Schedule 2**, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) no later than the opening of the Trading Day (as defined below) immediately following the Trading Day on which it has made sales of Placement Shares hereunder setting forth the number of Placement Shares sold on such day, the compensation payable by the Company to the Designated Agent pursuant to **Section 2** with respect to such sales and the Net Proceeds (as defined below) payable to the Company. The Designated Agent may sell Placement Shares by any method permitted by law deemed to be an "at the market offering" as defined in Rule 415 of the Securities Act. Notwithstanding the provisions of **Section 6(pp)**, the Designated Agent shall not purchase Placement Shares for its own account as principal unless expressly authorized to do so by the Company in a Placement Notice. During the term of this Agreement, neither the Agents nor any of their respective affiliates or subsidiaries, shall, for their own respective account, engage in (i) any short sale of any security of the Company, (ii) any sale of any security of the Company that the respective Agents do not own or any sale which is consummated by the delivery of a security of the

Company borrowed by, or for the account of, the Agents, or (iii) in any proprietary trading or trading for the Agents (or their respective affiliates' or subsidiaries') own account. Notwithstanding the foregoing, these restrictions shall not apply to bona fide transactions executed by the Agents on behalf and at the discretion of any of their respective third party customer accounts. The Company acknowledges and agrees that (i) there can be no assurance that the Designated Agent will be successful in selling Placement Shares, and (ii) the Designated Agent will incur no liability or obligation to the Company or any other person or entity if it does not sell Placement Shares for any reason other than a failure by the Designated Agent to use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such Placement Shares as required under this Section 3. For the purposes hereof, "**Trading Day**" means any day on which the Company's Common Stock is purchased and sold on the principal market on which the Common Stock is listed or quoted.

(b) Limitations on Offering Size. Under no circumstances shall the Company request the offer or sale of any Placement Shares if, after giving effect to the sale of such Placement Shares, the aggregate number of Placement Shares sold pursuant to this Agreement would exceed the lesser of (A) together with all sales of Placement Shares under this Agreement, the Maximum Amount, and (B) the amount authorized from time to time to be issued and sold under this Agreement by the Company's board of directors, a duly authorized committee thereof or a duly authorized executive committee, and notified to the Designated Agent in writing. Under no circumstances shall the Company request the offer or sale of any Placement Shares pursuant to this Agreement at a price lower than the minimum price authorized from time to time by the Company's board of directors, a duly authorized committee thereof or a duly authorized executive committee, and notified to the Designated Agent in writing. Further, under no circumstances shall the Company request the sale of Placement Shares pursuant to this Agreement in an aggregate offering amount that would exceed the Maximum Amount.

4. Suspension of Sales.

(a) The Company or the Designated Agent may, upon notice to the other party in writing (including by email correspondence to each of the individuals of the other party set forth on Schedule 2, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) or by telephone (confirmed immediately by verifiable facsimile transmission or email correspondence to each of the individuals of the other party set forth on Schedule 2), suspend any sale of Placement Shares; *provided, however*, that such suspension shall not affect or impair either party's obligations with respect to any Placement Shares sold hereunder prior to the receipt of such notice. Each of the parties agrees that no such notice under this Section 4 shall be effective against the other unless it is made to one of the individuals named on Schedule 2 hereto, as such schedule may be amended from time to time and in accordance with the notice delivery requirements of this Section 4. While a suspension is in effect, any obligation under Sections 7(m), 7(n), and 7(o) with respect to the delivery of certificates, opinions, or comfort letters to the Agents shall be deemed waived.

(b) Notwithstanding any other provision of this Agreement, during any period in which the Company is in possession of material non-public information, the Company and the Agents agree that (i) no sale of Placement Shares will take place, (ii) the Company shall not

request the sale of any Placement Shares, and (iii) the Agents shall not be obligated to sell or offer to sell any Placement Shares.

5. Settlement.

(a) Settlement of Placement Shares. Unless otherwise specified in the applicable Placement Notice, settlement for sales of Placement Shares will occur on the second (2nd) Trading Day (or such earlier day as is industry practice for regular-way trading) following the date on which such sales are made (each, a “**Settlement Date**” and the first such settlement date, the “**First Delivery Date**”). The amount of proceeds to be delivered to the Company on a Settlement Date against receipt of the Placement Shares sold (the “**Net Proceeds**”) will be equal to the aggregate sales price received by the Designated Agent at which such Placement Shares were sold, after deduction for (i) the Designated Agent’s commission, discount or other compensation for such sales set forth on **Schedule 3**, (ii) any other amounts due and payable by the Company to the Designated Agent hereunder pursuant to Section 7(g) (Expenses) hereof, and (iii) any transaction fees imposed by any governmental or self-regulatory organization in respect of such sales.

(b) Delivery of Placement Shares. On or before each Settlement Date, the Company will, or will cause its transfer agent to, electronically transfer the Placement Shares being sold by crediting the Designated Agent’s or its designee’s account (provided the Designated Agent shall have given the Company written notice of such designee at least one Trading Day prior to the Settlement Date) at The Depository Trust Company through its Deposit and Withdrawal at Custodian System (“**DWAC**”) or by such other means of delivery as may be mutually agreed upon by the parties hereto which in all cases shall be freely tradable, transferable, registered shares in good deliverable form. On each Settlement Date, the Designated Agent will deliver the related Net Proceeds in same day funds to an account designated by the Company on, or prior to, the Settlement Date. The Company agrees that if the Company, or its transfer agent (if applicable), defaults in its obligation to deliver duly authorized Placement Shares on a Settlement Date through no fault of the Designated Agent, in addition to and in no way limiting the rights and obligations set forth in Section 9(a) (Company Indemnification) hereto, it will (i) hold the Designated Agent harmless against any loss, claim, damage, or reasonable, documented expense (including reasonable and documented legal fees and expenses), as incurred, arising out of or in connection with such default by the Company, and (ii) pay to the Designated Agent any commission, discount or other compensation to which it would otherwise have been entitled absent such default.

(c) Sales Through Agents. The Company agrees that any offer to sell, any solicitation of an offer to buy, or any sales of Common Stock or any other equity security of the Company shall only be effected by or through an Agent, and only a single Agent, on any single given date, and in no event shall the Company request that more than one Agent sell Placement Shares on the same day; provided, however, that (i) the foregoing limitation shall not apply to (A) any sales of Common Stock or any other equity security of the Company upon the exercise of any option, warrant, right or any conversion privilege set forth in the instruction governing such securities or any settlement of a restricted stock unit, (B) sales solely to employees, directors, consultants, service providers or security holders of the Company or its subsidiaries, or to a trustee or other person acquiring such securities for the accounts of such person and (ii) such limitation shall not

apply (A) on any day during which no sales are made pursuant to this Agreement or (B) during a period in which the Company has notified the Agents that it will not sell Common Stock under this Agreement and (1) no Placement Notice is pending or (2) after a Placement Notice has been withdrawn.

6. Representations and Warranties of the Company. The Company represents and warrants to, and agrees with, the Agents that, as of the effective date of the Registration Statement, each Representation Date (as defined in Section 7(m)), each date on which a Placement Notice is given, and any date on which Placement Shares are sold hereunder:

(a) Compliance with Registration Requirements. The Registration Statement and any Rule 462(b) Registration Statement have been declared effective by the Commission under the Securities Act. The Company has complied to the Commission's satisfaction with all requests of the Commission for additional or supplemental information related to the Registration Statement or the Prospectus. No stop order suspending the effectiveness of the Registration Statement or any Rule 462(b) Registration Statement is in effect and no proceedings for such purpose have been instituted or are pending or, to the best knowledge of the Company, are contemplated or threatened by the Commission.

(b) No Misstatement or Omission. The Prospectus when filed complied and, as amended or supplemented, if applicable, will comply in all material respects with the Securities Act. Each of the Registration Statement, any Rule 462(b) Registration Statement, the Prospectus and any post-effective amendments or supplements thereto, at the time it became effective or its date, as applicable, and as of each of the Settlement Dates, if any, complied in all material respects with the Securities Act and did not and, as of each Settlement Date, if any, did not and will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein, or with respect to the Prospectus, necessary to make the statements therein in the light of the circumstances under which they were made, not misleading. The Prospectus, as amended or supplemented, as of its date, and as of each of the Settlement Dates, if any, will not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The representations and warranties set forth in the two immediately preceding sentences do not apply to statements in or omissions from the Registration Statement, any Rule 462(b) Registration Statement, or any post-effective amendment thereto, or the Prospectus, or any amendments or supplements thereto, made in reliance upon and in conformity with information relating to the Agents furnished to the Company in writing by the Agents expressly for use therein. There are no contracts or other documents required to be described in the Prospectus or to be filed as exhibits to the Registration Statement which have not been described or filed as required.

(c) Not an Ineligible Issuer. The Company currently is not an "ineligible issuer," as defined in Rule 405 of the rules and regulation of the Commission. The Company agrees to notify the Agents promptly upon the Company becoming an "ineligible issuer."

(d) Distribution of Offering Material by the Company. The Company has not distributed and will not distribute, prior to the completion of the Agents' distribution of the

Placement Shares, any offering material in connection with the offering and sale of the Placement Shares other than the Prospectus or the Registration Statement.

(e) The Sales Agreement. This Agreement has been duly authorized, executed and delivered by, and is a valid and binding agreement of, the Company, enforceable in accordance with its terms, except as rights to indemnification and contribution hereunder may be limited by applicable law and public policy considerations and except as the enforcement hereof may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws relating to or affecting the rights and remedies of creditors or by general equitable principles.

