

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

**FORM S-8  
REGISTRATION STATEMENT**  
*UNDER  
THE SECURITIES ACT OF 1933*

**Organovo Holdings, Inc.**

(Exact name of registrant as specified in its charter)

**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

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

**440 Stevens Avenue, Suite 200  
Solana Beach, CA 92075**  
(Address of Principal Executive Offices) (Zip Code)

**Organovo Holdings, Inc. Amended and Restated 2012 Equity Incentive Plan**  
(Full titles of the plans)

**Keith Murphy**  
Executive Chairman  
**Organovo Holdings, Inc.**  
**440 Stevens Avenue, Suite 200**  
**Solana Beach, CA 92075**  
**(858) 224-1000**  
(Name, address and telephone number, including area code, of agent for service)

**Copies to:**  
**Jeffrey T. Hartlin, Esq.**  
**Paul Hastings LLP**  
**1117 S. California Avenue**  
**Palo Alto, California 94304**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="checkbox"/>		Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>		Smaller reporting company	<input checked="" type="checkbox"/>
			Emerging growth company	<input type="checkbox"/>

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 7(a)(2)(B) of the Securities Act.

**CALCULATION OF REGISTRATION FEE**

Title of securities to be registered	Amount to be registered (1)	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock, \$0.001 par value per share, reserved for issuance pursuant to stock options outstanding under the Amended and Restated 2012 Equity Incentive Plan	149,046 (2)	\$6.50 (3)	\$968,799.00	\$89.81

Common Stock, \$0.001 par value per share, reserved for issuance pursuant to the Amended and Restated 2012 Equity Incentive Plan	750,954 (2)	\$6.265 (4)	\$4,704,726.81	\$436.13
<b>Total</b>	900,000	—	\$5,673,525.81	\$525.94

- (1) Pursuant to Rule 416(a) of the Securities Act of 1933, as amended (the “Securities Act”), this Registration Statement on Form S-8 (the “Registration Statement”) shall also cover any additional shares of common stock, \$0.001 par value per share (the “Common Stock”), of the Registrant (as defined below) that become issuable under the Organovo Holdings, Inc. Amended and Restated 2012 Equity Incentive Plan (the “2012 Plan”) by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of the Registrant’s outstanding shares of Common Stock.
- (2) 900,000 shares of Common Stock that were added to the shares reserved for issuance under the 2012 Plan pursuant to an amendment thereto that was approved by the Registrant’s stockholders at the Registrant’s 2021 Annual Meeting of Stockholders held on October 5, 2021.
- (3) Estimated in accordance with Rule 457(h) of the Securities Act solely for purposes of calculating the registration fee and based on the weighted-average exercise price of the options.
- (4) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rules 457(c) and 457(h) of the Securities Act. The proposed maximum aggregate offering price per share and the proposed maximum aggregate offering price with respect to these shares are calculated based on the average of the high and low prices of the Common Stock as reported on the Nasdaq Capital Market on November 5, 2021, a date within five business days prior to the filing of this Registration Statement.

## EXPLANATORY NOTE

Organovo Holdings, Inc. (the “Registrant”) has prepared this Registration Statement in accordance with the requirements of Form S-8 under the Securities Act to register 900,000 additional shares of Common Stock issuable pursuant to the 2012 Plan, which includes 149,046 shares of Common Stock issuable upon exercise of outstanding options granted pursuant to the 2012 Plan.

The Registrant’s stockholders previously approved the 2012 Plan, including the 327,699 shares of Common Stock initially available for issuance pursuant thereto, on October 17, 2012. On August 21, 2013, the Registrant’s stockholders approved an amendment to the 2012 Plan to increase the number of shares of Common Stock issuable under the 2012 Plan by 250,000 shares. On August 20, 2015, the Registrant’s stockholders approved an amendment to the 2012 Plan to, among other things, increase the number of shares of Common Stock issuable under the 2012 Plan by 300,000 shares. On July 26, 2018, the Registrant’s stockholders approved an amendment to the 2012 Plan to, among other things, increase the number of shares of Common Stock issuable under the 2012 Plan by 550,000 shares. On October 5, 2021, the Registrant’s stockholders approved an amendment to the 2012 Plan to, among other things, increase the number of shares of Common Stock issuable under the 2012 Plan by 900,000 shares.

