

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

**FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

ENTEROMEDICS INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

48-1293684
(IRS Employer
Identification No.)

3845
(Primary Standard Industrial
Classification Code Number)

**2800 Patton Road
St. Paul, Minnesota 55113
(651) 634-3071**
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Dan W. Gladney
Chief Executive Officer
EnteroMedics Inc.
2800 Patton Road
St. Paul, Minnesota 55113
(651) 634-3003**
(Name, address, including zip code, and telephone number, including area code, of agent for service)

with copies to:

**Timothy S. Hearn
Jonathan B. Abram
Dorsey & Whitney LLP
50 South Sixth Street
Minneapolis, Minnesota 55402
Tel: (612) 340-2600
Fax: (612) 340-2868**

**Michael F. Nertney
Ellenoff Grossman & Schole, LLP
1345 Avenue of the Americas
New York, NY 10105
Tel: (212) 370-1300
Fax: (212) 370-7889**

Approximate date of commencement of proposed sale to the public: As soon as practicable after this Registration Statement is declared effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. (File No. 333-213704)

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

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

Large accelerated filer

Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

Smaller reporting company

CALCULATION OF REGISTRATION FEE

Title of securities to be registered (1)	Proposed maximum aggregate offering price (1)	Amount of Registration Fee (2)
Class A Units consisting of:	\$422,438	\$48.96
(i) shares of common stock, par value \$0.01 per share		
(ii) Warrants to purchase common stock		
Class B Units consisting of:	1,326,712	153.77
(i) Series A Convertible Preferred Stock		
(ii) Common Stock issuable on conversion of Series A Convertible Preferred Stock		
(iii) Warrants to purchase common stock		
Common stock issuable upon exercise of the warrants	3,645,488	422.51
Total	\$5,394,638	\$625.24

- (1) Pursuant to Rule 416 under the Securities Act of 1933, the securities registered also include such indeterminate amounts and numbers of shares of common stock issuable to cover additional securities that may be offered or issued to prevent dilution resulting from stock splits, stock dividends or similar transactions. Also includes the offering price of additional units that the underwriters have the option to purchase.
- (2) Calculated pursuant to Rule 457(o) based on an estimate of the proposed maximum aggregate offering price.

This Registration Statement shall become effective upon filing in accordance with Rule 462(b) under the Securities Act of 1933.

EXPLANATORY NOTE

This 462(b) Registration Statement relates to the public offering of Class A Units and Class B Units (the "Offering") contemplated by the Registration Statement on Form S-1 (File No. 333-213704), which was initially filed with the Securities and Exchange Commission (the "SEC") on September 20, 2016, and which, as amended, was declared effective by the SEC on January 17, 2017 (the "Prior Registration Statement"). This Registration Statement on Form S-1 is being filed pursuant to Rule 462(b) under the Securities Act of 1933, as amended, for the purposes of registering additional securities of the same class as were included in the Prior Registration Statement, representing an increase in the maximum aggregate offering price by \$1,749,150. The contents of the Prior Registration Statement and all exhibits thereto are hereby incorporated by reference.

The required opinion and consents are listed on an Exhibit Index attached hereto and filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in St. Paul, Minnesota on January 17, 2017.

ENTEROMEDICS INC.

By: /s/ Dan W. Gladney

Dan W. Gladney

President and Chief Executive Officer

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Dan W. Gladney</u> Dan W. Gladney	Chairman of the Board and President and Chief Executive Officer (principal executive officer)	January 17, 2017
<u>/s/ Scott P. Youngstrom</u> Scott P. Youngstrom	Chief Financial Officer and Chief Compliance Officer (principal financial and accounting officer)	January 17, 2017
<u>*</u> Gary D. Blackford	Director	January 17, 2017
<u>*</u> Carl Goldfischer, M.D.	Director	January 17, 2017
<u>*</u> Bobby I. Griffin	Director	January 17, 2017
<u>*</u> Lori C. McDougal	Director	January 17, 2017
<u>*</u> Nicholas L. Teti, Jr.	Director	January 17, 2017
<u>*</u> Jon T. Tremmel	Director	January 17, 2017

*By: /s/ Dan W. Gladney

Dan W. Gladney

Attorney-in-fact

**Exhibit
Number**

Description of Document

5.1*	Opinion of Dorsey & Whitney LLP.
23.1*	Consent of Deloitte & Touche LLP, Independent Registered Public Accounting Firm.
23.2*	Consent of Dorsey & Whitney LLP (included in Exhibit 5.1).
24.1	Power of Attorney (Incorporated herein by reference to Exhibit 24.1 to the Company's Registration Statement on Form S-1 filed on September 20, 2016 (File No. 333-213704)).

* Filed herewith.