(f) S-3 Eligibility. (i) At the time of filing the Registration Statement and (ii) at the time of the most recent amendment thereto for the purposes of complying with Section 10(a)(3) of the Securities Act (whether such amendment was by post-effective amendment, incorporated report filed pursuant to Section 13 or 15(d) of the Exchange Act or form of prospectus), the Company met the then applicable requirements for use of Form S-3 under the Securities Act, including compliance with General Instruction I.B.1 of Form S-3, as applicable. The Company is not a shell company (as defined in Rule 405) and has not been a shell company for at least 12 calendar months previously and if it has been a shell company at any time previously, has filed current Form 10 information (as defined in Instruction I.B.6 of Form S-3) with the Commission at least 12 calendar months previously reflecting its status as an entity that is not a shell company.

(g) Authorization of the Placement Shares. The Placement Shares, when issued and delivered, will be duly authorized for issuance and sale pursuant to this Agreement and, when issued and delivered by the Company against payment therefor pursuant to this Agreement, will be validly issued, fully paid and nonassessable.

(h) No Applicable Registration or Other Similar Rights. Except as otherwise disclosed in the Prospectus, there are no persons with registration or other similar rights to have any equity or debt securities registered for sale under the Registration Statement or included in the offering contemplated by this Agreement, except for such rights as have been duly waived.

(i) No Material Adverse Change. Except as otherwise disclosed in the Prospectus, subsequent to the respective dates as of which information is given in the Prospectus: (i) there has been no material adverse change, or any development that would reasonably be expected to result in a material adverse change, in the condition, financial or otherwise, or in the earnings, business, operations or prospects, whether or not arising from transactions in the ordinary course of business, of the Company and its subsidiaries, considered as one entity (any such change is called a "**Material Adverse Change**"); (ii) the Company and its subsidiaries, considered as one entity, have not incurred any material liability or obligation, indirect, direct or contingent, not in the ordinary course of business nor entered into any material transaction or agreement not in the ordinary course of business; and (iii) there has been no dividend or distribution of any kind declared, paid or made by the Company or, except for regular quarterly dividends publicly announced by the Company or dividends paid to the Company or other subsidiaries, by any of its subsidiaries on any class of capital stock or repurchase or redemption by the Company or any of its subsidiaries of any class of capital stock.

(j) Independent Accountants. Mayer Hoffman McCann P.C., who has expressed its opinion with respect to the financial statements (which term as used in this Agreement includes the related notes thereto) and supporting schedules filed with the Commission or incorporated by reference as a part of the Registration Statement and included in the Prospectus, is an independent registered public accounting firm as required by the Securities Act and the Exchange Act.

(k) Preparation of the Financial Statements. The financial statements, together with related notes and schedules, filed with the Commission as a part of or incorporated by reference in the Registration Statement and included in the Prospectus present fairly, in all material respects, the consolidated financial position of the Company and its subsidiaries as of and at the dates indicated and the results of their operations and cash flows for the periods specified. The supporting schedules included in or incorporated in the Registration Statement present fairly the information required to be stated therein. Such financial statements and supporting schedules have been prepared in accordance with generally accepted accounting principles as applied in the United States (“U.S. GAAP”) applied on a consistent basis throughout the periods involved, except as may be expressly stated in the related notes thereto. No other financial statements or supporting schedules are required to be included in or incorporated in the Registration Statement.

(l) XBRL. The interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement fairly presents the information called for in all material respects and has been prepared in accordance with the Commission’s rules and guidelines applicable thereto.

(m) Incorporation and Good Standing of the Company and its Subsidiaries. The Company has been duly incorporated and validly exists as a corporation in good standing under the laws of Delaware and has corporate power and authority to own, lease and operate its properties and to conduct its business as described in the Prospectus and to enter into and perform its obligations under this Agreement. Each subsidiary of the Company has been duly organized and validly exists as a corporation in good standing under the laws of the jurisdiction of its organization and has the requisite power and authority to own, lease and operate its properties and to conduct its business as described in the Prospectus. Each of the Company and the subsidiaries is duly qualified as a foreign corporation or foreign partnership to transact business and is in good standing in each jurisdiction in which such qualification is required, whether by reason of the ownership or leasing of property or the conduct of business, except for such jurisdictions where the failure to so qualify or to be in good standing would not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Change. Except as described in the Prospectus, all of the issued and outstanding capital stock or other equity interests of the subsidiaries have been duly authorized and validly issued, are fully paid and nonassessable and are owned by the Company free and clear of any security interest, mortgage, pledge, lien, encumbrance or adverse claim. The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the subsidiaries listed in Exhibit 21.1 to the Company’s Annual Report on Form 10-K for the most recently ended fiscal year and other than (i) those subsidiaries not required to be listed on Exhibit 21.1 by Item 601 of Regulation S-K under the Exchange Act and (ii) those subsidiaries formed or acquired since the last day of the most recently ended fiscal year.

(n) Capital Stock Matters. Since the most recent date such information was included in the Prospectus or as otherwise disclosed in the Prospectus, there has been no material change in the authorized, issued and outstanding capital stock of the Company (other than for subsequent issuances, if any, pursuant to employee benefit plans described in the Prospectus, upon the exercise of outstanding options or warrants or the settlement of restricted stock units described in the Prospectus, as a result of sales of Placement Shares hereunder or as otherwise described in any document incorporated by reference in the Prospectus). The shares of the Common Stock conform in all material respects to the description thereof contained in the Prospectus. All of the issued and outstanding shares of Common Stock have been duly authorized and validly issued, are fully paid and nonassessable and have been issued in compliance with federal and state securities laws. None of the outstanding shares of Common Stock were issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. There are no authorized or outstanding options, warrants, preemptive rights, rights of first refusal or other rights to purchase, or equity or debt securities convertible into or exchangeable or exercisable for, any capital stock of the Company or any of its subsidiaries other than those accurately described in all material respects in the Prospectus. The description of the Company's stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, set forth in the Prospectus accurately and fairly presents in all material respects the information required to be shown with respect to such plans, arrangements, options and rights under the Exchange Act or the Securities Act, as applicable.

(o) Non-Contravention of Existing Instruments; No Further Authorizations or Approvals Required. Neither the Company nor any of its subsidiaries is in violation of its charter or by-laws or is in default (or, with the giving of notice or lapse of time, would be in default) ("**Default**") under any indenture, mortgage, loan or credit agreement, note, contract, franchise, lease or other instrument to which the Company or any of its subsidiaries is a party or by which it or any of them may be bound, or to which any of the property or assets of the Company or any of its subsidiaries is subject (each, an "**Existing Instrument**"), except for such Defaults as would not, individually or in the aggregate, result in a Material Adverse Change. The Company's execution, delivery and performance of this Agreement and consummation of the transactions contemplated hereby and by the Prospectus (i) have been duly authorized by all necessary corporate action and will not result in any violation of the provisions of the charter or by-laws of the Company or any subsidiary, (ii) will not conflict with or constitute a breach of, or Default under, or result in the creation or imposition of any lien, charge or encumbrance upon any property or assets of the Company or any of its subsidiaries pursuant to, or require the consent of any other party to, any Existing Instrument, except for such conflicts, breaches, Defaults, liens, charges or encumbrances as would not, individually or in the aggregate, result in a Material Adverse Change and (iii) will not result in any violation of any law, administrative regulation or administrative or court decree applicable to the Company or any subsidiary, except for such violations that would not, individually or in the aggregate, result in a Material Adverse Change. No consent, approval, authorization or other order of, or registration or filing with, any court or other governmental or regulatory authority or agency, is required for the Company's execution, delivery and performance of this Agreement and consummation of the transactions contemplated hereby and by the Prospectus, except such as have been obtained or made by the Company and are in full force and effect under the Securities Act, or that may be required under

applicable state securities or blue sky laws and from the Financial Industry Regulatory Authority (“**FINRA**”) or the Exchange.

(p) No Material Actions or Proceedings. Except as disclosed in the Prospectus, there are no legal or governmental actions, suits or proceedings pending or, to the best of the Company’s knowledge, threatened (i) against or affecting the Company or any of its subsidiaries, (ii) which has as the subject thereof any officer or director of, or property owned or leased by, the Company or any of its subsidiaries or (iii) relating to environmental or discrimination matters, where in any such case (A) there is a reasonable possibility that such action, suit or proceeding might be determined adversely to the Company or such subsidiary and (B) any such action, suit or proceeding, if so determined adversely, would result in a Material Adverse Change or adversely affect the consummation of the transactions contemplated by this Agreement. No material labor dispute with the employees of the Company or any of its subsidiaries exists or, to the Company’s knowledge, is threatened or imminent.

(q) All Necessary Permits, etc. The Company and each subsidiary possess such valid and current certificates, authorizations or permits issued by the appropriate state, federal or foreign regulatory agencies or bodies necessary to conduct their respective businesses as currently conducted and described in the Prospectus, other than those the failure to possess or own would not result in a Material Adverse Change, and neither the Company nor any subsidiary has received any notice of proceedings relating to the revocation or modification of, or non-compliance with, any such certificate, authorization or permit which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, could result in a Material Adverse Change.

(r) Title to Properties. The Company and each subsidiary own the real property described in the Prospectus. The Company and the subsidiaries have good and marketable title to all of the real and personal property and other assets owned by them, in each case free and clear of any security interests, mortgages, liens, encumbrances, equities, adverse claims and other defects, except such as are described in the Prospectus or as do not materially and adversely affect the value of such property and do not materially interfere with the use made or proposed to be made of such property by the Company or a subsidiary. To the Company’s knowledge, the real property, improvements, equipment and personal property held under lease by the Company or the subsidiaries are held under valid and enforceable leases, with such exceptions as are described in the Prospectus or are not material and do not materially interfere with the use made or proposed to be made of such real property, improvements, equipment or personal property by the Company or the subsidiaries.

(s) Tax Law Compliance. Subject to any permitted extensions, the Company and its consolidated subsidiaries have filed all necessary federal, state and foreign income, property and franchise tax returns (or have properly requested extensions thereof) and have paid all taxes required to be paid by any of them and, if due and payable, any related or similar assessment, fine or penalty levied against any of them except as may be being contested in good faith and by appropriate proceedings. The Company has made adequate charges, accruals and reserves in the applicable financial statements referred to in Section 6(k) above in respect of all federal, state and foreign income, property and franchise taxes for all periods as to which the tax liability of the Company or any of its consolidated subsidiaries has not been finally determined.

