

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 8-A

**FOR REGISTRATION OF CERTAIN CLASSES OF SECURITIES
PURSUANT TO SECTION 12(b) OR 12(g) OF THE
SECURITIES EXCHANGE ACT OF 1934**

ORGANOVO HOLDINGS, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware

(State of Incorporation or Organization)

27-1488943

(I.R.S. Employer Identification No.)

**5871 Oberlin Drive, Suite 150
San Diego, California**

(Address of Principal Executive Offices)

92121

(Zip Code)

Securities to be registered pursuant to Section 12(b) of the Act: None.

If this form relates to the registration of a class of securities pursuant to Section 12(b) of the Exchange Act and is effective pursuant to General Instruction A. (c), check the following box.

If this form relates to the registration of a class of securities pursuant to Section 12(g) of the Exchange Act and is effective pursuant to General Instruction A. (d), check the following box.

Securities Act registration statement file number to which this form relates: N/A

Securities to be registered pursuant to Section 12(g) of the Act:

Common Stock, par value \$0.001 per share

(Title of class)

INFORMATION REQUIRED IN REGISTRATION STATEMENT

Item 1. Description of Registrant's Securities to be Registered.

The following description of the Registrant's common stock and the provisions of its charter documents are summaries and are qualified by reference to the Registrant's Certificate of Incorporation and its Bylaws listed as exhibits to this registration statement. The Registrant and its common stock are also governed by the general corporation laws of the State of Delaware.

Authorized and Outstanding: We are authorized to issue up to 150,000,000 shares of common stock, par value \$0.001 per share, and 25,000,000 shares of preferred stock, par value \$0.001 per share. As of March 9, 2012, there were 36,770,241 shares of our common stock issued and outstanding, which shares were held by 204 stockholders of record, and no shares of preferred stock outstanding.

All outstanding shares of common stock are fully paid and nonassessable.

Common Stock:

Voting: Holders of our common stock are entitled to one vote for each share on all matters submitted to a stockholder vote, except matters that relate only to a series of our preferred stock. Holders of common stock do not have cumulative voting rights.

In general, (i) stockholder action (except for bylaw amendments, which requires a majority of shares entitled to vote, and election of directors, which requires a plurality vote) is based on the affirmative vote of a majority of the votes cast and (ii) broker non-votes and abstentions are considered for purposes of establishing a quorum but are not considered as votes cast for or against a proposal or director nominee. Directors are elected by a plurality of the voting power of the shares present in person or represented by proxy at the meeting and entitled to vote on the election of directors. A vote by the holders of a majority of our outstanding shares is required to effectuate certain fundamental corporate changes such as liquidation, merger or an amendment to our certificate of incorporation.

Our board of directors is divided into three classes. At each annual meeting of stockholders, each of the successors elected to replace the directors of a class whose term expires at such annual meeting are elected to hold office for a three year term.

Stockholders may not take action by written consent unless the taking of such action by written consent is approved in advance by resolution of our board of directors

Dividends: Subject to limitations under Delaware law and preferences that may apply to any then-outstanding shares of preferred stock, holders of common stock are entitled to share in all dividends that the board of directors, in its discretion, declares from legally available funds.

We have never declared or paid any cash dividends on our common stock. We currently intend to retain future earnings, if any, to finance the expansion of our business. As a result, we do not anticipate paying any cash dividends in the foreseeable future.

Liquidation: In the event of a liquidation, dissolution or winding up, each outstanding share entitles its holder to participate pro rata in all assets that remain after payment of liabilities and after providing for each class of stock, if any, having preference over the common stock, subject to the liquidation preference of any then outstanding shares of preferred stock.

Miscellaneous: Holders of our common stock have no pre-emptive rights, no conversion rights and there are no redemption provisions applicable to our common stock.

Preferred Stock:

Our Certificate of Incorporation empowers our board of directors, without further action by our stockholders, to issue up to 25,000,000 shares of preferred stock from time to time in one or more series. Our board of directors is authorized to fix and determine the designations, powers, preferences and rights, and the qualifications, limitations or restrictions, of the preferred stock, including dividend rights, dividend rates, conversion rights, voting rights, rights and terms of redemption, the redemption price or prices and liquidation preferences, any or all of which may be greater than the rights of the common stock. The issuance of preferred stock could make it more difficult or prevent a change of control of our company or the removal of our management. Additionally, the issuance of preferred stock may have the effect of decreasing the market price of our common stock. The rights of holders of our common stock described above will be subject to, and may be adversely affected by, the rights of any preferred stock that our board of directors may designate and issue in the future.

Anti-Takeover Effects of Provisions of Our Charter Documents:

Some provisions of our Certificate of Incorporation and Bylaws contain provisions that could make the following transactions more difficult:

- acquisition of our company by means of a tender offer;
- acquisition of our company by means of a proxy contest or otherwise; or
- removal of our incumbent officers and directors.

These provisions, summarized below, may discourage coercive takeover practices and inadequate takeover bids and promote stability in our management. These provisions may also encourage persons seeking to acquire control of our company to first negotiate with our board of directors.

Removal of Directors. The Certificate of Incorporation provides that stockholders may only remove a director from office for cause.

Board Vacancies are Filled by Remaining Directors and Not Stockholders. The Bylaws provide that any vacancies on the board of directors may be filled by the vote of the majority of the remaining directors, although less than a quorum.

Stockholder Meetings. The Bylaws provide that a special meeting of stockholders, other than those required by Delaware law, may be called only by our board of directors, chairperson of the board of directors, chief executive officer or president (in the absence of a chief executive officer).

No Action by Written Consent. As discussed previously, stockholders may not take action by written consent unless the taking of such action by written consent is approved in advance by resolution of our board of directors

Undesignated Preferred Stock. The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue one or more series of preferred stock with voting or other rights or preferences that could make it more difficult or prevent a change of control of our company or the removal of our management.

Requirements for advance notification of stockholder nominations and proposals. Our Bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors.

SIGNATURE

Pursuant to the requirements of Section 12 of the Securities Exchange Act of 1934, the Registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereto duly authorized.

ORGANOVO HOLDINGS, INC.

Date: March 12, 2012

By: /s/ Keith Murphy

Name: Keith Murphy

Title: Chief Executive Officer

EXHIBIT INDEX

Exhibit No. Description

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| 3.1 | Certificate of Incorporation of the Registrant (incorporated by reference from Exhibit 3.1 to the Registrant's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on February 3, 2012 (the "February 2012 Form 8-K")). |
| 3.2 | Bylaws of the Registrant (incorporated by reference from Exhibit 3.2 to the February 2012 Form 8-K). |