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

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

BACTERIN INTERNATIONAL HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

20-5313323
(I.R.S. Employer
Identification No.)

600 Cruiser Lane
Belgrade, Montana 59714
(Address of Principal Executive Offices, Including Zip Code)

Bacterin International Equity Incentive Plan
(Full title of the plans)

John Gandolfo
Chief Financial Officer
Bacterin International Holdings, Inc.
600 Cruiser Lane
Belgrade, Montana 59714
(Name and address of agent for service)

(406) 388-0480
(Telephone number, including area code, of agent for service)

Copies to:

Jill Gilpin
Exemplar Law LLC
115 Broad Street, 5th Floor
Boston, MA 02110
(617) 542-7400

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	<input type="radio"/>	Accelerated filer	<input type="radio"/>
Non-accelerated filer	<input type="radio"/> (Do not check if a smaller reporting company.)	Smaller reporting company	<input checked="" type="radio"/>

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be Registered	Proposed maximum offering price per share	Proposed maximum aggregate offering price(2)	Amount of registration fee
Common Stock, par value \$0.000001 per share(1)	6,000,000(1)	\$3.84 (2)	\$23,040,000 (2)	\$2,674.94

- (1) Pursuant to Rule 416 promulgated under the Securities Act of 1933, as amended (the “Securities Act”), this registration statement (the “Registration Statement”) also covers an indeterminate number of additional shares of the common stock of Bacterin International Holdings, Inc. (the “Company”), par value \$0.000001 (the “Common Stock”), that may be offered or issued by reason of certain corporate transactions or events, including any stock dividend, stock split or any other similar transaction effected which results in an increase in the number of shares of Common Stock.
- (2) Estimated solely for the purpose of calculating the registration fee required by Section 6(b) of the Securities Act and calculated pursuant to Rules 457(h) and 457(c) under the Securities Act. The proposed maximum aggregate offering price was calculated based upon the market value of the shares of Common Stock in accordance with Rule 457(c) and is equal to the product of (i) \$3.84, the average of the high and low prices per share of Common Stock on the NYSE Amex on March 15, 2011 (which is within five business days of the filing hereof), multiplied by (ii) 6,000,000 shares of Common Stock issuable pursuant to the Bacterin International Equity Incentive Plan (the “Plan”).

PART I
INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

The documents containing the information specified in Part I will be sent or given to employees participating in the Plan, as specified by Rule 428(b) (1) under the Securities Act of 1933, as amended (the "Securities Act"). In accordance with the instructions to Part I of Form S-8, such documents will not be filed with the Commission either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 under the Securities Act. These documents and the documents incorporated by reference pursuant to Item 3 of Part II of this Registration Statement, taken together, constitute the prospectus as required by 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 with the Commission are incorporated herein by reference:

1. The Company's registration statement on Form S-1 (File No. 333-169620), originally filed with the Securities and Exchange Commission on September 28, 2010, as amended, including the form of prospectus contained therein pursuant to Rule 424(b) under the Securities Act of 1933.
2. The Company's Quarterly Reports on Form 10-Q for the quarterly periods ended September 30, 2010 and June 30, 2010, filed with the Commission on November 16, 2010 and August 20, 2010 respectively.
3. The Company's Current Reports on Form 8-K filed with the Commission on June 30, 2010, July 7, 2010, August 5, 2010, August 12, 2010, September 24, 2010, October 4, 2010, October 21, 2010, November 15, 2010, November 22, 2010, January 3, 2011, January 12, 2011, January 21, 2011, February 1, 2011, February 16, 2011, February 28, 2011, and March 4, 2011, in each case to the extent filed and not furnished.
4. The description of the Company's common stock contained in the Registration Statement on Form 8-A filed with the Commission on November 5, 2010, as amended by Form 8-A/A, filed on March 4, 2011 pursuant to Section 12 of the Securities Exchange Act of 1934 (the "Exchange Act"), including any amendments that may update the description of the Company's common stock.