(t) Company Not an “Investment Company”. The Company has been advised of the rules and requirements under the Investment Company Act of 1940, as amended (the “**Investment Company Act**”). The Company is not, and after receipt of payment for the Placement Shares will not be, an “investment company” within the meaning of Investment Company Act and will conduct its business in a manner so that it will not become subject to the Investment Company Act.

(u) Insurance. Except as otherwise described in the Prospectus, each of the Company and its subsidiaries are insured by insurers of recognized financial responsibility with policies in such amounts and with such deductibles and covering such risks as are generally deemed prudent and customary for their respective businesses as currently conducted and described in the Prospectus. The Company has no reason to believe that it or any subsidiary will not be able (i) to renew its existing insurance coverage as and when such policies expire or (ii) to obtain comparable coverage from similar institutions as may be necessary or appropriate to conduct its business as now conducted and at a cost that would not result in a Material Adverse Change.

(v) No Price Stabilization or Manipulation. The Company has not taken and will not take, directly or indirectly, any action designed to or that would be reasonably expected to cause or result in stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Placement Shares or otherwise, and has taken no action which would directly or indirectly violate Regulation M.

(w) Related Party Transactions. There are no business relationships or related-party transactions, as defined in Item 404 of Regulation S-K under the Exchange Act, involving the Company or any subsidiary or any other person required to be described in the Prospectus which have not been described as required.

(x) Exchange Act Compliance. The Incorporated Documents, at the time they were or hereafter are filed with the Commission, complied and will comply in all material respects with the requirements of the Exchange Act, and, when read together with the other information in the Prospectus, at the Settlement Dates, will not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(y) No Unlawful Contributions or Other Payments. Neither the Company nor any of its subsidiaries nor, to the Company’s knowledge, any employee or agent of the Company or any subsidiary, has made any contribution or other payment to any official of, or candidate for, any federal, state or foreign office in violation of any law or of the character required to be disclosed in the Registration Statement and the Prospectus. Neither the Company nor any of its subsidiaries nor, to the Company’s knowledge, any director, officer, employee or agent of the Company or any subsidiary acting on behalf of the Company or any of its subsidiaries has taken any action, directly or indirectly, that would result in a violation by such persons of the Foreign Corrupt Practices Act of 1977, as amended, and the rules and regulations thereunder (the “**FCPA**”), including, without limitation, making use of the mails or any means or instrumentality of interstate commerce corruptly in furtherance of an offer, payment, promise to pay or authorization of the payment of any money, or other property, gift, promise to give, or

authorization of the giving of anything of value to any “foreign official” (as such term is defined in the FCPA) or any foreign political party or official thereof or any candidate for foreign political office, in contravention of the FCPA and the Company and, to the knowledge of the Company, its controlled affiliates have conducted their businesses in compliance with the FCPA and have instituted and maintain policies and procedures designed to ensure, and which are reasonably expected to continue to ensure, continued compliance therewith.

(z) Compliance with Money Laundering Laws. The operations of the Company and its subsidiaries are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all jurisdictions, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the “Money Laundering Laws”) and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

(aa) Compliance with OFAC. None of the Company, any of its subsidiaries or, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company or any of its subsidiaries is currently subject to any U.S. sanctions administered by the Office of Foreign Office Control of the U.S. Department of the Treasury (“OFAC”); and the Company will not, directly or indirectly, use the proceeds of the offering of the Placement Shares hereunder, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other person or entity, for the purpose of financing the activities of any person currently subject to any U.S. sanctions administered by OFAC.

(bb) Company’s Accounting System. The Company maintains a system of “internal control over financial reporting” (as such term is defined in Rule 13a-15(f) of the General Rules and Regulations under the Exchange Act (the “Exchange Act Rules”)) that complies with the requirements of the Exchange Act and has been designed by its principal executive and principal financial officers, or under their supervision, to provide reasonable assurances that (i) transactions are executed in accordance with management’s general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with U.S. GAAP and to maintain accountability for assets; (iii) access to assets is permitted only in accordance with management’s general or specific authorization; and (iv) the recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences. Except as described in the Prospectus, since the end of the Company’s most recent audited fiscal year, there has been (A) no material weakness in the Company’s internal control over financial reporting (whether or not remediated) and (B) no change in the Company’s internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company’s internal control over financial reporting.

(cc) Disclosure Controls. The Company maintains disclosure controls and procedures (as such is defined in Rule 13a-15(e) of the Exchange Act Rules) that comply with the requirements of the Exchange Act; such disclosure controls and procedures have been designed to ensure that information required to be disclosed by the Company in reports that it files or

submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission's rules and forms, including controls and procedures designed to ensure that such information is accumulated and communicated to the Company's management to allow timely decisions regarding disclosures. To the extent required by the Exchange Act Rules, the Company has conducted evaluations of the effectiveness of its disclosure controls as required by Rule 13a-15 of the Exchange Act.

(dd) **Compliance with Environmental Laws.** Except as otherwise described in the Prospectus, and except as would not, individually or in the aggregate, result in a Material Adverse Change (i) neither the Company nor any of its subsidiaries is in violation of any federal, state, local or foreign law or regulation relating to pollution or protection of human health or the environment (including, without limitation, ambient air, surface water, groundwater, land surface or subsurface strata) or wildlife, including without limitation, laws and regulations relating to emissions, discharges, releases or threatened releases of chemicals, pollutants, contaminants, wastes, toxic substances, hazardous substances, petroleum and petroleum products (collectively, "**Materials of Environmental Concern**"), or otherwise relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Materials of Environmental Concern (collectively, "**Environmental Laws**"), which violation includes, but is not limited to, noncompliance with any permits or other governmental authorizations required for the operation of the business of the Company or its subsidiaries under applicable Environmental Laws, or noncompliance with the terms and conditions thereof, nor has the Company or any of its subsidiaries received any written communication, whether from a governmental authority, citizens group, employee or otherwise, that alleges that the Company or any of its subsidiaries is in violation of any Environmental Law; (ii) there is no claim, action or cause of action filed with a court or governmental authority, no investigation with respect to which the Company has received written notice, and no written notice received by the Company from any person or entity alleging potential liability for investigatory costs, cleanup costs, governmental responses costs, natural resources damages, property damages, personal injuries, attorneys' fees or penalties arising out of, based on or resulting from the presence, or release into the environment, of any Material of Environmental Concern at any location owned, leased or operated by the Company or any of its subsidiaries, now or in the past (collectively, "**Environmental Claims**"), pending or, to the Company's knowledge, threatened against the Company or any of its subsidiaries or any person or entity whose liability for any Environmental Claim the Company or any of its subsidiaries has retained or assumed either contractually or by operation of law; and (iii) to the best of the Company's knowledge, there are no past or present actions, activities, circumstances, conditions, events or incidents, including, without limitation, the release, emission, discharge, presence or disposal of any Material of Environmental Concern, that reasonably could result in a violation of any Environmental Law or form the basis of a potential Environmental Claim against the Company or any of its subsidiaries or against any person or entity whose liability for any Environmental Claim the Company or any of its subsidiaries has retained or assumed either contractually or by operation of law.

(ee) **Intellectual Property.** Except as disclosed in the Registration Statement or the Prospectus, the Company and its subsidiaries own or possess the valid right to use all (i) valid and enforceable patents, patent applications, trademarks, trademark registrations, service marks, service mark registrations, Internet domain name registrations, copyrights, copyright

registrations, licenses and trade secret rights (“**Intellectual Property Rights**”) and (ii) inventions, software, works of authorships, trademarks, service marks, trade names, databases, formulae, know how, Internet domain names and other intellectual property (including trade secrets and other unpatented and/or unpatentable proprietary confidential information, systems, or procedures) (collectively, “**Intellectual Property Assets**”) necessary to conduct their respective businesses as currently conducted, except to the extent that the failure to own, possess, license or have other rights to use such Intellectual Property Rights or Intellectual Property Assets would not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Change. The Company and its subsidiaries have not received any opinion from their legal counsel concluding that any activities of their respective businesses infringe, misappropriate, or otherwise violate, valid and enforceable Intellectual Property Rights of any other person, and have not received written notice of any challenge, which is to their knowledge still pending, by any other person to the rights of the Company and its subsidiaries with respect to any Intellectual Property Rights or Intellectual Property Assets owned or used by the Company or its subsidiaries. To the knowledge of the Company, the Company and its subsidiaries’ respective businesses as now conducted do not constitute infringement of, misappropriation of, or other violation of, any valid and enforceable Intellectual Property Rights of any other person. All licenses for the use of the Intellectual Property Rights described in the Prospectus to which the Company is a party are, to the Company’s knowledge, valid, binding upon, and enforceable by or against the parties thereto in accordance with their terms. The Company has complied in all material respects with, and is not in material breach nor has received any written notice of any asserted or threatened claim of breach of, any license agreement pursuant to which Intellectual Property Rights have been licensed to or by the Company (the “**Intellectual Property Licensed Agreements**”), and the Company has no knowledge of any material breach by any other person to any Intellectual Property License Agreement. Except as described in the Prospectus, no claim has been made in writing against the Company alleging the infringement by the Company of any patent, trademark, service mark, trade name, copyright, trade secret, license in or other intellectual property right or franchise right of any person. The Company has taken all reasonable steps to protect, maintain and safeguard its Intellectual Property Rights, including the execution of appropriate nondisclosure and confidentiality agreements. The consummation of the transactions contemplated by this Agreement will not result in the loss or impairment of or payment of any additional amounts with respect to, nor require the consent of any other person in respect of, the Company’s right to own, use, or hold for use any of the Intellectual Property Rights as owned, used or held by the Company for use in the conduct of the business as currently conducted.

