

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

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

**XTANT MEDICAL HOLDINGS, INC.**

(Exact name of registrant as specified in its charter)

**Delaware**

**20-5313323**

(State or other jurisdiction of incorporation or organization)

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

**664 Cruiser Lane  
Belgrade, Montana 59714**

(Address of Principal Executive Offices, Including Zip Code)

**Amended and Restated Xtant Medical Equity Incentive Plan**

(Full title of the plan)

**John Gandolfo  
Chief Financial Officer  
Xtant Medical Holdings, Inc.  
664 Cruiser Lane  
Belgrade, Montana 59714**

(Name and address of agent for service)

**(406) 388-0480**

(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	<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**

<b>Title of securities to be registered</b>	<b>Amount to be Registered (1)</b>	<b>Proposed maximum offering price per share</b>	<b>Proposed maximum aggregate offering price(2)</b>	<b>Amount of registration fee</b>
Common Stock, par value \$0.000001 per share	1,000,000(2)	\$1.96 (3)	\$1,960,000 (3)	\$197.37

(1) Pursuant to Rule 416(a) of the Securities Act of 1933, as amended (the “Securities Act”), this registration statement also covers any additional shares of the common stock of Xtant Medical Holdings, Inc. (the “Company”), par value \$0.000001 (the “Common Stock”), that become issuable under the Amended and Restated Xtant Medical Equity Incentive Plan, as amended by the First Amendment to the Amended and Restated Xtant Medical Equity Incentive Plan (the “Amended and Restated Plan”) by reason of any stock dividend, stock split, recapitalization or other similar transaction.

(2) The Company previously registered 900,000 shares of Common Stock that may be issued under the Bacterin International Equity Incentive Plan, as amended and restated (the “Plan”). This filing is made to register an additional 1,000,000 shares that may be issued under the Amended and Restated Plan.

(3) Estimated pursuant to Rules 457(c) and 457(h)(1) under the Securities Act solely for the purpose of calculating the registration fee, based on the average of the high and low prices per share of Common Stock as reported by the NYSE MKT LLC on July 11, 2016 (which is within five business days of the filing hereof).

## EXPLANATORY NOTE

This Registration Statement on Form S-8 (the “Registration Statement”) is being filed pursuant to General Instruction E to Form S-8 to register 1,000,000 additional shares of Common Stock, which may be issued under the Amended and Restated Plan following the amendment of the Plan to increase the number of authorized shares (i) from 900,000 to 1,400,000 pursuant to the Amended and Restated Xtant Medical Equity Incentive Plan, and (ii) from 1,400,000 to 1,900,000 pursuant to the First Amendment to the Amended and Restated Xtant Medical Equity Incentive Plan. The contents of the Registration Statement on Form S-8 (File No. 333-187563) filed by the Company on March 27, 2013, to register 300,000 shares of Common Stock, and the Registration Statement on Form S-8 (File No. 333-172891) filed by the Company on March 17, 2011, to register 600,000 shares of Common Stock, are hereby incorporated by reference into this Registration Statement, in each case except to the extent supplemented, amended or superseded by the information set forth herein, in accordance with General Instruction E to Form S-8. The Company completed a 1:10 reverse split of its Common Stock, effective at the close of business on Friday, July 25, 2014 and in effect for trading purposes on Monday, July 28, 2014, and the numbers in this paragraph reflect the reverse split.

## 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 Annual Report on Form 10-K for the fiscal year ended December 31, 2015, filed with the Commission on March 24, 2016.
2. The Company’s Quarterly Reports on Form 10-Q for the quarterly period ended March 31, 2016, filed with the Commission on May 11, 2016.
3. The Company’s Current Reports on Form 8-K filed with the Commission on January 22, 2016, April 4, 2016, April 19, 2016, May 31, 2016 and June 17, 2016.
4. The Company’s Definitive Proxy Statement on Schedule 14A, as filed with the Commission on May 26, 2016;
5. All other reports filed with the Commission pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, since the end of the fiscal year covered by the Registrant’s Annual Report referred to in (1) above; and
6. 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 Exchange Act and the Registration Statement on Form 8-A filed with the Commission on October 15, 2015.