Pursuant to the Registration Statement on Form S-8 (File No. 333-181324) filed by the Registrant with the Securities and Exchange Commission (the “Commission”) on May 11, 2012 (the “2012 Registration Statement”), the Registrant previously registered 327,699 shares of Common Stock under the 2012 Plan. The Registrant also filed: (i) a Registration Statement on Form S-8 (File No. 333-192248) with the Commission on November 8, 2013 (the “2013 Registration Statement”), pursuant to which the Registrant registered 250,000 additional shares of Common Stock issuable pursuant to the 2012 Plan, (ii) a Registration Statement on Form S-8 (File No. 333-209395) with the Commission on February 4, 2016, pursuant to which the Registrant registered 300,000 additional shares of Common Stock issuable pursuant to the 2012 Plan (the “2016 Registration Statement”), and (iii) a Registration Statement on Form S-8 (File No. 333-226839) with the Commission on August 14, 2018, pursuant to which the Registrant registered 550,000 additional shares of Common Stock issuable pursuant to the 2012 Plan (the “2018 Registration Statement” and together with the 2012 Registration Statement, the 2013 Registration Statement and the 2016 Registration Statement, the “Prior Registration Statements”).

All share amounts in this Registration Statement give effect to the 1-for-20 reverse stock split of the Common Stock effected on August 18, 2020.

In accordance with General Instruction E to Form S-8, the contents of the Prior Registration Statements are hereby incorporated by reference.

### PART I

#### INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

The document(s) containing the information specified in Part I will be sent or given to employees as specified by Rule 428(b)(1) of the Securities Act. Such documents are not being filed with the Securities and Exchange Commission (the “SEC”) either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 of the Securities Act. Such documents and the documents incorporated by reference in this Registration Statement pursuant to Item 3 of Part II hereof, taken together, constitute a prospectus that meets the requirements of Section 10(a) of the Securities Act.

### PART II

#### INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

##### ITEM 3. INCORPORATION OF DOCUMENTS BY REFERENCE.

The following documents filed by the Registrant with the SEC are hereby incorporated by reference into this Registration Statement:

- The Registrant’s Annual Report on [Form 10-K](#) for the fiscal year ended March 31, 2021, filed with the SEC on June 15, 2021;
- The Registrant’s Annual Report on [Form 10-K/A](#) for the fiscal year ended March 31, 2021, filed with the SEC on July 29, 2021;
- The Registrant’s Quarterly Report on [Form 10-Q](#) for the quarterly period ended June 30, 2021, filed with the SEC on August 6, 2021;
- The Registrant’s Quarterly Report on [Form 10-Q](#) for the quarterly period ended September 30, 2021, filed with the SEC on November 8, 2021;
- The Registrant’s definitive proxy statement on [Schedule 14A](#), filed with the SEC on August 5, 2021;
- The Registrant’s definitive additional proxy materials on [Schedule 14A](#), filed with the SEC on August 31, 2021;
- The Registrant’s definitive additional proxy materials on [Schedule 14A](#), filed with the SEC on September 17, 2021;
- The Registrant’s Current Reports on Form 8-K filed with the SEC on [April 19, 2021](#), [May 13, 2021](#), [September 17, 2021](#), [October 1, 2021](#) and [October 6, 2021](#); and
- The description of the Registrant’s common stock set forth in the Registrant’s Registration Statement on [Form 8-A](#) (File No. 001-35996), filed with the SEC on July 26, 2016, including any amendments or reports filed for the purpose of updating such description.

All other reports and other documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference into this Registration Statement and to be a part of this Registration Statement from the date of the filing of such reports and documents, except as to any portion of any future annual or quarterly report to stockholders or document or current report furnished under Items 2.02 or 7.01 of Form 8-K that is not deemed filed under such provisions.

For the purposes of this Registration Statement, any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded to the extent that a statement contained herein or in any other subsequently filed document that also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

You should rely only on the information provided or incorporated by reference in this Registration Statement or any related prospectus. The Registrant has not authorized anyone to provide you with different information. You should not assume that the information in this Registration Statement or any related prospectus is accurate as of any date other than the date on the front of the document.

You may contact the Registrant in writing or orally to request copies of the above-referenced filings, without charge (excluding exhibits to such documents unless such exhibits are specifically incorporated by reference into the information incorporated into this Registration Statement). Requests for such information should be directed to:

Organovo Holdings, Inc.  
440 Stevens Ave, Suite 200  
Solana Beach, CA 92075  
(858) 224-1000  
Attn: Executive Chairman