(ff) Compliance with Applicable Laws. The Company and the subsidiaries: (A) are and at all times have been in material compliance with all statutes, rules and regulations applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product under development, manufactured or distributed by the Company or the subsidiaries (“**Applicable Laws**”), (B) have not received any Form 483 from the United States Food and Drug Administration (“**FDA**”), notice of adverse finding, warning letter, or other written correspondence or notice from the FDA, European Medicines Agency (“**EMA**”), or any other federal, state, local or foreign governmental or regulatory authority alleging or asserting material noncompliance with any Applicable Laws or with any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such

Applicable Laws (“**Authorizations**”), which would, individually or in the aggregate, result in a Material Adverse Change; (C) possess all material Authorizations and such Authorizations are valid and in full force and effect and neither the Company nor the subsidiaries is in material violation of any term of any such Authorizations; (D) have not received written notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from the FDA, the EMA, or any other federal, state, local or foreign governmental or regulatory authority or third party alleging that any Company product, operation or activity is in material violation of any Applicable Laws or Authorizations and have no knowledge that the FDA, the EMA, or any other any federal, state, local or foreign governmental or regulatory authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding against the Company; (E) have not received notice that the FDA, the EMA, or any other federal, state, local or foreign governmental or regulatory authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any material Authorizations and have no knowledge that the FDA, the EMA, or any other federal, state, local or foreign governmental or regulatory authority is considering such action; and (F) have filed, obtained, maintained or submitted all reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations except where the failure to file such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments would not result in a Material Adverse Change, and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were materially complete and correct on the date filed (or were corrected or supplemented by a subsequent submission).

(gg) Clinical Studies. All animal and other preclinical studies and clinical trials conducted by the Company or on behalf of the Company were, and, if still pending are, to the Company’s knowledge, being conducted in compliance with all Applicable Laws and in accordance with experimental protocols, procedures and controls generally used by qualified experts in the preclinical study and clinical trials of new drugs, biologics, medical devices and drug-device combination products as applied to comparable products to those being developed by the Company, except for such noncompliance that would not reasonably be expected to result in a Material Adverse Change; the descriptions of the results of such preclinical studies and clinical trials contained in the Registration Statement and the Prospectus are accurate in all material respects, and, except as set forth in the Registration Statement and the Prospectus, the Company has no knowledge of any other clinical trials or preclinical studies, the results of which reasonably call into question the clinical trial or preclinical study results described or referred to in the Registration Statement and the Prospectus when viewed in the context in which such results are described; and the Company has not received any written notices or correspondence from any domestic or foreign governmental agency requiring the termination or suspension of any preclinical studies or clinical trials conducted by or on behalf of the Company that are described in the Registration Statement and the Prospectus or the results of which are referred to in the Registration Statement and the Prospectus.

(hh) Compliance Programs. The Company has established and administers a compliance program applicable to the Company, to assist the Company and the officers and employees of the Company in complying with applicable regulatory guidelines (including, without limitation, those administered by the FDA, the EMA, and any other foreign, federal, state or local governmental or regulatory authority performing functions similar to those

performed by the FDA or EMA); except where such noncompliance would not reasonably be expected to result in a Material Adverse Change.

(ii) **Statistical and Market-Related Data.** The statistical, demographic and market-related data included in the Registration Statement and the Prospectus, as of the date or dates to which they speak, are based on or derived from sources that the Company believes to be reliable and accurate or represent the Company's good faith estimates that are made on the basis of data derived from such sources.

(jj) **ERISA Compliance.** The Company and its subsidiaries and any "**employee benefit plan**" (as defined under the Employee Retirement Income Security Act of 1974, as amended, and the regulations and published interpretations thereunder (collectively, "**ERISA**")) established or maintained by the Company, its subsidiaries or their "**ERISA Affiliates**" (as defined below) are, to their knowledge, in compliance in all material respects with ERISA. "**ERISA Affiliate**" means, with respect to the Company or a subsidiary, any member of any group of organizations described in Sections 414(b), (c),(m) or (o) of the Internal Revenue Code of 1986, as amended, and the regulations and published interpretations thereunder (the "**Code**") of which the Company or such subsidiary is a member. Except as described in the Prospectus, no "**reportable event**" (as defined under ERISA) has occurred or is reasonably expected to occur with respect to any "**employee benefit plan**" established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates. Except as described in the Prospectus, no "**employee benefit plan**" established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates, if such "**employee benefit plan**" were terminated, would have any "**amount of unfunded benefit liabilities**" (as defined under ERISA). Except as described in the Prospectus, neither the Company, its subsidiaries nor any of their ERISA Affiliates has incurred or reasonably expects to incur any liability under (i) Title IV of ERISA with respect to termination of, or withdrawal from, any "**employee benefit plan**" or (ii) Sections 412, 4971, 4975 or 4980B of the Code. Each "**employee benefit plan**" established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates that is intended to be qualified under Section 401(a) of the Code is so qualified and, except as described in the Prospectus, nothing has occurred, whether by action or failure to act, which would reasonably be expected to result in the loss of such qualification.

(kk) **Listing.** The Company is subject to and in compliance in all material respects with the reporting requirements of Section 13 or Section 15(d) of the Exchange Act. The Common Stock is registered pursuant to Section 12(b) or Section 12(g) of the Exchange Act and is listed on the Exchange, and the Company has taken no action designed to, or reasonably likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from the Exchange, nor has the Company received any notification that the Commission or the Exchange is contemplating terminating such registration or listing.

(ll) **Brokers.** Except for the Agents, there is no broker, finder or other party that is entitled to receive from the Company any brokerage or finder's fee or other fee or commission as a result of any transactions contemplated by this Agreement.

(mm) No Outstanding Loans or Other Indebtedness. Except as described in the Prospectus, there are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees or indebtedness by the Company to or for the benefit of any of the officers or directors of the Company or any of the immediate family members of any of them.

(nn) FINRA Matters. All of the information provided to the Agents or to counsel for the Agents by the Company, its officers and, to the Company's knowledge, directors and the holders of any securities (debt or equity) or options to acquire any securities of the Company in connection with letters, filings or other supplemental information provided to FINRA pursuant to FINRA Rule 5110 is true, complete and correct in all material respects.

(oo) FINRA Exemption. To enable the Agents to rely on Rule 5110(b)(7)(C)(i) of FINRA, the Company represents that as of the date hereof, the Company (i) has a non-affiliate, public common equity float of at least \$150 million or a non-affiliate, public common equity float of at least \$100 million and annual trading volume of at least three million shares and (ii) has been subject to the Exchange Act reporting requirements for a period of at least 36 months.

(pp) No Reliance. The Company has not relied upon the Agents or legal counsel for the Agents for any legal, tax or accounting advice in connection with the offering and sale of the Placement Shares.

(qq) Purchases by the Agents. The Company acknowledges and agrees that the Agents have informed the Company that each Agent may, to the extent permitted under the Securities Act, the Exchange Act and this Agreement, purchase and sell shares of Common Stock for its own account while this Agreement is in effect, subject to the prohibitions of Section 3(a) hereof.

Any certificate signed by an authorized officer of the Company and required to be delivered to the Agents or to counsel for the Agents in connection with this Agreement shall be deemed to be a representation and warranty by the Company to the Agents as to the matters set forth therein.

The Company acknowledges that the Agents and, for purposes of the opinions to be delivered pursuant to Section 7 hereof, counsel to the Company and counsel to the Agents, will rely upon the accuracy and truthfulness of the foregoing representations and hereby consents to such reliance.

7. Covenants of the Company. The Company covenants and agrees with each Agent that:

(a) Registration Statement Amendments. After the date of this Agreement and during any period in which a Prospectus relating to any Placement Shares is required to be delivered by the Agents under the Securities Act (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), (i) the Company will notify the Agents promptly of the time when any subsequent amendment to the Registration Statement, other than any Incorporated Documents or amendments not related to any Placement Shares, has been filed with the Commission and/or has become effective or any subsequent supplement to the Prospectus has been filed and of any request by the Commission for any amendment or

supplement to the Registration Statement or Prospectus related to any Placement Shares or for additional information related to any Placement Shares, (ii) the Company will prepare and file with the Commission, promptly upon the Agents' reasonable request, any amendments or supplements to the Registration Statement or Prospectus that, in the Agents' reasonable opinion and upon the advice of the Company's legal counsel, may be necessary or advisable in connection with the distribution of the Placement Shares by the Agents (*provided, however*, that the failure of the Agents to make such request shall not relieve the Company of any obligation or liability hereunder, or affect the Agents' right to rely on the representations and warranties made by the Company in this Agreement and provided, further, that the only remedy the Agents shall have with respect to the failure to make such filing shall be to cease making sales under this Agreement until such amendment or supplement is filed); (iii) the Company will not file any amendment or supplement to the Registration Statement or Prospectus, other than documents incorporated by reference, relating to the Placement Shares or a security convertible into the Placement Shares unless a copy thereof has been submitted to the Agents within a reasonable period of time before the filing and the Agents has not reasonably objected thereto (*provided, however*, that (A) the failure of the Agents to make such objection shall not relieve the Company of any obligation or liability hereunder, or affect the Agents' right to rely on the representations and warranties made by the Company in this Agreement, (B) the Company has no obligation to provide the Agents any advance copy of such filing or to provide the Agents an opportunity to object to such filing if the filing does not name the Agents or does not relate to the transaction herein provided, and (C) the only remedy the Agents shall have with respect to the failure by the Company to provide the Agents with such copy or the filing of such amendment or supplement despite the Agents' objection shall be to cease making sales under this Agreement) and the Company will furnish to the Agents at the time of filing thereof a copy of any document that upon filing is deemed to be incorporated by reference into the Registration Statement or Prospectus, except for those documents available via EDGAR; and (iv) the Company will cause each amendment or supplement to the Prospectus, other than documents incorporated by reference, to be filed with the Commission as required pursuant to the applicable paragraph of Rule 424(b) of the Securities Act.