[Letterhead of Dorsey & Whitney LLP]

January 17, 2017

EnteroMedics Inc.
2800 Patton Rd
St Paul, MN 55113

Re: Registration Statement on Form S-1

Ladies and Gentlemen:

We have acted as counsel to EnteroMedics Inc., a Delaware corporation (the "Company"), in connection with a Registration Statement on Form S-1 (the "Registration Statement"), filed by the Company with the Securities and Exchange Commission (the "Commission") pursuant to Rule 462(b) of the Securities Act of 1933, as amended (the "Securities Act"), relating to the registration by the Company of up to \$1,749,150 of (i) Class A Units, with each Class A Unit consisting of one share of the Company's common stock, par value \$0.01 per share (the "Common Stock") and one warrant to purchase one share of Common Stock (the "Class A Units"); and (ii) Class B Units consisting of one share of Series A Convertible Preferred Stock, par value \$0.01 per share (the "Preferred Stock") and warrants to purchase a number of shares of Common Stock equal to \$1,000 divided by the conversion price of the Preferred Stock (together with the shares of common stock underlying such shares of Preferred Stock and such warrants, the "Class B Units" and, together with the Class A Units, the "Units") at a public offering price of \$1,000 per Class B Unit. The Units will be sold pursuant to an Underwriting Agreement to be entered into between the Company and the underwriters named therein (the "Underwriting Agreement"). Pursuant to the Certificate of Designation (the "Certificate of Designation") establishing the powers, designations, preferences and rights of the Preferred Stock to be filed in connection with the offering contemplated by the Registration Statement and the Company's Sixth Amended and Restated Certificate of Incorporation (the "Certificate of Incorporation"), the shares of the Preferred Stock will be convertible into shares of Common Stock.

We have examined such documents and have reviewed such questions of law as we have considered necessary or appropriate for the purposes of our opinions set forth below. In rendering our opinions set forth below, we have assumed the authenticity of all documents submitted to us as originals, the genuineness of all signatures and the conformity to authentic originals of all documents submitted to us as copies. We have also assumed the legal capacity for all purposes relevant hereto of all natural persons and, with respect to all parties to agreements or instruments relevant hereto other than the Company, that such parties had the requisite power and authority (corporate or otherwise) to execute, deliver and perform such agreements and instruments, that such agreements and instruments have been duly authorized by all requisite action (corporate or otherwise), executed and delivered by such parties and that such agreements and instruments are the valid, binding and enforceable obligations of such parties. As to questions of fact material to our opinions, we have relied upon certificates or comparable documents of officers and other representatives of the Company and of public officials.

Based on the foregoing, we are of the opinion that:

1. The shares of Common Stock, when issued and delivered (i) against payment of the consideration therefor specified in the Underwriting Agreement, (ii) upon the valid exercise of the warrants in accordance with their terms, including without limitation, payment of the consideration therefor as described therein, or (iii) upon the valid conversion of the shares Preferred Stock in accordance with the Certificate of Designation, will be validly issued, fully paid and non-assessable.
2. When the warrants have been duly executed and delivered by the Company against payment of the consideration therefor specified in the Underwriting Agreement, such warrants will constitute binding obligations of the Company, enforceable against the Company in accordance with their terms.

3. The shares of Preferred Stock have been duly authorized, and when issued and delivered against payment of the consideration therefor specified in the Underwriting Agreement and in accordance with the Certificate of Designation and the Certificate of Incorporation, will be validly issued, fully paid and non-assessable.

Our opinions set forth in paragraph 2 above are subject to the effect of any applicable bankruptcy, insolvency, reorganization, moratorium or similar law relating to or affecting creditors' rights generally (including, without limitation, fraudulent conveyance laws).

Our opinions set forth in paragraph 2 above are subject to the effect of general principles of equity, including, without limitation, concepts of materiality, reasonableness, good faith and fair dealing and the possible unavailability of specific performance or injunctive relief, regardless of whether considered in a proceeding in equity or at law.

Our opinions set forth in paragraph 2 above are subject to limitations regarding the availability of indemnification and contribution where such indemnification or contribution may be limited by applicable law or the application of principles of public policy.

We express no opinion as to the enforceability of (i) provisions that relate to choice of law, forum selection or submission to jurisdiction (including, without limitation, any express or implied waiver of any objection to venue in any court or of any objection that a court is an inconvenient forum) to the extent that the validity, binding effect or enforceability of any such provision is to be determined by any court other than a state court of the State of New York, (ii) waivers by the Company of any statutory or constitutional rights or remedies, (iii) terms which excuse any person or entity from liability for, or require the Company to indemnify such person or entity against, such person's or entity's negligence or willful misconduct or (iv) obligations to pay any prepayment premium, default interest rate, early termination fee or other form of liquidated damages, if the payment of such premium, interest rate, fee or damages may be construed as unreasonable in relation to actual damages or disproportionate to actual damages suffered as a result of such prepayment, default or termination.

We draw your attention to the fact that, under certain circumstances, the enforceability of terms to the effect that provisions may not be waived or modified except in writing may be limited.

Our opinions expressed above are limited to the laws of the State of New York and the Delaware General Corporation Law and the federal laws of the United States of America.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement, and to the reference to our firm under the heading "Legal Matters" in the prospectus constituting part of the Registration Statement. In giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission thereunder.

Very truly yours,

/s/ Dorsey & Whitney LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-1 filed pursuant to Rule 462(b) of the Securities Act of 1933, as amended, of our report dated March 28, 2016, relating to the consolidated financial statements of EnteroMedics Inc. and subsidiary, appearing in the Annual Report on Form 10-K of EnteroMedics Inc. for the year ended December 31, 2015 and incorporated by reference in the Prospectus included in Registration Statement No. 333-213704, as amended.

/s/ Deloitte & Touche LLP

Minneapolis, Minnesota

January 17, 2017