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; *provided, however*, that documents or information deemed to have been furnished and not filed in accordance with the rules of the Commission shall not be deemed incorporated by reference into 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 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.

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## Item 6. Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law (the “DGCL”), permits, in general, a Delaware corporation to indemnify any person who was or is a party to any proceeding (other than an action by, or in the right of, the corporation) by reason of the fact that he or she is or was a director or officer of the corporation, or served another entity in any capacity at the request of the corporation, against liability incurred in connection with such proceeding, including the estimated expenses of litigating the proceeding to conclusion and the expenses actually and reasonably incurred in connection with the defense or settlement of such proceeding, including any appeal thereof, if such person acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, the best interests of the corporation and, in criminal actions or proceedings, additionally had no reasonable cause to believe that his or her conduct was unlawful. Section 145(e) of the DGCL permits the corporation to pay such costs or expenses in advance of a final disposition of such action or proceeding upon receipt of an undertaking by or on behalf of the director or officer to repay such amount if he or she is ultimately found not to be entitled to indemnification under the DGCL. Section 145(f) of the DGCL provides that the indemnification and advancement of expense provisions contained in the DGCL shall not be deemed exclusive of any rights to which a director or officer seeking indemnification or advancement of expenses may be entitled.

Our bylaws require us to indemnify our directors and officers to the fullest extent permitted by law and our certificate of incorporation provides that no director of the company will be personally liable to the company or our stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director’s duty of loyalty to the company or our stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for the improper declaration of dividends or redemption of shares of capital stock in violation of Delaware law, or (iv) for any transaction from which the director derived an improper personal benefit. We have also entered into indemnification agreements with our directors and officers containing provisions which are in some respects broader than the specific indemnification provisions contained in the DGCL. These indemnification agreements may require us, among other things, to indemnify our directors and officers against liabilities that may arise by reason of their status or service as directors or officers and to advance expenses incurred as a result of any proceeding against them as to which they could be indemnified.

The above discussion of our certificate of incorporation, bylaws, indemnification agreements and Section 145 of the DGCL is only a summary and is qualified in its entirety by the full text of each of the foregoing.

We have been advised that it is the position of the SEC that insofar as the foregoing provisions may be invoked to disclaim liability for damages arising under the Securities Act, that such provisions are against public policy as expressed in the Securities Act and are therefore unenforceable.

## Item 8. Exhibits.

The exhibits listed under the caption “Exhibit Index” of this Registration Statement are incorporated by reference herein.

## Item 9. Undertakings

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the 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 the 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 was 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% change in the maximum aggregate offering price set forth in the “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 the registration statement or any material change to such information in the registration statement;

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Provided, however, that Paragraphs (a)(1)(i) and (a)(1)(ii) of this section do not apply if the registration statement is on Form S-8 (§ 239.16b of this chapter), and the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o(d)) that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, 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 registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) 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 of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant 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 registrant 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 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 13th day of July, 2016.

XTANT MEDICAL HOLDINGS, INC.

By: /s/ John Gandolfo

Name: John Gandolfo

Title: Chief Financial Officer

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## POWER OF ATTORNEY

We, the undersigned officers and directors of the Company, hereby severally constitute and appoint Daniel Goldberger 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, to 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 July 13, 2016:

<b>Signature</b>	<b>Title</b>
<u>/s/ Daniel Goldberger</u> Daniel Goldberger	Chief Executive Officer and Director (Principal Executive Officer)
<u>/s/ John Gandolfo</u> John Gandolfo	Chief Financial Officer (Principal Financial and Principal Accounting Officer)
<u>/s/ Kent Swanson</u> Kent Swanson	Chairman of the Board of Directors
<u>/s/ Michael Lopach</u> Michael Lopach	Director
<u>/s/ John Deedrick</u> John Deedrick	Director
<u>/s/ David Kirschman</u> David Kirschman	Director
<u>/s/ Paul R. Buckman</u> Paul R. Buckman	Director
<u>/s/ Rudy A. Mazzocchi</u> Rudy A. Mazzocchi	Director
<u>/s/ Eric B. Timko</u> Eric B. Timko	Director