(b) Notice of Commission Stop Orders. The Company will advise the Agents, promptly after it receives notice or obtains knowledge thereof, of the issuance or threatened issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or of any order preventing or suspending the use of the Prospectus, of the suspension of the qualification of the Placement Shares for offering or sale in any jurisdiction, or of the initiation or threatening of any proceeding for any such purpose or of any request by the Commission for the amending or supplementing of the Registration Statement or the Prospectus; and it will promptly use its commercially reasonable efforts to prevent the issuance of any stop order or of any order preventing or suspending the use of the Prospectus or suspending any such qualification, or, to obtain its withdrawal if such a stop order should be issued.

(c) Delivery of Prospectus; Subsequent Changes. During any period in which a Prospectus relating to the Placement Shares is required to be delivered by the Agents under the Securities Act with respect to a pending sale of the Placement Shares, (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), the Company will use its commercially reasonable efforts to comply with all requirements imposed upon it by the Securities Act, as from time to time in force, and to file on

or before their respective due dates (taking into account any extensions available under the Exchange Act) all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Sections 13(a), 13(c), 14, 15(d) or any other provision of or under the Exchange Act. If during such period any event occurs as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary to amend or supplement the Registration Statement or Prospectus to comply with the Securities Act, the Company will promptly notify the Designated Agent to suspend the offering of Placement Shares during such period and the Company will promptly amend or supplement the Registration Statement or Prospectus (at the expense of the Company) so as to correct such statement or omission or effect such compliance.

(d) Listing of Placement Shares. During any period in which the Prospectus relating to the Placement Shares is required to be delivered by the Agents under the Securities Act with respect to a pending sale of the Placement Shares (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), the Company will use its commercially reasonable efforts to cause the Placement Shares to be listed on the Exchange and to qualify the Placement Shares for sale under the securities laws of such jurisdictions as the Agents reasonably designate and to continue such qualifications in effect so long as required for the distribution of the Placement Shares; *provided, however*, that the Company shall not be required in connection therewith to qualify as a foreign corporation or dealer in securities or file a general consent to service of process in any jurisdiction.

(e) Delivery of Registration Statement and Prospectus. The Company will furnish to the Agents and their counsel (at the expense of the Company) copies of the Registration Statement, the Prospectus (including all Incorporated Documents) and all amendments and supplements to the Registration Statement or Prospectus that are filed with the Commission during any period in which a Prospectus relating to the Placement Shares is required to be delivered under the Securities Act (including all Incorporated Documents), in each case as soon as reasonably practicable and in such quantities as the Agents may from time to time reasonably request and, at the Agents' request, will also furnish copies of the Prospectus to each exchange or market on which sales of the Placement Shares may be made; *provided, however*, that the Company shall not be required to furnish any document (other than the Prospectus) to the Agents to the extent such document is available on EDGAR.

(f) Earnings Statement. The Company will make generally available to its security holders as soon as practicable, but in any event not later than 15 months after the end of the Company's current fiscal quarter, an earnings statement covering a 12-month period that satisfies the provisions of Section 11(a) and Rule 158 of the Securities Act. For the avoidance of doubt, the Company's compliance with the reporting requirements of the Exchange Act shall be deemed to satisfy the requirements of this Section 7(f).

(g) Expenses. The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is terminated, in accordance with the provisions of Section 11 hereunder, will pay all of its own expenses incident to the performance of its obligations under this Agreement, including (i) the preparation, filing, including any fees required by the

Commission, and printing of the Registration Statement (including financial statements and exhibits) as originally filed and of each amendment and supplement thereto and each Free Writing Prospectus, in such number as the Agents shall deem reasonably necessary, (ii) the printing and delivery to the Agents of this Agreement and such other documents as may be required by the Agents in connection with the offering, purchase, sale, issuance or delivery of the Placement Shares, (iii) the preparation, issuance and delivery of the certificates, if any, for the Placement Shares to the Agents, including any stock or other transfer taxes and any capital duties, stamp duties or other duties or taxes payable upon the sale, issuance or delivery of the Placement Shares to the Agents, (iv) the fees and disbursements of the counsel, accountants and other advisors to the Company, (v) the fees and disbursements of counsel to the Agents in connection with entering into the transactions contemplated by this Agreement up to \$50,000, and the quarterly disbursements of counsel to the Agents up to \$2,500 per calendar quarter; (vi) the fees and expenses of the transfer agent and registrar for the Common Stock, (vii) the filing fees incident to any review by FINRA of the terms of the sale of the Placement Shares, (viii) the fees and expenses incurred in connection with the listing of the Placement Shares on the Exchange, and (ix) all trading, execution, settlement, or wiring fees incurred by the Agents in connection with the sale of the Placement Shares.

(h) Use of Proceeds. The Company will use the Net Proceeds as described in the Prospectus in the section entitled "Use of Proceeds."

(i) Notice of Other Sales. During the pendency of any Placement Notice given hereunder, and for 3 Trading Days following the termination of any Placement Notice given hereunder, the Company shall provide the Agents notice as promptly as reasonably possible before it offers to sell, contracts to sell, sells, grants any option to sell or otherwise disposes of any shares of Common Stock (other than Placement Shares offered pursuant to the provisions of this Agreement) or securities convertible into or exchangeable for Common Stock, warrants or any rights to purchase or acquire Common Stock; *provided*, that such notice shall not be required in connection with (i) the issuance, grant or sale of Common Stock, options to purchase shares of Common Stock or any other equity awards, or Common Stock issuable upon the exercise of options or other equity awards or upon the settlement of restricted stock units pursuant to any stock option, stock bonus, employee stock purchase or other stock plan or arrangement described in the Prospectus, (ii) the issuance, grant or sale of Common Stock, or securities convertible into or exercisable for Common Stock, in connection with any joint venture, commercial, strategic or collaborative relationship, or the acquisition or license by the Company of the securities, businesses, property or other assets of another person or entity, (iii) the issuance or sale of Common Stock pursuant to any dividend reinvestment plan that the Company may adopt from time to time provided the implementation of such is disclosed to the Agents in advance or (iv) any shares of Common Stock issuable upon the exchange, conversion or redemption of securities or the exercise or vesting of warrants, options or other rights in effect or outstanding. Notwithstanding the foregoing provisions, nothing herein shall be construed to restrict the Company's ability to file a registration statement under the Securities Act.

(j) Change of Circumstances. The Company will, at any time during a fiscal quarter in which the Company intends to tender a Placement Notice or sell Placement Shares, advise the Agents promptly after it shall have received notice or obtained knowledge thereof, of any

information or fact that would alter or affect in any material respect any opinion, certificate, letter or other document required to be provided to the Agents pursuant to this Agreement.

(k) Due Diligence Cooperation. During the term of this Agreement, the Company will cooperate with any reasonable due diligence review conducted by the Agents or their agents in connection with the transactions contemplated hereby, including, without limitation, providing information and making available documents and senior corporate officers, during regular business hours and at the Company's principal offices, as the Agents may reasonably request.

(l) Required Filings Relating to Placement of Placement Shares. To the extent that the filing of a prospectus supplement with the Commission with respect to a placement of Placement Shares is required under Rule 424(b) under the Securities Act, the Company agrees that on or before such dates as the Securities Act shall require, the Company will (i) file a prospectus supplement with the Commission under the applicable paragraph of Rule 424(b) under the Securities Act (each and every filing under Rule 424(b), a "**Filing Date**"), which prospectus supplement will set forth, to the extent required, within the relevant period, the amount of Placement Shares sold through the Agents, the Net Proceeds to the Company and the compensation payable by the Company to the Agents with respect to such Placement Shares (provided that the Company may satisfy its obligations under this Section 7(l)(i) by effecting a filing in accordance with the Exchange Act with respect to such information), and (ii) deliver such number of copies of each such prospectus supplement to each exchange or market on which such sales were effected as may be required by the rules or regulations of such exchange or market.

(m) Representation Dates; Certificate. On or prior to the First Delivery Date and each time the Company (i) amends or supplements the Registration Statement or the Prospectus relating to the Placement Shares (other than a prospectus supplement filed in accordance with Section 7(l) of this Agreement) by means of a post-effective amendment, sticker, or supplement but not by means of incorporation of document(s) by reference to the Registration Statement or the Prospectus relating to the Placement Shares; (ii) files an annual report on Form 10-K under the Exchange Act; (iii) files its quarterly reports on Form 10-Q under the Exchange Act; or (iv) files a current report on Form 8-K under the Exchange Act containing amended audited financial information (other than information "furnished" pursuant to Items 2.02 or 7.01 of Form 8-K or to provide disclosure pursuant to Item 8.01 of Form 8-K relating to the reclassification of certain properties as discontinued operations in accordance with Statement of Financial Accounting Standards No. 144 under the Exchange Act) under the Exchange Act (each date of filing of one or more of the documents referred to in clauses (i) through (iv) shall be a "**Representation Date**"); the Company shall furnish the Agents with a certificate, in the form attached hereto as Exhibit 7(m) within five (5) Trading Days of any Representation Date if requested by the Agents. The requirement to provide a certificate under this Section 7(m) shall be automatically waived for any Representation Date occurring at a time at which no Placement Notice is pending, which waiver shall continue until the earlier to occur of the date the Company delivers a Placement Notice hereunder (which for such calendar quarter shall be considered a Representation Date, including for purposes of Sections 7(n) and 7(o) hereof) and the next occurring Representation Date; *provided, however*, that such waiver shall not apply for any Representation Date on which the Company files its annual report on Form 10-K. Notwithstanding the foregoing, if the Company subsequently decides to sell Placement Shares

following a Representation Date when the Company relied on such waiver and did not provide the Agents with a certificate under this Section 7(m), then before the Company delivers the Placement Notice or the Agents sells any Placement Shares, the Company shall provide the Agents with a certificate, in the form attached hereto as Exhibit 7(m), dated the date of the Placement Notice.