## ITEM 8. EXHIBITS.

Exhibit Number	Description
3.1	<a href="#"><u>Certificate of Incorporation of Organovo Holdings, Inc. (Delaware) (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, as filed with the SEC on February 3, 2012).</u></a>
3.2	<a href="#"><u>Certificate of Amendment of Certificate of Incorporation of Organovo Holdings, Inc. (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, as filed with the SEC on July 27, 2018).</u></a>
3.3	<a href="#"><u>Certificate of Second Amendment to the Certificate of Incorporation of Organovo Holdings, Inc. (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, as filed with the SEC on August 17, 2020).</u></a>
3.4	<a href="#"><u>Bylaws of Organovo Holdings, Inc. (Delaware) (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K, as filed with the SEC on February 3, 2012).</u></a>
3.5	<a href="#"><u>Amendment to Bylaws of Organovo Holdings, Inc., dated October 10, 2019 (incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K, as filed with the SEC on October 11, 2019).</u></a>
3.6	<a href="#"><u>Amendment to Bylaws of Organovo Holdings, Inc. dated September 29, 2021 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, as filed with the SEC on October 1, 2021).</u></a>
4.1	<a href="#"><u>Organovo Holdings, Inc. Amended and Restated 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on October 6, 2021 and incorporated herein by reference).</u></a>
4.2	<a href="#"><u>Form of Stock Option Agreement under the 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.16 to the Company's Current Report on Form 8-K, as filed with the SEC on February 13, 2012).</u></a>
4.3	<a href="#"><u>Form of Non-Employee Director Stock Option Award Agreement under the 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.35 to the Company's Annual Report on Form 10-K, as filed with the SEC on June 9, 2015).</u></a>
4.4	<a href="#"><u>Form of Executive Stock Option Award Agreement under the 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.36 to the Company's Annual Report on Form 10-K, as filed with the SEC on June 9, 2015).</u></a>
4.5	<a href="#"><u>Form of Restricted Stock Unit Grant Notice and Restricted Stock Unit Agreement (Retention Form) under the 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q, as filed with the SEC on August 4, 2016).</u></a>
4.6	<a href="#"><u>Form of Employee Restricted Stock Unit Grant Notice and Restricted Stock Unit Agreement under the 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q, as filed with the SEC on August 4, 2016).</u></a>
4.7	<a href="#"><u>Form of Non-Employee Director Restricted Stock Unit Grant Notice and Restricted Stock Unit Agreement under the 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q, as filed with the SEC on August 4, 2016).</u></a>
5.1	<a href="#"><u>Opinion of Paul Hastings LLP.</u></a>
23.1	<a href="#"><u>Consent of Mayer Hoffman McCann P.C., Independent Registered Public Accounting Firm.</u></a>
23.2	<a href="#"><u>Consent of Paul Hastings LLP (included in Exhibit 5.1).</u></a>
24.1	<a href="#"><u>Power of Attorney is contained on the signature page.</u></a>

## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Solana Beach, State of California, on November 9, 2021.

### ORGANOVO HOLDINGS, INC.

By: /s/ Keith Murphy

Name: Keith Murphy

Title: Executive Chairman

## POWER OF ATTORNEY

**KNOW ALL PERSONS BY THESE PRESENTS**, that each person whose signature appears below constitutes and appoints Keith Murphy, Thomas P. Hess and Thomas Jurgensen, and each or any one of them, as his or her true and lawful attorneys-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<u>SIGNATURE</u>	<u>TITLE</u>	<u>DATE</u>
<u>/s/ Keith Murphy</u> Keith Murphy	Executive Chairman and Director <i>(Principal Executive Officer)</i>	November 9, 2021
<u>/s/ Thomas P. Hess</u> Thomas P. Hess	President and Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>	November 9, 2021
<u>/s/ Douglas Jay Cohen</u> Douglas Jay Cohen	Director	November 9, 2021
<u>/s/ David Gobel</u> David Gobel	Director	November 9, 2021
<u>/s/ Alison Tjosvold Milhous</u> Alison Tjosvold Milhous	Director	November 9, 2021
<u>/s/ Adam K. Stern</u> Adam K. Stern	Director	November 9, 2021

November 9, 2021

47901.00001

Organovo Holdings, Inc.  
440 Stevens Ave, Suite 200  
Solana Beach, CA 92075

Re: Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel to Organovo Holdings, Inc., a Delaware corporation (the “**Company**”), in connection with the registration statement on Form S-8 to be filed by the Company with the U.S. Securities and Exchange Commission (the “**Commission**”) on or about the date hereof (the “**Registration Statement**”) to effect registration under the Securities Act of 1933, as amended (the “**Securities Act**”), of an aggregate of 900,000 shares (the “**Shares**”) of the Company’s common stock, \$0.001 par value per share (“**Common Stock**”), issuable upon the vesting and exercise of awards to be granted by the Company pursuant to the Company’s Amended and Restated 2012 Equity Incentive Plan (the “**Equity Plan**”).

