

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

**FORM S-8
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
(I.R.S. Employer
Identification No.)

**2800 Patton Road
St. Paul, MN 55113**
(Address, including zip code, of registrant's principal executive offices)

ENTEROMEDICS INC. 2003 STOCK INCENTIVE PLAN
(Full title of the plan)

Greg S. Lea
Chief Financial Officer and Secretary
EnteroMedics Inc.
2800 Patton Road
St. Paul, MN 55113
(651) 634-3003
(Name, address and telephone number, including area code, of agent for service)

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 the 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	Amount to be registered(1)	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock (\$0.01 par value per share)	3,000,000	(2)	\$6,675,000(2)	\$373

- (1) Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement also covers additional shares of EnteroMedics Inc. common stock that may become issuable in accordance with the adjustment and anti-dilution provisions of the EnteroMedics Inc. 2003 Stock Incentive Plan.
- (2) Estimated solely for the purpose of determining the registration fee pursuant to Rule 457(h)(1) and (c) under the Securities Act, based on the average of the high and low sale prices of EnteroMedics Inc.'s common stock as reported on the NASDAQ Global Market on May 27, 2009.

EXPLANATORY NOTE

This Registration Statement on Form S-8 of EnteroMedics Inc. (the "Company") is being filed pursuant to General Instruction E to Form S-8 under the Securities Act of 1933, as amended, to register an additional 3,000,000 shares of common stock, par value \$0.01 per share, of the Company issuable pursuant to the Company's 2003 Stock Incentive Plan (the "Plan"). These additional shares were authorized by an amendment to the Plan which was approved by the stockholders at the Company's annual meeting of stockholders on May 6, 2009. The remaining shares of common stock issuable under the Plan have been previously registered by Registration Statement on Form S-8 (Registration No. 333-149662), which registration statement is hereby incorporated by reference.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

There are hereby incorporated by reference into this Registration Statement on Form S-8 the following documents and information, which have been filed with the Securities and Exchange Commission ("SEC") by EnteroMedics Inc. (the "Company"):

1. The Company's Annual Report on Form 10-K for the year ended December 31, 2008;
2. The Company's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2009;
3. The Company's Current Report on Form 8-K filed with the SEC on May 11, 2009; and
4. The description of the Company's common stock contained in its Registration Statement on Form 8-A filed with the SEC on November 8, 2007, including any amendment or report filed for the purpose of updating such description.

All documents filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, as amended, (excluding any portions thereof furnished under Items 2.02 or 7.01 of Form 8-K) subsequent to the date hereof and prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities remaining unsold shall be deemed to be incorporated by reference herein and to be a part hereof from the respective dates of filing of such documents.

Item 8. Exhibits.

- 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 to this Registration Statement).
- 24.1 Power of Attorney (included on signature page to this Registration Statement).

* Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, 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 St. Paul, State of Minnesota, on the 29th day of May, 2009.

ENTEROMEDICS INC.

By: /s/ Mark B. Knudson, Ph.D.

Mark B. Knudson, Ph.D.

President and Chief Executive Officer

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Mark B. Knudson and Greg S. Lea, and each of them, his true and lawful attorneys-in-fact and agents, each acting alone, with the powers of substitution and revocation, for him and in his name, place and stead, in any and all capacities, to sign a Registration Statement on Form S-8, and any and all amendments (including post-effective amendments) thereto, relating to the issuance of shares of common stock of EnteroMedics Inc. pursuant to the EnteroMedics Inc. 2003 Stock Incentive Plan and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming that all such attorneys-in-fact and agents or any of them, or their substitute or substitutes, 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 date indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Mark B. Knudson, Ph.D.</u> Mark B. Knudson, Ph.D.	President and Chief Executive Officer, Chairman and Director (principal executive officer)	May 29, 2009
<u>/s/ Greg S. Lea</u> Greg S. Lea	Senior Vice President and Chief Financial Officer (principal financial and accounting officer)	May 29, 2009
<u>/s/ Luke Evnin, Ph.D.</u> Luke Evnin, Ph.D.	Director	May 29, 2009
<u>/s/ Catherine Friedman</u> Catherine Friedman	Director	May 29, 2009
<u>/s/ Carl Goldfischer, M.D.</u> Carl Goldfischer, M.D.	Director	May 29, 2009
<u>/s/ Bobby I. Griffin</u> Bobby I. Griffin	Director	May 29, 2009

<u>/s/ Donald C. Harrison, M.D.</u> Donald C. Harrison, M.D.	Director	May 29, 2009
<u>/s/ Paul H. Klingenstein</u> Paul H. Klingenstein	Director	May 29, 2009
<u>/s/ Nicholas L. Teti, Jr.</u> Nicholas L. Teti, Jr.	Director	May 29, 2009
<u>/s/ Jon T. Tremmel</u> Jon T. Tremmel	Director	May 29, 2009

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
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* Filed herewith.

[Letterhead of Dorsey & Whitney LLP]

May 29, 2009

EnteroMedics Inc.
2800 Patton Road
St. Paul, MN 55113

Re: Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel to EnteroMedics Inc., a Delaware corporation (the "Company"), in connection with the registration under the Securities Act of 1933, as amended, on a registration statement on Form S-8 (the "Registration Statement") of an aggregate of 3,000,000 shares of the Company's common stock, \$0.01 par value per share (the "Shares"), issuable under the EnteroMedics Inc. 2003 Stock Incentive Plan (the "Plan").

We have examined such documents and have reviewed such questions of law as we have considered necessary and appropriate for the purposes of this opinion. In rendering our opinion 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. As to questions of fact material to our opinion, we have relied upon certificates of officers of the Company and of public officials.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, upon issuance, delivery and payment therefor in accordance with the terms of the Plan, and any relevant agreements thereunder, will be validly issued, fully paid and nonassessable.

Our opinion expressed above is limited to the Delaware General Corporation Law.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement. The foregoing opinion is being furnished to you solely for your benefit and may not be relied upon by, nor may copies be delivered to, any other person without our prior written consent.

Very truly yours,

/s/ Dorsey & Whitney LLP

KLC

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 March 5, 2009, relating to the consolidated financial statements of EnteroMedics Inc. and subsidiary (the "Company") (which report expresses an unqualified opinion and includes an explanatory paragraph relating to the January 1, 2006, adoption of the provisions of Financial Accounting Standards Board Statement No. 123(R), *Share-Based Payment*), appearing in the Annual Report on Form 10-K of the Company for the year ended December 31, 2008.

/s/ DELOITTE & TOUCHE LLP

Minneapolis, Minnesota

May 29, 2009