(n) Legal Opinion. (i) On or prior to the First Delivery Date, the Company shall cause to be furnished to the Agents a written opinion and negative assurance letter of Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP, or other counsel reasonably satisfactory to the Agents (“Company Counsel”), in form and substance reasonably satisfactory to the Agents and their counsel, dated the date that such opinion and negative assurance letter are required to be delivered and (ii) within the later of (A) five (5) Trading Days of each Representation Date following the First Delivery Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 7(m) and (B) the date a Placement Notice is first delivered by the Company following a Representation Date, the Company shall cause to be furnished to the Agents a negative assurance letter of Company Counsel in form and substance reasonably satisfactory to the Agents and their counsel, dated the date of delivery of such negative assurance letter (the “Opinion Date”), respectively, modified, as necessary, to relate to the Registration Statement and the Prospectus as then amended or supplemented; *provided, however*, that in lieu of such negative assurance letters for subsequent Representation Dates, counsel may furnish the Agents with a letter (a “Reliance Letter”) to the effect that the Agents may rely on a prior negative assurance letter delivered under this Section 7(n) to the same extent as if it were dated the date of such Reliance Letter (except that statements in such prior negative assurance letter shall be deemed to relate to the Registration Statement and the Prospectus as amended or supplemented at such Representation Date).

(o) Comfort Letter. On or prior to the First Delivery Date and within five (5) Trading Days of each subsequent Representation Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 7(m), other than pursuant to Section 7(m)(iii), the Company shall cause its independent accountants to furnish the Agents letters (the “Comfort Letters”), dated the date the Comfort Letter is delivered, in form and substance reasonably satisfactory to the Agents, (i) confirming that they are an independent registered public accounting firm within the meaning of the Securities Act and the Public Company Accounting Oversight Board, (ii) stating, as of such date, the conclusions and findings of such firm with respect to the financial information and other matters ordinarily covered by accountants’ “comfort letters” to underwriters in connection with registered public offerings (the first such letter, the “Initial Comfort Letter”) and (iii) updating the Initial Comfort Letter with any information that would have been included in the Initial Comfort Letter had it been given on such date and modified as necessary to relate to the Registration Statement and the Prospectus, as amended and supplemented to the date of such letter.

(p) Market Activities. The Company will not, directly or indirectly, (i) take any action designed to cause or result in, or that constitutes or might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Placement Shares or (ii) sell, bid for, or purchase the Placement Shares to be issued and sold pursuant to this Agreement, or pay anyone any compensation for soliciting purchases of the Placement Shares other than the Agents; *provided, however*, that the

Company may bid for and purchase shares of its Common Stock in accordance with Rule 10b-18 under the Exchange Act.

(q) Insurance. The Company and its subsidiaries shall maintain, or cause to be maintained, insurance in such amounts and covering such risks as is reasonable and customary for the business for which it is engaged.

(r) Compliance with Laws. The Company and each of its subsidiaries will use commercially reasonable efforts to maintain, or cause to be maintained, all material environmental permits, licenses and other authorizations required by federal, state and local law in order to conduct their businesses as described in the Prospectus, and the Company and each of its subsidiaries shall conduct their businesses, or cause their businesses to be conducted, in substantial compliance with such permits, licenses and authorizations and with applicable environmental laws, except where the failure to maintain or be in compliance with such permits, licenses and authorizations could not reasonably be expected to result in a Material Adverse Change.

(s) Investment Company Act. The Company will conduct its affairs in such a manner so as to reasonably ensure that neither it nor its subsidiaries will be or become, at any time prior to the termination of this Agreement, an "investment company," as such term is defined in the Investment Company Act, assuming no change in the Commission's current interpretation as to entities that are not considered an investment company.

(t) Securities Act and Exchange Act. The Company will use its commercially reasonable efforts to comply with all requirements imposed upon it by the Securities Act and the Exchange Act as from time to time in force, so far as necessary to permit the continuance of sales of, or dealings in, the Placement Shares as contemplated by the provisions hereof and the Prospectus.

(u) No Offer to Sell. Other than any free writing prospectus (as defined in Rule 405 under the Securities Act) approved in advance by the Company and the Agents in their capacity as principals or agents hereunder, neither the Agents nor the Company (including its agents and representatives, other than the Agents in their capacity as such) will make, use, prepare, authorize, approve or refer to any written communication (as defined in Rule 405 under the Securities Act), required to be filed with the Commission, that constitutes an offer to sell or solicitation of an offer to buy Placement Shares hereunder.

(v) Sarbanes-Oxley Act. The Company and its subsidiaries will use their best efforts to comply with all effective provisions of the Sarbanes-Oxley Act applicable to the Company.

8. Conditions to the Agents' Obligations. The obligations of the Agents hereunder with respect to a Placement will be subject to the continuing accuracy and completeness of the representations and warranties made by the Company herein, to the due performance by the Company of its obligations hereunder, to the completion by the Agents of a due diligence review satisfactory to the Agents in their reasonable judgment, and to the continuing satisfaction (or waiver by the Agents in their sole discretion) of the following additional conditions:

- (a) Registration Statement Effective. The Registration Statement shall be effective and shall be available for (i) all sales of Placement Shares issued pursuant to all prior Placement Notices and (ii) the sale of all Placement Shares contemplated to be issued by any Placement Notice.
- (b) No Material Notices. None of the following events shall have occurred and be continuing: (i) receipt by the Company or any of its subsidiaries of any request for additional information from the Commission or any other federal or state governmental authority during the period of effectiveness of the Registration Statement, the response to which would require any post-effective amendments or supplements to the Registration Statement or the Prospectus; (ii) the issuance by the Commission or any other federal or state governmental authority of any stop order suspending the effectiveness of the Registration Statement or the initiation of any proceedings for that purpose; (iii) receipt by the Company of any notification from the Commission or any other federal or state governmental authority with respect to the suspension of the qualification or exemption from qualification of any of the Placement Shares for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose; or (iv) the occurrence of any event that makes any material statement made in the Registration Statement or the Prospectus or any Incorporated Document untrue in any material respect or that requires the making of any changes in the Registration Statement, the related Prospectus or such documents so that, in the case of the Registration Statement, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading and, that in the case of the Prospectus, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.
- (c) No Misstatement or Material Omission. The Agents shall not have advised the Company that the Registration Statement or Prospectus, or any amendment or supplement thereto, contains an untrue statement of fact that in the Agents' reasonable opinion is material, or omits to state a fact that in the Agents' reasonable opinion is material and is required to be stated therein or is necessary to make the statements therein not misleading.
- (d) Material Changes. Except as contemplated in the Prospectus, or disclosed in the Company's reports filed with the Commission, there shall not have been any Material Adverse Change or any development that could reasonably be expected to result in a Material Adverse Change.
- (e) Company Counsel Legal Opinion. The Agents shall have received the opinion and negative assurance letters or Reliance Letters of Company Counsel required to be delivered pursuant to Section 7(n) on or before the date on which such delivery of such opinion and negative assurance letter is required pursuant to Section 7(n).
- (f) Agent Counsel Legal Opinion. The Agents shall have received from the Agents' counsel, such opinion or opinions, on or before the date on which the delivery of the Company Counsel legal opinion is required pursuant to Section 7(n), with respect to such matters as the Agents may reasonably require, and the Company shall have furnished to such counsel such documents as they request for enabling them to pass upon such matters.

(g) Comfort Letter. The Agents shall have received the Comfort Letter required to be delivered pursuant to Section 7(o) on or before the date on which such delivery of such Comfort Letter is required pursuant to Section 7(o).

(h) Representation Certificate. The Agents shall have received the certificate required to be delivered pursuant to Section 7(m) on or before the date on which delivery of such certificate is required pursuant to Section 7(m).

(i) Secretary's Certificate. On or prior to the First Delivery Date, the Agents shall have received a certificate, signed on behalf of the Company by its corporate Secretary, in form and substance satisfactory to the Agents and their counsel.

(j) No Suspension. Trading in the Common Stock shall not have been suspended on the Exchange.

(k) Other Materials. On each date on which the Company is required to deliver a certificate pursuant to Section 7(m), the Company shall have furnished to the Agents such appropriate further information, certificates and documents as the Agents may have reasonably requested in furtherance of the transactions contemplated hereby, in form and substance reasonably satisfactory to the Agents and their counsel.

(l) Securities Act Filings Made. All filings with the Commission required by Rule 424 under the Securities Act to have been filed prior to the issuance of any Placement Notice hereunder shall have been made within the applicable time period prescribed for such filing by Rule 424.

(m) Approval for Listing. The Placement Shares shall either have been (i) approved for listing on the Exchange, subject only to notice of issuance, or (ii) the Company shall have filed a notification of listing of additional shares with respect to the Placement Shares on the Exchange at, or prior to, the issuance of any Placement Notice.

(n) No Termination Event. There shall not have occurred any event that would permit the Agents to terminate this Agreement pursuant to Section 11(a).

9. Indemnification and Contribution.

(a) Company Indemnification. The Company agrees to indemnify and hold harmless the Agents, the directors, officers, partners, employees and agents of the Agents and each person, if any, who (i) controls the Agents within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, or (ii) is controlled by or is under common control with the Agents (an "Agent Affiliate") from and against any and all losses, claims, liabilities, expenses and damages (including, but not limited to, any and all reasonable investigative, legal and other expenses incurred in connection with, and any and all amounts paid in settlement (in accordance with Section 9(c)) of, any action, suit or proceeding between any of the indemnified parties or between any indemnified party and any third party, or otherwise, or any claim asserted), as and when incurred, to which the Agents, or any such person, may become subject under the Securities Act, the Exchange Act or other federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, liabilities, expenses or damages arise out of or

are based, directly or indirectly, on (x) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement or the Prospectus or any amendment or supplement to the Registration Statement or the Prospectus or in any free writing prospectus or based on written information furnished by or on behalf of the Company filed in any jurisdiction in order to qualify the Common Stock under the securities laws thereof or filed with the Commission, (y) the omission or alleged omission to state in any such document a material fact required to be stated in it or necessary to make the statements in it, not misleading; *provided, however*, that this indemnity agreement shall not apply to the extent that such loss, claim, liability, expense or damage arises from the sale of the Placement Shares pursuant to this Agreement and is caused directly or indirectly by an untrue statement or omission or alleged untrue statement or omission made in reliance upon and in conformity with information relating to the Agents and furnished to the Company in writing by the Agents expressly for use therein. This indemnity agreement will be in addition to any liability that the Company might otherwise have.