All documents filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act after the date of this Registration Statement, and prior to the filing of a post-effective amendment which indicates that all shares of Common Stock offered hereby have been sold or which deregisters all shares of Common Stock then remaining unsold, shall be deemed to be incorporated by reference in this Registration Statement and to be a part hereof from the date of filing of such documents.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained in this Registration Statement, or in any other subsequently filed document which also is or is deemed to be incorporated by reference in this Registration Statement, 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.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law provides that a corporation may indemnify directors and officers, as well as employees and agents, who were or are a party, or are threatened to be made a party to any third party proceeding by reason of the fact that such person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or firm, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement, that are actually and reasonably incurred in connection with various actions, suits or proceedings, whether civil, criminal, administrative or investigative other than an action by or in the right of the corporation, known as a derivative action, if they acted in good faith and in a manner they reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, if they had no reasonable cause to believe their conduct was unlawful. A similar standard is applicable in the case of derivative actions, except that indemnification only extends to expenses (including attorneys' fees) actually and reasonably incurred in connection with the defense or settlement of such actions, and the statute requires approval of the Delaware Court of Chancery or the court in which the action or suit was brought, upon application, before there can be any indemnification if the person seeking indemnification has been found liable to the corporation. The statute provides that it is not excluding other indemnification that may be granted by a corporation's bylaws, disinterested director vote, stockholder vote, agreement or otherwise.

Our Amended and Restated Bylaws contain an indemnification provision which provides that we will indemnify and hold harmless, to the fullest extent permitted by applicable law, each person who was, is or becomes a party to, or a witness in, or is threatened to be made a party to, or otherwise becomes involved in as a witness or otherwise in any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he or she is or was an authorized representative of the Company, against all expenses (including attorneys' fees and disbursements), judgments, fines (including excise taxes, interest and penalties) and amounts paid in settlement actually and reasonably incurred by him or her in connection with such action, suit or proceeding.

Our Bylaws also provide that we will pay the expenses incurred by such person in defending any such proceeding in advance of its final disposition, to the extent not prohibited by applicable law, provided we receive an undertaking to repay such amount advanced if it is ultimately determined that such person is not entitled to be indemnified. These rights are not exclusive of any other right that any person may have or acquire under any statute, provision of the Company's corporate documents, agreement, vote of stockholders or disinterested directors or otherwise.

The Company's Certificate of Incorporation also provides that, to the fullest extent permitted under the Delaware General Corporation Law, none of the Company's directors will be personally liable to the Company or its stockholders for monetary damages for breach of fiduciary duty as a director. In addition, we maintain liability insurance for our directors and officers.

Item 7. Exemption From Registration Claimed.

Not applicable.

Item 8. Exhibits.

The exhibits listed under the caption "Exhibits Index" of this Registration Statement are incorporated by reference herein.

Item 9. Undertakings.

- a. The undersigned Company hereby undertakes:
1. To file, during any period in which offers or sales are being made pursuant to this Registration Statement, a post-effective amendment to this Registration Statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which is registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in "Calculation of Registration Fee" table in the effective registration statement;
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in this Registration Statement or any material change to such information in this Registration Statement;

provided, however, that paragraphs (i) and (ii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed by the Company pursuant to Section 13 or 15(d) of the Exchange Act that are incorporated by reference in this Registration Statement.

2. That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
 3. To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- b. The undersigned Company hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Company's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- c. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Company pursuant to the provisions described under "Item 6—Indemnification of Directors and Officers", or otherwise, the Company has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Company of expenses incurred or paid by a director, officer or controlling person of the Company in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Company will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.
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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Company 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 Belgrade, State of Montana, on this 16th day of March, 2011.

BACTERININTERNATIONAL HOLDINGS, INC.

By: /s/ John Gandolfo
Name: John Gandolfo
Title: Chief Financial Officer

POWER OF ATTORNEY

We, the undersigned officers and directors of the Company, hereby severally constitute and appoint Guy Cook and John Gandolfo, and each of them individually, our true and lawful attorneys-in-fact with full power to them, and each of them singly, to sign for us and in our names in the capacities indicated below, the Registration Statement on Form S-8 filed herewith and any and all subsequent amendments to said Registration Statement, and generally to do all such things in our names and behalf in our capacities as officers and directors to enable the Company to comply with all requirements of the Commission, hereby ratifying and confirming our signatures as they may be signed by said attorneys-in-fact, or any of them, to said Registration Statement and any and all amendments thereto.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed below by the following persons in the capacities indicated on March 16, 2011:

<u>Signature</u>	<u>Title</u>
<u>/s/ Guy S. Cook</u> Guy S. Cook	Chief Executive Officer, President and Chairman of the Board of Directors (Principal Executive Officer)
<u>/s/ John Gandolfo</u> John Gandolfo	Chief Financial Officer and Chief Accounting Officer (Principal Financial and Accounting Officer)
<u>/s/ Kent Swanson</u> Kent Swanson	Director
<u>/s/ Mitchell Godfrey</u> Mitchell Godfrey	Director
<u>/s/ Michael Lopach</u> Michael Lopach	Director
<u>/s/ Jon Wickwire</u> Jon Wickwire	Director

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Description</u>
3.1	Certificate of Incorporation (incorporated by reference to the Company's Form 8-K filed with the SEC on June 30, 2010).
3.2	Amended and Restated Bylaws (incorporated by reference to the Company's Form 8-K filed with the SEC on January 12, 2011).
4.3	See Exhibits 3.1 and 3.2 for provisions of the Certificate of Incorporation and Amended and Restated Bylaws defining the rights of holders of Common Stock.
5.1	Opinion of Exemplar Law LLC.*
10.5	Bacterin International Equity Incentive Plan (incorporated by reference to Exhibit 10.5 to Form 8-K filed with the SEC on July 7, 2010).
23.1	Consent of Child, Van Wagoner & Bradshaw, PLLC*
23.2	Consent of Exemplar Law LLC (included in Exhibit 5.1).
23.3	Power of Attorney (included in the signature pages of this Registration Statement).

* Filed herewith



March 15, 2011

Bacterin International Holdings, Inc.
600 Cruiser Lane
Belgrade, Montana 59714

Ladies and Gentlemen:

We have acted as counsel to Bacterin International Holdings, Inc., a Delaware corporation (the "Company"), in connection with the Company's Registration Statement on Form S-8 (the "Registration Statement"), filed with the Securities and Exchange Commission (the "SEC") under the Securities Act of 1933, as amended (the "Act"), relating to the registration of 6,000,000 shares of the Company's common stock, par value \$0.000001 per share (the "Shares"), which may be issued pursuant to the Bacterin International Equity Incentive Plan (the "Plan").

In connection with this opinion, we have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinion expressed below. In connection with this opinion, we have assumed the legal capacity of all natural persons, the accuracy and completeness of all documents and records that we have reviewed, the genuineness of all signatures, the authenticity of the documents submitted to us as originals and the conformity to authentic original documents of all documents submitted to us as copies.

The opinion expressed below is limited to the Delaware General Corporation Law (which includes judicial decisions interpreting the Delaware General Corporation Law), and we express no opinion as to the effect of the laws of any other jurisdiction.

Based on the foregoing, and subject to the qualifications stated herein, we are of the opinion that the Shares that may be issued under the Plan will be when issued in accordance with the terms of the Plan, validly issued, fully paid and non-assessable.

In rendering this opinion, we have assumed that each award under the Plan will be approved by the Company's Board of Directors or an authorized committee of the Board of Directors.

This opinion is given as of the date hereof, and we assume no obligation to advise you after the date hereof of facts or circumstances that come to our attention or changes in law that occur which could affect the opinion contained herein. This opinion is being rendered for the benefit of the Company in connection with the matters addressed herein.

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

Very truly yours,

/s/ Exemplar Law LLC

**Child,
Van Wagoner
& Bradshaw,
PLLC**

CERTIFIED PUBLIC ACCOUNTANTS



CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors
Bacterin International Holdings, Inc.

We hereby consent to the use of our report dated June 18, 2010, with respect to the financial statements of Bacterin International, Inc. for the years ended December 31, 2009 and 2008, contained in the Registration Statement of Bacterin International Holdings, Inc. on Form S-1 (File No. 333-169620) originally filed with the Securities and Exchange Commission on September 28, 2010, as amended, and incorporated by reference in this Registration Statement on Form S-8 to be filed on or about March 15, 2011 (the "S-8"). We also consent to the use of our name and the reference to us in the Experts section of such S-8.

Child, Van Wagoner & Bradshaw, PLLC
Salt Lake City, Utah
March 15, 2011

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