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## EXHIBIT INDEX

<b><u>Exhibit No.</u></b>	<b><u>Description</u></b>
4.1	Form of Common Stock Certificate (incorporated by reference to Exhibit 4.2 to the Company's Registration Statement on Form S-1 filed with the SEC on December 21, 2015)
5.1*	Opinion of Counsel
10.1	Amended and Restated Xtant Medical Equity Incentive Plan (incorporated by reference to Exhibit 10.8 to the Company's Form 10-Q filed with the SEC on November 16, 2015)
10.2	First Amendment to Amended and Restated Xtant Medical Equity Incentive Plan (incorporated by reference to Appendix A to the Company's definitive proxy statement on Schedule 14A filed on May 26, 2016)
23.1*	Consent of EKS&H LLLP
23.2	Consent of Counsel (included in Exhibit 5.1)
24.1	Power of Attorney (included in the signature pages of this Registration Statement)

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\* Filed herewith

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July 13, 2016

Xtant Medical Holdings, Inc.  
600 Cruiser Lane  
Belgrade, Montana 59714

Ladies and Gentlemen:

In my capacity as General Counsel for Xtant Medical Holdings, Inc., a Delaware corporation (the “Company”), I have assisted the Company in connection with the preparation of the Company’s Registration Statement on Form S-8 (the “Registration Statement”), filed with the Securities and Exchange Commission (the “SEC”) on July 13, 2016, under the Securities Act of 1933, as amended (the “Act”), relating to the registration of 1,000,000 additional shares of the Company’s common stock, par value \$0.000001 per share (the “Additional Shares”), 500,000 of which may be issued pursuant to the Amended and Restated Xtant Medical Equity Incentive Plan (the “Amended and Restated Plan”) and 500,000 of which may be issued pursuant to the Amended and Restated Plan, in addition to the 600,000 shares previously registered on Form S-8 (File No. 333-172891) and the 300,000 shares previously registered on Form S-8 (File No. 333-187563).

In connection with this opinion, I have reviewed such documents and made such examination of law as I have deemed appropriate to give the opinion expressed below. In connection with this opinion, I have assumed the legal capacity of all natural persons, the accuracy and completeness of all documents and records that I reviewed, the genuineness of all signatures, the authenticity of the documents submitted to me as originals and the conformity to authentic original documents of all documents submitted to me 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 I express no opinion as to the effect of the laws of any other jurisdiction.

Based on the foregoing, and subject to the assumptions and qualifications stated herein, I am of the opinion that the Additional Shares that may be issued under the Amended and Restated Plan will be, when issued in accordance with the terms of the Amended and Restated Plan and any agreement regarding a grant under the Amended and Restated Plan, validly issued, fully paid and non-assessable.

In rendering this opinion, I have assumed that each award under the Amended and Restated Plan will be approved by the Company’s Board of Directors or an authorized committee of the Board of Directors, that any applicable exercise price will be paid prior to issuance, and that all vesting, tax withholding and other criteria required for issuance will be satisfied prior to issuance of any Additional Shares.

This opinion is given as of the date hereof, and I assume no obligation to advise you after the date hereof of facts or circumstances that come to my 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.

I hereby consent to the filing of this opinion as Exhibit 5.1 to the Registration Statement. In giving this consent, I do not thereby admit that I am 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,

Xtant Medical Holdings, Inc.

By: /s/ Debbie Kirschman Klopsch

Name: Debbie Kirschman Klopsch

Title: General Counsel

 406.388.0480  600 Cruiser Ln., Belgrade, MT 59714  [info@xtantmedical.com](mailto:info@xtantmedical.com)  [xtantmedical.com](http://xtantmedical.com)

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**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in the Registration Statement on Form S-8 of our report dated March 24, 2016, with respect to the consolidated financial statements of Xtant Medical Holdings, Inc. (formerly known as Bacterin International Holdings, Inc.) included in its Annual Report on Form 10-K for the year ended December 31, 2015, filed with the Securities and Exchange Commission.

*EKS+H LLLP*

EKS&H LLLP

July 13, 2016  
Denver, Colorado

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