(b) **Agent Indemnification.** Each of the Agents agrees to indemnify and hold harmless the Company and its directors and each officer of the Company that signed the Registration Statement, and each person, if any, who (i) controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, or (ii) is controlled by or is under common control with the Company against any and all loss, liability, claim, damage and expense described in the indemnity contained in Section 9(a), as incurred, but only with respect to untrue statements or omissions, or alleged untrue statements or omissions, made in the Registration Statement (or any amendments thereto) or the Prospectus (or any amendment or supplement thereto) in reliance upon and in conformity with information relating to such Agent and furnished to the Company in writing by such Agent expressly for use therein.

(c) **Procedure.** Any party that proposes to assert the right to be indemnified under this Section 9 will, promptly after receipt of notice of commencement of any action against such party in respect of which a claim is to be made against an indemnifying party or parties under this Section 9, notify each such indemnifying party of the commencement of such action, enclosing a copy of all papers served, but the omission so to notify such indemnifying party will not relieve the indemnifying party from (i) any liability that it might have to any indemnified party otherwise than under this Section 9 and (ii) any liability that it may have to any indemnified party under the foregoing provision of this Section 9 unless, and only to the extent that, such omission results in the forfeiture of substantive rights or defenses by the indemnifying party or to the extent the indemnifying party has been damaged or prejudiced thereby. If any such action is brought against any indemnified party and it notifies the indemnifying party of its commencement, the indemnifying party will be entitled to participate in and, to the extent that it elects by delivering written notice to the indemnified party promptly after receiving notice of the commencement of the action from the indemnified party, jointly with any other indemnifying party similarly notified, to assume the defense of the action, with counsel reasonably satisfactory to the indemnified party, and after notice from the indemnifying party to the indemnified party of its election to assume the defense, the indemnifying party will not be liable to the indemnified party for any legal or other expenses except as provided below and except for the reasonable costs of investigation subsequently incurred by the indemnified party in connection with the defense. The indemnified party will have the right to employ its own counsel in any such action, but the fees, expenses and other charges of such counsel will be at the expense of such

indemnified party unless (1) the employment of counsel by the indemnified party has been authorized in writing by the indemnifying party, (2) the indemnified party has reasonably concluded (based on advice of counsel) that there may be legal defenses available to it or other indemnified parties that are different from or in addition to those available to the indemnifying party, (3) a conflict or potential conflict of interest exists (based on advice of counsel to the indemnified party) between the indemnified party and the indemnifying party (in which case the indemnifying party will not have the right to direct the defense of such action on behalf of the indemnified party) or (4) the indemnifying party has not in fact employed counsel to assume the defense of such action within a reasonable time after receiving notice of the commencement of the action, in each of which cases the reasonable fees and documented out-of-pocket disbursements and other charges of counsel will be at the expense of the indemnifying party or parties. It is understood that the indemnifying party or parties shall not, in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the reasonable fees, disbursements and other charges of more than one separate firm admitted to practice in such jurisdiction at any one time for all such indemnified party or parties. All such reasonable fees and documented out-of-pocket disbursements and other charges will be promptly reimbursed by the indemnifying party following the receipt of reasonably detailed documentation with respect to such fees, disbursements and other charges. An indemnifying party will not, in any event, be liable for any settlement of any action or claim effected without its written consent. No indemnifying party shall, without the prior written consent of each indemnified party, settle or compromise or consent to the entry of any judgment in any pending or threatened claim, action or proceeding relating to the matters contemplated by this Section 9 (whether or not any indemnified party is a party thereto), unless such settlement, compromise or consent (i) includes an unconditional release of each indemnified party from all liability arising or that may arise out of such claim, action or proceeding and (ii) does not include any statement or admission as to fault, culpability or a failure to act on the part of any indemnified party.

(d) Contribution. In order to provide for just and equitable contribution in circumstances in which the indemnification provided for in the foregoing paragraphs of this Section 9 is applicable in accordance with its terms but for any reason is held to be unavailable from the Company or an Agent, the Company and such Agent will contribute to the total losses, claims, liabilities, expenses and damages (including any investigative, legal and other expenses reasonably incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claim asserted, but after deducting any contribution received by the Company from persons other than the Agents, such as persons who control the Company within the meaning of the Securities Act, officers of the Company who signed the Registration Statement and directors of the Company, who also may be liable for contribution) to which the Company and the Agents may be subject in such proportion as shall be appropriate to reflect the relative benefits received by the Company on the one hand and the Agents on the other hand. The relative benefits received by the Company on the one hand and the Agents on the other hand shall be deemed to be in the same proportion as the total Net Proceeds from the sale of the Placement Shares (before deducting expenses) received by the Company bear to the total compensation received by the Agents (before deducting expenses) from the sale of Placement Shares on behalf of the Company. If, but only if, the allocation provided by the foregoing sentence is not permitted by applicable law, the allocation of contribution shall be made in such proportion as is appropriate to reflect not only the relative benefits referred to in the foregoing sentence but also the relative fault of the Company, on the one hand, and such Agent, on the

other, with respect to the statements or omission that resulted in such loss, claim, liability, expense or damage, or action in respect thereof, as well as any other relevant equitable considerations with respect to such offering. Such relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or such Agent, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and each Agent agree that it would not be just and equitable if contributions pursuant to this Section 9(d) were to be determined by pro rata allocation or by any other method of allocation that does not take into account the equitable considerations referred to herein. The amount paid or payable by an indemnified party as a result of the loss, claim, liability, expense, or damage, or action in respect thereof, referred to above in this Section 9(d) shall be deemed to include, for the purpose of this Section 9(d), any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim to the extent consistent with Section 9(c) hereof. Notwithstanding the foregoing provisions of this Section 9(d), an Agent shall not be required to contribute any amount in excess of the commissions received by it under this Agreement and no person found guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 9(d), any person who controls a party to this Agreement within the meaning of the Securities Act, and any officers, directors, partners, employees or agents of an Agent, will have the same rights to contribution as that party, and each officer of the Company who signed the Registration Statement will have the same rights to contribution as the Company, subject in each case to the provisions hereof. Any party entitled to contribution, promptly after receipt of notice of commencement of any action against such party in respect of which a claim for contribution may be made under this Section 9(d), will notify any such party or parties from whom contribution may be sought, but the omission to so notify will not relieve that party or parties from whom contribution may be sought from any other obligation it or they may have under this Section 9(d) except to the extent that the failure to so notify such other party materially prejudiced the substantive rights or defenses of the party from whom contribution is sought. Except for a settlement entered into pursuant to the last sentence of Section 9(c) hereof, no party will be liable for contribution with respect to any action or claim settled without its written consent if such consent is required pursuant to Section 9(c) hereof.

10. Representations and Agreements to Survive Delivery. The indemnity and contribution agreements contained in Section 9 of this Agreement and all representations and warranties of the Company herein or in certificates delivered pursuant hereto shall survive, as of their respective dates, regardless of (i) any investigation made by or on behalf of the Agents, any controlling persons, or the Company (or any of their respective officers, directors or controlling persons), (ii) delivery and acceptance of the Placement Shares and payment therefor or (iii) any termination of this Agreement.

11. Termination.

(a) An Agent shall have the right by giving written notice as hereinafter specified at any time to terminate this Agreement if (i) since the date of this Agreement, any Material Adverse Change, or any development that would reasonably be expected to result in a Material

Adverse Change has occurred that, in the reasonable judgment of such Agent, may materially impair the ability of such Agent to sell the Placement Shares hereunder; (ii) the Company shall have failed, refused or been unable to perform any agreement on its part to be performed hereunder (through no fault of such Agent); *provided, however*, in the case of any failure of the Company to deliver (or cause another person to deliver) any certification, opinion, or letter required under Sections 7(m), 7(n), or 7(o), such Agent's right to terminate shall not arise unless such failure to deliver (or cause to be delivered) continues for more than thirty (30) days from the date such delivery was required; (iii) any other condition of the Agents' obligations hereunder is not fulfilled; or (iv), any suspension of trading in the Common Stock shall have occurred. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g) (Expenses), Section 9 (Indemnification and Contribution), Section 10 (Representations and Agreements to Survive Delivery), Section 16 (Applicable Law; Consent to Jurisdiction) and Section 17 (Waiver of Jury Trial) hereof shall remain in full force and effect notwithstanding such termination. If an Agent elects to terminate this Agreement as provided in this Section 11(a), such Agent shall provide the required written notice as specified in Section 12 (Notices).

(b) The Company shall have the right, by giving five (5) days' notice as hereinafter specified to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(c) Each Agent shall have the right, by giving five (5) days' notice as hereinafter specified to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(d) Unless earlier terminated pursuant to this Section 11, this Agreement shall automatically terminate upon the issuance and sale of all of the Placement Shares through the Agents on the terms and subject to the conditions set forth herein; *provided* that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(e) This Agreement shall remain in full force and effect unless terminated pursuant to Sections 11(a), (b), (c), or (d) above or otherwise by mutual agreement of the parties; *provided, however*, that any such termination by mutual agreement shall in all cases be deemed to provide that Section 7(g), Section 9, Section 10, Section 16 and Section 17 shall remain in full force and effect.