As such counsel and for purposes of our opinion set forth below, we have examined and relied upon originals or copies, certified or otherwise identified to our satisfaction, of such documents, resolutions, certificates and other instruments of the Company and corporate records furnished to us by the Company, and have reviewed certificates of public officials, statutes, records and such other instruments and documents as we have deemed necessary or appropriate as a basis for the opinion set forth below, including, without limitation:

- (i) the Registration Statement;
- (ii) the Certificate of Incorporation of the Company, as amended, certified by the Office of the Secretary of State of the State of Delaware on November 9, 2021;
- (iii) the Bylaws of the Company, as amended, as presently in effect, certified by an officer of the Company on November 9, 2021;
- (iv) the Equity Plan and the forms of award agreements related thereto;
- (v) a certificate, dated as of November 9, 2021, from the Office of the Secretary of State of the State of Delaware, as to the existence and good standing of the Company in the State of Delaware (the “**Good Standing Certificate**”); and
- (vi) the resolutions adopted by the board of directors of the Company regarding the Equity Plan and other matters related thereto, as certified by an officer of the Company on November 9, 2021.

In addition to the foregoing, we have made such investigations of law as we have deemed necessary or appropriate as a basis for the opinion set forth in this opinion letter.

In such examination and in rendering the opinion expressed below, we have assumed, without independent investigation or verification: (i) the genuineness of all signatures on all agreements, instruments, corporate records, certificates and other documents submitted to us; (ii) the authenticity and completeness of all agreements, instruments, corporate records, certificates and other documents submitted to us as originals; (iii) that all agreements, instruments, corporate records, certificates and other documents submitted to us as certified, electronic, facsimile, conformed, photostatic or other copies conform to originals thereof, and that such originals are authentic and complete; (iv) the legal capacity and authority of all persons or entities (other than the Company) executing all agreements, instruments, corporate records, certificates and other documents submitted to us; (v) the due authorization, execution and delivery of all agreements, instruments, corporate records, certificates and other documents by all parties thereto (other than the Company); (vi) that no documents submitted to us have been amended or terminated orally or in writing except as has been disclosed to us in writing; (vii) that the statements contained in the certificates and comparable documents of public officials, officers and representatives of the Company and other persons on which we have relied for the purposes of this opinion letter are true and correct; (viii) that there has not been any change in the good standing status of the Company from that reported in the Good Standing Certificate; and (ix) that each of the officers and directors of the Company has properly exercised his or her fiduciary duties. As to all questions of fact material to this opinion letter, and as to the materiality of any fact or other matter referred to herein, we have relied (without independent investigation or verification) upon representations and certificates or comparable documents of officers and representatives of the Company. Our knowledge of the Company and its legal and other affairs is limited by the scope of our engagement, which scope includes the delivery of this opinion letter. We do not represent the Company with respect to all legal matters or issues. The Company may employ other independent counsel and, to our knowledge, handles certain legal matters and issues without the assistance of independent counsel. We have also assumed that the individual issuances, grants, awards or grants of purchase rights under the Equity Plan will be duly authorized by all necessary corporate action of the Company and duly issued, granted or awarded and exercised in accordance with the requirements of law, the Equity Plan and the agreements, forms of instrument, awards and grants duly adopted thereunder.

Based upon the foregoing, and in reliance thereon, and subject to the assumptions, limitations, qualifications and exceptions set forth herein, we are of the opinion that the Shares are duly authorized and, when issued and sold as described in the Registration Statement and in accordance with the Equity Plan and the applicable award agreements or forms of instrument evidencing purchase rights thereunder (including the receipt by the Company of the full consideration therefor), will be validly issued, fully paid and nonassessable.

Without limiting any of the other limitations, exceptions and qualifications stated elsewhere herein, we express no opinion with regard to the applicability or effect of the laws of any jurisdiction other than the General Corporation Law of the State of Delaware, as in effect on the date of this opinion letter.

This opinion letter deals only with the specified legal issues expressly addressed herein, and you should not infer any opinion that is not explicitly stated herein from any matter addressed in this opinion letter.

This opinion letter is rendered solely in connection with the issuance and delivery of the Shares as described in the Registration Statement and in accordance with the terms of the Equity Plan and the applicable award agreement or form of instrument evidencing purchase rights thereunder. This opinion letter is rendered as of the date hereof, and we assume no obligation to advise you or any other person with regard to any change after the date hereof in the circumstances or the law that may bear on the matters set forth herein even if the change may affect the legal analysis or a legal conclusion or other matters in this opinion letter.



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**PAUL**  
**HASTINGS**

Organovo Holdings, Inc.

November 9, 2021

Page 3

We hereby consent to the filing of this opinion letter as Exhibit 5.1 to the Registration Statement. In giving such consent, we do not hereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules or regulations of the Commission thereunder.

Very truly yours,

/s/ Paul Hastings LLP

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated June 15, 2021, relating to the consolidated financial statements of Organovo Holdings, Inc. as of March 31, 2021 and 2020, and for each of the two years in the period ended March 31, 2021, included in its Annual Report on Form 10-K for the year ended March 31, 2021.

/s/ Mayer Hoffman McCann P.C.

San Diego, California  
November 9, 2021