(f) Any termination of this Agreement shall be effective on the date specified in such notice of termination; *provided, however*, that such termination shall not be effective until the close of business on the date of receipt of such notice by an Agent or the Company, as the case may be. If such termination shall occur prior to the Settlement Date for any sale of Placement Shares, such Placement Shares shall settle in accordance with the provisions of this Agreement.

12. **Notices.** All notices or other communications required or permitted to be given by any party to any other party pursuant to the terms of this Agreement shall be in writing, unless otherwise specified in this Agreement, and if sent to the Agents, shall be delivered to HCW at H.C. Wainwright & Co., LLC, 430 Park Avenue, New York, NY 10022, email: atm@hcwco.com, Attention: Head of Investment Banking and to JonesTrading at 32133 Lindero Canyon Road, Suite 208, Westlake Village, CA 91361, Fax No.: (818) 879-5481, Attention: Trent McNair, Email: trentm@jonestrading.com and JTCM@jonestrading.com, with a copy to 155 Federal Street, Suite 1002, Boston, MA 02110, Attention: Steve Chmielewski, Esq., E-mail: steve@jonestrading.com and a copy to Duane Morris LLP, One Riverfront Plaza, 1037 Raymond Boulevard, Suite 1800, Newark, NJ 07102, attention: Dean M. Colucci, e-mail: dmcolucci@duanemorris.com; or if sent to the Company, shall be delivered to Organovo Holdings, Inc., 6275 Nancy Ridge Drive, San Diego, California 92121, attention: Craig Kussman, e-mail: ckussman@organovo.com, with a copy to Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP, 3570 Carmel Mountain Rd., Suite 200, San Diego, CA 92130, attention: Jeffrey C. Thacker, e-mail: Jthacker@gunder.com. Each party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose. Each such notice or other communication shall be deemed given (i) when delivered personally, by email or by verifiable facsimile transmission (with an original to follow) on or before 4:30 p.m., New York City time, on a Business Day (as defined below), or, if such day is not a Business Day on the next succeeding Business Day, (ii) on the next Business Day after timely delivery to a nationally-recognized overnight courier, (iii) on the Business Day actually received if deposited in the U.S. mail (certified or registered mail, return receipt requested, postage prepaid) and (iv) if sent by e-mail, on the Business Day on which receipt is confirmed by the individual to whom the notice is sent, other than via auto-reply. For purposes of this Agreement, "**Business Day**" shall mean any day on which the Exchange and commercial banks in the City of New York are open for business.

An electronic communication ("**Electronic Notice**") shall be deemed written notice for purpose of this Section 12 if sent to the electronic mail address specified by the receiving party under separate cover. Electronic Notice shall be deemed to be received at the time the party sending Electronic Notice receives confirmation of receipt by the receiving party. Any party receiving Electronic Notice may request and shall be entitled to receive the notice on paper, in a non-electronic form ("**Non-electronic Notice**") which shall be sent to the requesting party within ten (10) days of receipt of the written request for Non-electronic Notice.

13. **Successors and Assigns.** This Agreement shall inure to the benefit of and be binding upon the Company and each Agent and their respective successors and the affiliates, controlling persons, officers and directors referred to in Section 9 hereof. References to any of the parties contained in this Agreement shall be deemed to include the successors and permitted assigns of such party. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and permitted assigns any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement. Neither party may assign its rights or obligations under this Agreement without the prior written consent of the other party.

14. Adjustments for Share Splits. The parties acknowledge and agree that all share-related numbers contained in this Agreement shall be adjusted to take into account any share split, share dividend or similar event effected with respect to the Common Stock occurring after the date hereof.

15. Entire Agreement; Amendment; Severability. This Agreement (including all schedules and exhibits attached hereto and Placement Notices issued pursuant hereto) constitutes the entire agreement and supersedes all other prior and contemporaneous agreements and undertakings, both written and oral, among the parties hereto with regard to the subject matter hereof. Neither this Agreement nor any term hereof may be amended except pursuant to a written instrument executed by the Company and each Agent. In the event that any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable as written by a court of competent jurisdiction, then such provision shall be given full force and effect to the fullest possible extent that it is valid, legal and enforceable, and the remainder of the terms and provisions herein shall be construed as if such invalid, illegal or unenforceable term or provision was not contained herein, but only to the extent that giving effect to such provision and the remainder of the terms and provisions hereof shall be in accordance with the intent of the parties as reflected in this Agreement.

16. Applicable Law; Consent to Jurisdiction. This Agreement shall be governed by, and construed in accordance with, the internal laws of the State of New York without regard to the principles of conflicts of laws. Each party hereby irrevocably submits to the non-exclusive jurisdiction of the state and federal courts sitting in the City of New York, borough of Manhattan, for the adjudication of any dispute hereunder or in connection with any transaction contemplated hereby, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is brought in an inconvenient forum or that the venue of such suit, action or proceeding is improper. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof (certified or registered mail, return receipt requested) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any manner permitted by law.

17. Waiver of Jury Trial. The Company and the Agents each hereby irrevocably waives any right it may have to a trial by jury in respect of any claim based upon or arising out of this Agreement or any transaction contemplated hereby.

18. Absence of Fiduciary Relationship. The Company acknowledges and agrees that:

(a) Each Agent has been retained solely to act as sales agent in connection with the sale of the Placement Shares and that no fiduciary relationship between the Company and either Agent has been created in respect of any of the transactions contemplated by this Agreement, irrespective of whether such Agent has advised or is advising the Company on other matters;

(b) the Company is capable of evaluating and understanding and understands and accepts the terms, risks and conditions of the transactions contemplated by this Agreement;

(c) the Company has been advised that each Agent and its affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that neither Agent has an obligation to disclose such interests and transactions to the Company by virtue of any fiduciary, advisory or agency relationship; and

(d) the Company waives, to the fullest extent permitted by law, any claims it may have against the Agents, for breach of fiduciary duty or alleged breach of fiduciary duty in connection with the sale of Placement Shares under this Agreement, and agrees that the Agents shall have no liability (whether direct or indirect) to the Company in respect of such a fiduciary claim.

19. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery of an executed Agreement by one party to the other may be made by facsimile or other electronic transmission.

[Remainder of Page Intentionally Blank]

If the foregoing correctly sets forth the understanding between the Company and each Agent, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement between the Company and each Agent.

Very truly yours,

ORGANOVO HOLDINGS, INC.

By: /s/ Taylor Crouch
Name: Taylor Crouch
Title: Chief Executive Officer

**ACCEPTED as of the date
first-above written:**

H.C. WAINWRIGHT & CO., LLC

By: /s/ Edward D. Silvera
Name: Edward D. Silvera
Title: Chief Operating Officer

JONESTRADING INSTITUTIONAL SERVICES LLC

By: /s/ Trent McNair
Name: Trent McNair
Title: CFO

[Signature Page To Sales Agreement]

FORM OF PLACEMENT NOTICE

From: Organovo Holdings, Inc.
To: [H.C. Wainwright & Co., LLC] / [JonesTrading Institutional Services LLC]
Subject: At the Market Offering—Placement Notice
Date: , 20

Gentlemen:

Pursuant to the terms and subject to the conditions contained in the Sales Agreement between Organovo Holdings, Inc. (the "Company"), and H.C. Wainwright & Co., LLC ("HCW") and JonesTrading Institutional Services LLC ("JonesTrading") dated March 16, 2018 (the "Agreement"), I hereby request on behalf of the Company that [*identify Designated Agent*] sell up to [] shares of the Company's common stock, par value \$0.001 per share, at a minimum market price of \$ per share. Sales should begin on the date of this Notice and shall continue until [DATE] [all shares are sold][the aggregate sales price of the shares reaches \$[]].

Notice Parties

The Company

Taylor Crouch tcrouch@organovo.com
Craig Kussman ckussman@organovo.com
Jennifer Bush jbush@organovo.com

HCW

Peter Fry pfry@hcwco.com
Charles Worthman csworthman@hcwco.com
With a copy to atm@hcwco.com

JonesTrading

Moe Cohen moec@jonestrading.com
John D'Agostini johnd@jonestrading.com
Ryan Gerety ryang@jonestrading.com
Bryan Turley bturley@jonestrading.com
With a copy to JTCM@jonestrading.com

Compensation

The Designated Agent shall be paid compensation up to 3.0% of the gross proceeds from the sales of Placement Shares pursuant to the terms of this Agreement.

OFFICER CERTIFICATE

The undersigned, the duly qualified and elected _____, of Organovo Holdings, Inc. ("**Company**"), a Delaware corporation, does hereby certify in such capacity and on behalf of the Company, pursuant to **Section 7(m)** of the Sales Agreement dated March 16, 2018 (the "**Sales Agreement**") among the Company and H.C. Wainwright & Co., LLC and JonesTrading Institutional Services LLC, that to the best of the knowledge of the undersigned:

(i) The representations and warranties of the Company in **Section 6** of the Sales Agreement (A) to the extent such representations and warranties are subject to qualifications and exceptions contained therein relating to materiality or Material Adverse Change, are true and correct on and as of the date hereof with the same force and effect as if expressly made on and as of the date hereof, except for those representations and warranties that speak solely as of a specific date and which were true and correct as of such date, and (B) to the extent such representations and warranties are not subject to any qualifications or exceptions, are true and correct in all material respects as of the date hereof as if made on and as of the date hereof with the same force and effect as if expressly made on and as of the date hereof except for those representations and warranties that speak solely as of a specific date and which were true and correct as of such date; and

(ii) The Company has complied with all agreements and satisfied all conditions on its part to be performed or satisfied pursuant to the Sales Agreement at or prior to the date hereof.

Capitalized terms used but not defined herein shall have the meanings ascribed to them in the Sales Agreement.

ORGANOVO HOLDINGS, INC.

By: _____
Name:
Title:

Date: