

Xtant Medical Holdings, Inc.
Form S-1/A
April 18, 2018

As filed with the Securities and Exchange Commission April 17, 2018

Registration Statement No. 333-222918

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

AMENDMENT NO. 1

TO

FORM S-1

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

XTANT MEDICAL HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

3841

(Primary Standard Industrial
Classification Code Number)

20-5313323

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

664 Cruiser Lane

Belgrade, Montana 59714

(406) 388-0480

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Carl O'Connell

Chief Executive Officer

Xtant Medical Holdings, Inc.

664 Cruiser Lane

Belgrade, Montana 59714

(406) 388-0480

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Travis Leach

Ballard Spahr LLP

One East Washington Street, Suite 2300

Phoenix, Arizona 85004

(602) 798-5444

Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement becomes 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.

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, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

| | | | |
|-------------------------|--|---------------------------|--------------------------|
| Large accelerated filer | <input type="checkbox"/> | Accelerated filer | <input type="checkbox"/> |
| Non-accelerated filer | <input type="checkbox"/> (Do not check if a smaller reporting company) | Smaller Reporting Company | <input type="checkbox"/> |
| | | Emerging Growth Company | <input type="checkbox"/> |

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided to Section 7(a)(2)(B) of the Securities Act.

The registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission becomes effective. This prospectus is not an offer to sell these securities, and we are not soliciting offers to buy these securities in any state where the offer or sale of these securities is not permitted.

SUBJECT TO COMPLETION, DATED APRIL 17, 2018

PRELIMINARY PROSPECTUS

XTANT MEDICAL HOLDINGS, INC.

We are distributing to holders of our common stock, par value \$0.000001 per share, or the Common Stock, at no charge, non-transferable subscription rights to purchase up to an aggregate of 1,137,515 shares of our Common Stock, or the Shares. We refer to the offering that is the subject of this prospectus as the Rights Offering.

In the Rights Offering, you will receive 0.0869816 subscription rights for each share of Common Stock held by you at 5:00 PM Eastern Time on April 27, 2018, the record date of the Rights Offering, or the Record Date. The subscription rights will not be tradable.

Subscription Rights may only be exercised in whole numbers, and we will not issue fractional shares. To the extent that the number of Subscription Rights that are distributed to you on the Record Date is not a whole number, the shares of Common Stock issuable upon exercise of the Subscription Rights will be rounded down to the nearest whole share for purposes of determining the number of shares of Common Stock for which you may subscribe. Each whole subscription right will entitle you to purchase one Share, which we refer to as the Basic Subscription Right, at a subscription price per Share of \$7.20, which we refer to as the Subscription Price. The Basic Subscription Rights will be distributed in proportion to shareholders' holdings on the record date, and the number of Basic Subscription Rights distributed and the Subscription Price of \$7.20 reflect the 1-for-12 reverse stock split effected on February 14, 2018. If you exercise your Basic Subscription Rights in full, and other stockholders do not, you will be entitled to an over-subscription privilege to purchase a portion of the unsubscribed Shares at the Subscription Price, subject to proration, which we refer to as the Over-Subscription Privilege. The Noteholders have indicated that they do not intend to participate in the Rights Offering. Each subscription right consists of a Basic Subscription Right and an Over-Subscription Privilege, which we refer to as the Subscription Right.

The Subscription Rights will expire if they are not exercised by 5:00 PM Eastern Time, on Monday, June 18, 2018. We may extend the Rights Offering for additional periods in our sole discretion. Once made, all exercises of Subscription Rights are irrevocable.

There is no minimum amount of proceeds necessary in order for us to close the Rights Offering.

Investing in our securities involves a high degree of risk. See the section entitled “*Risk Factors*” beginning on page 11 of this prospectus. You should carefully consider these risk factors, as well as the information contained in this prospectus, before you invest.

This Rights Offering is being made directly by us. We are not using an underwriter or selling agent. Corporate Stock Transfer, Inc. will serve as the Subscription Agent for the Rights Offering. The Subscription Agent will hold the funds we receive from subscribers until we complete, abandon or terminate the Rights Offering. If you want to participate in this Rights Offering and you are the record holder of your shares, we recommend that you submit your subscription documents to the Subscription Agent well before the deadline. If you want to participate in this Rights Offering and you hold shares through your broker, dealer, bank, or other nominee, you should promptly contact your broker, dealer, bank, or other nominee and submit your subscription documents in accordance with the instructions and within the time period provided by your broker, dealer, bank, or other nominee. For a more detailed discussion, see “The Rights Offering—The Subscription Rights.”

Our board of directors reserves the right to terminate the Rights Offering for any reason any time before the completion of the Rights Offering. If we terminate the Rights Offering, all subscription payments received will be returned as soon as practicable, without interest or penalty.

Our Common Stock is listed on the NYSE American under the symbol “XTNT.” On April 16, 2018, the last reported sale price of our Common Stock was \$8.25. The Subscription Rights are non-transferrable and will not be listed for trading on NYSE American or any other stock exchange or market. You are urged to obtain a current price quote for our Common Stock before exercising your Subscription Rights.

| | Per Share | Total(1) |
|---------------------------------|-----------|--------------|
| Subscription price | \$ 7.20 | \$ 8,190,108 |
| Proceeds to us, before expenses | \$ 7.20 | \$ 8,190,108 |

(1) Assumes the Rights Offering is fully subscribed, including the full exercise of all Over-Subscription Privileges.

Our board of directors is making no recommendation regarding your exercise of the Subscription Rights. You should carefully consider whether to exercise your Subscription Rights before the expiration date. You may not revoke or revise any exercises of Subscription Rights once made, unless we terminate the Rights Offering.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this Prospectus is , 2018

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You should read this prospectus, the documents incorporated by reference into this prospectus, and any prospectus supplement or free writing prospectus that we may authorize for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus entitled “Incorporation of Certain Information by Reference” and “Where You Can Find More Information.” These documents contain important information that you should consider when making your investment decision.

We are only responsible for the information contained in, or incorporated by reference into, this prospectus, in any prospectus supplement or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We have not authorized anyone to provide any information other than that contained in this prospectus, in any prospectus supplement or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We are offering to sell, and seeking offers to buy, securities only in jurisdictions where such offers and sales are permitted. The information in this prospectus, in any prospectus supplement or any free writing prospectus is accurate only as of its date, regardless of its time of delivery or of any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

Unless otherwise indicated, information contained in this prospectus concerning our industry and the markets in which we operate, including our general expectations and market position, market opportunity and market share, is based on information from our own management estimates and research, as well as from industry and general publications and research, surveys and studies conducted by third parties. Management estimates are derived from publicly available information, our knowledge of our industry and assumptions based on such information and knowledge, which we believe to be reasonable. In addition, assumptions and estimates of our and our industry's future performance are necessarily subject to a high degree of uncertainty and risk due to a variety of factors, including those described in "Risk Factors." These and other factors could cause our future performance to differ materially from our assumptions and estimates. See "Cautionary Note Regarding Forward-Looking Statements."

Solely for convenience, trademarks and trade names referred to in this prospectus may appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or that the applicable owner will not assert its rights, to these trademarks and tradenames.

Except as otherwise indicated herein or as the context otherwise requires, references in this prospectus to "Xtant," "the Company," "we," "us," "our" and similar references refer to Xtant Medical Holdings, Inc. and its subsidiaries.

QUESTIONS AND ANSWERS RELATING TO THE RIGHTS OFFERING

The following are examples of what we anticipate will be common questions about the Rights Offering. The answers are based on selected information included elsewhere in this prospectus. The following questions and answers do not contain all of the information that may be important to you and may not address all of the questions that you may have about the Rights Offering. This prospectus and the documents incorporated by reference into this prospectus contain more detailed descriptions of the terms and conditions of the Rights Offering and provide additional information about us and our business, including potential risks related to the Rights Offering, the Shares offered hereby, and our business. We urge you to read this entire prospectus and the documents incorporated by reference into this prospectus.

Why are we conducting the Rights Offering?

We are conducting the Rights Offering to allow stockholders of the Company to purchase Common Stock at the same price per share at which shares were sold in the Tier 2 Transaction and the Private Placement (each as defined below) and to raise additional capital:

- to provide equity capital to support the continuing execution of the Company's growth strategy, specifically to increase surgical instruments and fixation and biologics inventory,
- to diversify our supply of donor tissue, expand our processing capabilities and develop a hybrid sales force, and
- for general corporate purposes, including research and development, business development and operational purposes.

What is the Rights Offering?

We are distributing, at no charge, to record holders of our Common Stock, non-transferable Subscription Rights to purchase 1,137,515 Shares of our Common Stock at a price per Share of \$7.20. The Subscription Rights will not be tradable. You will receive 0.0869816 Subscription Rights for each share of Common Stock that you owned as of 5:00 PM Eastern Time, on the Record Date. Each whole Subscription Right entitles the record holder to a Basic Subscription Right and an Over-Subscription Privilege. Subscription Rights may only be exercised in whole numbers, and we will not issue fractional shares. To the extent that the number of Subscription Rights that are distributed to you on the Record Date is not a whole number, the shares of Common Stock issuable upon exercise of the Subscription Rights will be rounded down to the nearest whole share for purposes of determining the number of shares of Common Stock for which you may subscribe.

What are the Basic Subscription Rights?

For each whole share you own as of the Record Date, you will receive 0.0869816 Basic Subscription Rights. Subscription Rights may only be exercised in whole numbers, and we will not issue fractional shares. To the extent that the number of Subscription Rights that are distributed to you on the Record Date is not a whole number, the shares of Common Stock issuable upon exercise of the Subscription Rights will be rounded down to the nearest whole share for purposes of determining the number of shares of Common Stock for which you may subscribe. Each whole subscription right will entitle you to purchase one Share at the Subscription Price per Share of \$7.20.

For example, if you owned 1,000 shares of Common Stock as of the Record Date, you will receive 86.9816 Subscription Rights and will have the right to purchase 86 shares of our Common Stock for a total purchase price of \$619.20. You may exercise all or a portion of your Basic Subscription Rights, or you may choose not to exercise any Basic Subscription Rights at all.

If you are a record holder, the number of Shares you may purchase pursuant to your Basic Subscription Rights is indicated on the enclosed Subscription Rights Statement. If you hold your shares in the name of a broker, dealer, bank, or other nominee who uses the services of the Depository Trust Company, or DTC, you will not receive a Subscription Rights Statement. Instead, DTC will issue 0.0869816 Subscription Rights to your nominee record holder for each share of our Common Stock that you own as of the Record Date. If you are not contacted by your nominee, you should contact your nominee as soon as possible.

What is the Over-Subscription Privilege?

If you exercise your Basic Subscription Rights in full, you may also choose to exercise your Over-Subscription Privilege to purchase a portion of any Shares that the other record holders do not purchase through the exercise of their Basic Subscription Rights. The Noteholders have indicated that they do not intend to participate in the Rights Offering. You should indicate on your Subscription Rights Statement, or the form provided by your nominee if your shares are held in the name of a nominee, how many additional Shares you would like to purchase pursuant to your Over-Subscription Privilege.

If sufficient Shares are available, we will seek to honor your Over-Subscription request in full. If Over-Subscription requests exceed the number of Shares available, however, we will allocate the available Shares pro-rata among the record holders exercising the Over-Subscription Privilege in proportion to the number of shares of our Common Stock each of those record holders owned on the Record Date, relative to the number of shares owned on the Record Date by all record holders exercising the Over-Subscription Privilege. If this pro-rata allocation results in any record holders receiving a greater number of Shares than the record holder subscribed for pursuant to the exercise of the Over-Subscription Privilege, then such record holder will be allocated only that number of Shares for which the record holder oversubscribed, and the remaining Shares will be allocated among all other record holders exercising the Over-Subscription Privilege on the same pro rata basis described above. The proration process will be repeated until all Shares have been allocated. See “The Rights Offering—Limitation on the Purchase of Shares” for a description of certain limitations on purchase.

To properly exercise your Over-Subscription Privilege, you must deliver to the Subscription Agent the subscription payment related to your Over-Subscription Privilege before the Rights Offering expires. See “The Rights Offering—The Subscription Rights—Over-Subscription Privilege.” To the extent you properly exercise your Over-Subscription Privilege for a number of Shares that exceeds the number of unsubscribed Shares available to you, any excess subscription payments will be returned to you as soon as practicable after the expiration of the Rights Offering, without interest or penalty.

Corporate Stock Transfer, Inc., our Subscription Agent for the Rights Offering, will determine the Over-Subscription allocation based on the formula described above.

What is the Restructuring?

On January 11, 2018, we announced that we had entered into a Restructuring and Exchange Agreement, or the Restructuring Agreement, with ROS Acquisition Offshore LP, OrbiMed Royalty Opportunities II, LP (ROS and OrbiMed are referred to herein as the Investors), Bruce Fund, Inc., Park West Partners International, Limited (PWPI), Park West Investors Master Fund, Limited (PWIMF), and Telemetry Securities, L.L.C., which constitute all of the holders, collectively referred to as the Noteholders, of the Company’s outstanding 6% convertible unsecured notes due in 2021, or the Notes.

On January 17, 2018, the Investors converted certain Notes issued to the Investors in January 2017 in the aggregate principal amount of \$1.627 million, plus accrued and unpaid interest, at the \$0.7589 per share conversion rate originally provided thereunder, into 2,275,745 shares of Common Stock (or approximately 189,645 shares of Common Stock after giving effect to the 1-for-12 reverse stock split), referred to as the Tier 1 Transaction. On February 14, 2018, after completion of the Tier 1 Transaction, following approval by the stockholders, and after completion of the 1-for-12 reverse stock split, the remaining \$70.238 million aggregate principal amount of the Notes

held by the Noteholders, or the Remaining Notes, plus accrued and unpaid interest, were exchanged for newly-issued shares of Common Stock at an exchange rate of 138.8889 shares per \$1,000 principal amount of Notes, for an exchange price of \$7.20 per share, referred to as the Tier 2 Transaction. Upon the consummation of the Tier 2 Transaction on February 14, 2018, the Remaining Notes were exchanged for approximately 10.4 million newly-issued shares of Common Stock. The Investors also purchased from the Company in a private placement, simultaneously with the consummation of the Tier 2 Transaction, an aggregate of \$6,809,896 of Common Stock at a price per share of \$7.20, or 945,819 shares of Common Stock, referred to as the Private Placement. The Tier 1 Transaction, Tier 2 Transaction and Private Placement are collectively referred to herein as the Restructuring. Following the consummation of the Restructuring on February 14, 2018, the Investors owned, in the aggregate, approximately 70.4%, and the Noteholders owned, in the aggregate, approximately 88.5%, of the outstanding Common Stock of the Company. Consequently, existing non-Noteholder stockholders of the Company, who owned approximately 95.7% of the Company's outstanding Common Stock prior to the Restructuring, owned approximately 11.3% of the Company's outstanding Common Stock following the consummation of the Restructuring.

The primary purposes of our entry into the Restructuring Agreement and the Rights Offering are to reform our capital structure, meet our liquidity needs, to reposition the Company for long-term growth, and to regain compliance with NYSE American LLC (formerly the NYSE MKT) listing standards. In conjunction with the consummation of the Restructuring, the Company regained compliance with NYSE American listing standards on February 15, 2018. Stockholder approval was required under Sections 713(a) and 713(b) of the NYSE American Company Guide to complete the Restructuring, which (i) required the issuance in the Tier 2 Transaction and Private Placement of Common Stock in excess of 20% of the total number of shares of our Common Stock outstanding immediately before the Tier 2 Transaction and (ii) resulted in a change of control of the Company. In addition, stockholder approval was required in order to effectuate the 1-for-12 reverse stock split and amend our certificate of incorporation to allow a sufficient number of authorized shares to complete the Tier 2 Transaction, Private Placement and Rights Offering. These approvals were obtained at a special meeting of stockholders held on February 13, 2018, referred to herein as the Special Meeting, and were required for us to realize the full potential of our transaction with the Noteholders. After obtaining the required approvals at the Special Meeting, closings for the Tier 2 Transaction and the Private Placement were held on February 14, 2018.

What is the reverse stock split?

In connection with the Restructuring, we implemented a reverse stock split of our Common Stock at a ratio of 1-for-12 on February 14, 2018. The reverse stock split affected all holders of Common Stock uniformly, and each stockholder held the same percentage of Common Stock outstanding immediately following the reverse stock split as that stockholder held immediately prior to the reverse stock split, except for adjustments that may result from the treatment of fractional shares. A holder of 12,000 shares prior to the reverse stock split held 1,000 shares following the split. The reverse stock split was implemented immediately prior to the closing of the Tier 2 Transaction and prior to the Record Date for this Rights Offering. The Basic Subscription Rights are being distributed in proportion to shareholders' holdings on the record date, and the number of Basic Subscription Rights distributed and the offering price of \$7.20 per Basic Subscription Right, reflect the reverse stock split. Unless otherwise indicated, all information in this prospectus reflects the effect of the reverse stock split.

What effect will the Rights Offering have on our outstanding Common Stock?

On March 31, 2018, 13,077,468 shares of our Common Stock were outstanding. Based on the foregoing, and assuming no other transactions by us involving our Common Stock prior to the expiration of the Rights Offering, if the Rights Offering is fully subscribed, approximately 14,214,983 shares of our Common Stock will be issued and outstanding. The exact number of shares that we will issue in this Rights Offering will depend on the number of Shares that are subscribed for in the Rights Offering.

How is the Subscription Price determined?

We are conducting the Rights Offering to allow stockholders of the Company to purchase Common Stock at the same price per share at which shares were sold in the Tier 2 Transaction and the Private Placement and to raise additional capital. In determining the price per share in the Tier 2 Transaction and the Private Placement, which is equivalent to the Subscription Price, our board of directors received a fairness opinion of Duff & Phelps, LLC, which stated that as of January 10, 2018, and subject to the assumptions, limitations and qualifications contained therein, the exchange rate of 138.8889 shares per \$1,000 principal amount of notes, for an exchange price of \$7.20 is fair to the public stockholders of the Company, from a financial point of view, as an exchange rate for the Notes. The Duff & Phelps fairness opinion was made solely in connection with the Tier 2 Transaction and did not opine as to the fairness of the Subscription Price or any shares sold pursuant to the Private Placement. Our board of directors also considered, among other things, our need for additional capital and liquidity and the cost of capital from other sources.

The Subscription Price does not necessarily bear any relationship to any established criteria for value. You should not consider the Subscription Price as an indication of actual value of the Company or our Common Stock. We cannot assure you that the market price of our Common Stock will not decline during or after the Rights Offering. You should obtain a current price quote for our Common Stock before exercising your Subscription Rights and make your own assessment of our business and financial condition, our prospects for the future, and the terms of this Rights Offering. Once made, all exercises of Subscription Rights are irrevocable.

Am I required to exercise all of the Basic Subscription Rights I receive in the Rights Offering?

No. You may exercise any number of your Basic Subscription Rights, or you may choose not to exercise any Basic Subscription Rights. If you do not exercise any Basic Subscription Rights, the number of shares of our Common Stock you own will not change. However, if you choose to not exercise your Basic Subscription Rights in full, your proportionate ownership interest in the Company will decrease. If you do not exercise your Basic Subscription Rights in full, you will not be entitled to exercise your Over-Subscription Privilege.

How soon must I act to exercise my Subscription Rights?

If you received a Subscription Rights Statement and elect to exercise any or all of your Subscription Rights, the Subscription Agent must receive your completed and signed Subscription Rights Statement and payment for both your Basic Subscription Rights and any Over-Subscription Privilege you elect to exercise, including final clearance of any uncertified check, before the Rights Offering expires on June 18, 2018, at 5:00 PM Eastern Time. If you hold your shares in the name of a broker, dealer, custodian bank, or other nominee, your nominee may establish a deadline before the expiration of the Rights Offering by which you must provide it with your instructions to exercise your Subscription Rights, along with the required subscription payment.

May I transfer my Subscription Rights?

No. The Subscription Rights may be exercised only by the stockholders to whom they are distributed, and they may not be sold, transferred, assigned or given away to anyone else, other than by operation of law. As a result, a Subscription Rights Statement may be completed only by the stockholder who receives the statement. The Subscription Rights will not be listed for trading on any stock exchange or market.

Will our directors, executive officers and significant stockholders participate in the Rights Offering?

To the extent they hold Common Stock as of the Record Date, our directors, executive officers and significant stockholders will be entitled to participate in the Rights Offering on the same terms and conditions applicable to other Rights holders. However, there can be no guarantee that any such holders will participate. The Noteholders have indicated that they do not intend to participate in the Rights Offering.

Has the board of directors made a recommendation to stockholders regarding the Rights Offering?

No. Our board of directors is not making a recommendation regarding your exercise of the Subscription Rights. Stockholders who exercise Subscription Rights will incur investment risk on new money invested. We cannot predict the price at which our shares of Common Stock will trade after the Rights Offering. On April 16, 2018, the closing price of our Common Stock was \$8.25 per share. The market price for our Common Stock may be above the Subscription Price or may be below the Subscription Price. If you exercise your Subscription Rights, you may not be able to sell the underlying shares of our Common Stock in the future at the same price or a higher price. You should make your decision based on your assessment of our business and financial condition, our prospects for the future, the terms of the Rights Offering and the information contained in this prospectus. See “Risk Factors” for discussion of some of the risks involved in investing in our securities.

How do I exercise my Subscription Rights?

If you are a stockholder of record (meaning you hold your shares of our Common Stock in your name and not through a broker, dealer, bank, or other nominee) and you wish to participate in the Rights Offering, you must deliver a properly completed and signed Subscription Rights Statement, together with payment of the Subscription Price for both your Basic Subscription Rights and any Over-Subscription Privilege you elect to exercise, to the Subscription Agent before 5:00 PM Eastern Time, on June 18, 2018. If you are exercising your Subscription Rights through your

broker, dealer, bank, or other nominee, you should promptly contact your broker, dealer, bank, or other nominee and submit your subscription documents and payment for the Shares subscribed for in accordance with the instructions and within the time period provided by your broker, dealer, bank or other nominee.

What if my shares are held in “street name”?

If you hold your shares of our Common Stock in the name of a broker, dealer, bank, or other nominee, then your broker, dealer, bank, or other nominee is the record holder of the shares you own. The record holder must exercise the Subscription Rights on your behalf. Therefore, you will need to have your record holder act for you.

If you wish to participate in this Rights Offering and purchase Shares, please promptly contact the record holder of your shares. We will ask the record holder of your shares, who may be your broker, dealer, bank, or other nominee, to notify you of this Rights Offering.

What form of payment is required?

You must timely pay the full Subscription Price for the full number of Shares you wish to acquire pursuant to the exercise of Subscription Rights by delivering to the Subscription Agent a:

cashier’s check drawn on a U.S. bank; or
wire transfer.

If you send a payment that is insufficient to purchase the number of Shares you requested, or if the number of Shares you requested is not specified in the forms, the payment received will be applied to exercise your Subscription Rights to the fullest extent possible based on the amount of the payment received.

When will I receive my new shares of Common Stock?

The Subscription Agent will arrange for the issuance of the Common Stock as soon as practicable after the expiration of the Rights Offering, payment for the Shares subscribed for has cleared, and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected. All Shares that you purchase in the Rights Offering will be issued in book-entry, or uncertificated, form meaning that you will receive a direct registration (DRS) account statement from our transfer agent reflecting ownership of these securities if you are a holder of record of shares. If you hold your shares in the name of a broker, dealer, bank, or other nominee, DTC will credit your account with your nominee with the securities you purchase in the Rights Offering.

After I send in my payment and Subscription Rights Statement to the Subscription Agent, may I cancel my exercise of Subscription Rights?

No. Exercises of Subscription Rights are irrevocable, unless the Rights Offering is terminated, even if you later learn information that you consider to be unfavorable to the exercise of your Subscription Rights. You should not exercise your Subscription Rights unless you are certain that you wish to purchase Shares at the Subscription Price.

How much will the Company receive from the Rights Offering?

Assuming that all Shares are sold in the Rights Offering, including the exercise of all Over-Subscription Privileges, we estimate that the net proceeds from the Rights Offering will be approximately \$8.0 million, based on a Subscription Price of \$7.20 per Share and after deducting other expenses payable by us.

Are there risks in exercising my Subscription Rights?

Yes. The exercise of your Subscription Rights involves risks. Exercising your Subscription Rights involves the purchase of additional shares of our Common Stock and you should consider this investment as carefully as you would consider any other investment. We cannot assure you that the market price of our Common Stock will exceed the Subscription Price, nor can we assure you that the market price of our Common Stock will not further decline during or after the Rights Offering. We also cannot assure you that you will be able to sell shares of our Common Stock purchased in the Rights Offering at a price equal to or greater than the Subscription Price. In addition, you should carefully consider the risks described under the heading "Risk Factors" for discussion of some of the risks involved in investing in our securities.

Can the board of directors terminate or extend the Rights Offering?

Yes. Our board of directors may decide to terminate the Rights Offering at any time and for any reason before the expiration of the Rights Offering. We also have the right to extend the Rights Offering for additional periods in our sole discretion. We do not presently intend to extend the Rights Offering. We will notify stockholders if the Rights Offering is terminated or extended by issuing a press release.

If the Rights Offering is not completed or is terminated, will my subscription payment be refunded to me?

Yes. The Subscription Agent will hold all funds it receives in a segregated bank account until completion of the Rights Offering. If we do not complete the Rights Offering, all subscription payments received by the Subscription Agent will be returned as soon as practicable after the termination or expiration of the Rights Offering, without interest or penalty. If you own shares in “street name,” it may take longer for you to receive your subscription payment because the Subscription Agent will return payments through the record holder of your shares.

How do I exercise my Rights if I live outside the United States?

The Subscription Agent will hold Subscription Rights Statements for stockholders having addresses outside the United States. To exercise Subscription Rights, foreign stockholders must notify the Subscription Agent and timely follow other procedures described in the section entitled “The Rights Offering—Foreign Stockholders” on page 26.

What fees or charges apply if I purchase shares in the Rights Offering?

We are not charging any fee or sales commission to issue Subscription Rights to you or to issue shares to you if you exercise your Subscription Rights. If you exercise your Subscription Rights through a broker, dealer, custodian bank, or other nominee, you are responsible for paying any fees your broker, dealer, bank, or other nominee may charge you.

What are the U.S. federal income tax consequences of exercising my Subscription Rights?

For U.S. federal income tax purposes, we do not believe you should recognize income or loss in connection with the receipt or exercise of Subscription Rights in the Rights Offering. You should consult your tax advisor as to the tax consequences of the Rights Offering in light of your particular circumstances. For a more detailed discussion, see “Material U.S. Federal Income Tax Consequences” beginning on page 30.

To whom should I send my forms and payment?

If your shares are held in the name of a broker, dealer, bank, or other nominee, then you should send your subscription documents and subscription payment to that broker, dealer, bank, or other nominee. If you are the record holder, then you should send your Subscription Rights Statement and payment of your subscription price to the Subscription Agent hand delivery, first class mail or courier service to:

By Mail or Hand or Overnight Courier:

**Corporate Stock Transfer, Inc.
3200 Cherry Creek Drive South, Suite 430
Denver, Colorado 80209**

You or, if applicable, your nominee are solely responsible for completing delivery to the Subscription Agent of your subscription documents, Subscription Rights Statement and payment. You should allow sufficient time for delivery of your subscription materials to the Subscription Agent before the expiration of the Rights Offering at 5:00 PM Eastern Time on June 18, 2018.

Whom should I contact if I have other questions?

If you have other questions or need assistance, please contact CG Capital as follows:

CG Capital
271 17th Street NW, Suite 530

Atlanta, GA 30363

Attention: Rich Cockrell
Email: rich@cg.capital
Telephone: (877) 889-1972

Prospectus SUMMARY

This summary highlights certain information about us, this offering and selected information contained in the prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our Common Stock. For a more complete understanding of the Company and this offering, we encourage you to read and consider the more detailed information included or incorporated by reference in this prospectus, including “Risk Factors” and the financial statements and related notes.

About Xtant Medical Holdings, Inc.

Xtant Medical Holdings, Inc. develops, manufactures and markets regenerative medicine products and medical devices for domestic and international markets. Xtant products serve the specialized needs of orthopedic and neurological surgeons, including orthobiologics for the promotion of bone healing, implants and instrumentation for the treatment of spinal disease, tissue grafts for the treatment of orthopedic disorders, and biologics to promote healing following cranial, and foot and ankle surgeries. Xtant believes the following competitive strengths will be key drivers of future growth of Xtant:

Portfolio of Proprietary Technologies: Xtant has developed a comprehensive portfolio of products that address a broad array of spinal pathologies, anatomies and surgical approaches in the complex spine and minimally invasive surgery (“MIS”) markets. To protect company innovative technologies and techniques, Xtant maintains and continues to grow its intellectual property portfolio, with over 100 issued patents globally and over 40 patent applications pending.

Customer Focus: Responding quickly and efficiently to the needs of patients, surgeons and hospitals is central to corporate culture and critical to success. Our supply chain and customer service teams make sure that the right product and instrumentation is in the right place at the right time. Through such vertically integrated processes, we are able to meet the changing needs of our customers.

Multi-channel Distribution Network: Xtant is building a hybrid sales and distribution function calling on Orthopedic Surgeons, Neuro Surgeons, their staff and the hospital administrators that support them. Approximately 420 field agents and distributors in the United States represent some or all of Xtant’s products. The distribution channel consists of multiple sub-channels including direct sales, consignment agents, reseller distributors, and private label distributors and technology licensees.

Recent Developments

On January 11, 2018, we announced that we had entered into a Restructuring and Exchange Agreement, or the Restructuring Agreement, with ROS Acquisition Offshore LP, OrbiMed Royalty Opportunities II, LP (ROS and OrbiMed are referred to herein as the Investors), Bruce Fund, Inc., Park West Partners International, Limited, Park West Investors Master Fund, Limited, and Telemetry Securities, L.L.C., which constitute all of the holders, collectively referred to as the Noteholders, of the Company's outstanding 6% convertible unsecured notes due in 2021, or the Notes.

On January 17, 2018, the Investors converted certain Notes issued to the Investors in January 2017 in the aggregate principal amount of \$1.627 million, plus accrued and unpaid interest, at the \$0.7589 per share conversion rate originally provided thereunder, into 2,275,745 shares of Common Stock (or approximately 189,645 shares of Common Stock after giving effect to the 1-for-12 reverse stock split). On February 14, 2018 at the closing of the Tier 2 Transaction, after completion of the Tier 1 Transaction, following approval by the stockholders, and after completion of the 1-for-12 reverse stock split, the remaining \$70.238 million aggregate principal amount of the Notes held by the Noteholders, plus accrued and unpaid interest, was exchanged for newly-issued shares of Common Stock at an exchange rate of 138.8889 shares per \$1,000 principal amount of Notes, for an exchange price of \$7.20 per share. The Remaining Notes were exchanged for approximately 10.4 million newly-issued shares of Common Stock in the Tier 2 Transaction. Furthermore, on February 14, 2018, the Investors purchased from the Company in a private placement, simultaneously with the consummation of the Tier 2 Transaction, an aggregate of \$6,809,896 of Common Stock at a price per share of \$7.20, or 945,819 shares of Common Stock.

The primary purposes of our entry into the Restructuring Agreement and the Rights Offering are to reform our capital structure, meet our liquidity needs, to reposition the Company for long-term growth, and to regain compliance with NYSE American LLC (formerly the NYSE MKT) listing standards. In conjunction with the consummation of the restructuring, the Company regained compliance with NYSE American listing standards on February 15, 2018. For a more detailed description of the Restructuring, see "Description of the Restructuring."

SUMMARY OF THE RIGHTS OFFERING

| | |
|--|--|
| Securities to be offered: | We are distributing, at no charge, to holders of our Common Stock on the Record Date, either as a holder of record or, in the case of shares held of record by brokers, banks, or other nominees, on your behalf, as a beneficial owner of such shares, non-transferrable Subscription Rights to purchase up to an aggregate of 1,137,515 shares of our common stock. |
| Subscription Price: | \$7.20 per Share. |
| Record Date: | 5:00 PM Eastern Time, April 27, 2018. |
| Subscription Right: | Each Subscription Right consists of a Basic Subscription Right and an Over-Subscription Privilege. |
| Basic Subscription Rights: | Each whole Basic Subscription Right will entitle you to purchase one Share at the Subscription Price. Subscription Rights may only be exercised in whole numbers, and we will not issue fractional shares. To the extent that the number of Subscription Rights that are distributed to you on the Record Date is not a whole number, the shares of Common Stock issuable upon exercise of the Subscription Rights will be rounded down to the nearest whole share for purposes of determining the number of shares of Common Stock for which you may subscribe. |
| Over-Subscription Privilege: | If you exercise your Basic Subscription Rights in full, you may also choose to purchase a portion of any Shares that are not purchased by our other stockholders through the exercise of their Basic Subscription Rights. The Noteholders have indicated that they do not intend to participate in the Rights Offering. You may subscribe for additional Shares pursuant to this Over-Subscription Privilege, subject to proration described elsewhere. |
| Expiration date: | The Subscription Rights will expire at 5:00 PM Eastern Time, on June 18, 2018. We reserve the right to extend the expiration date in our sole discretion. |
| Procedure for exercising Subscription Rights: | To exercise your Subscription Rights, you must take the following steps: If you are a record holder of our Common Stock, you must deliver payment and a properly completed Subscription Rights Statement to the Subscription Agent to be received before 5:00 PM Eastern Time, on June 18, 2018. You may deliver the documents and payments by first class mail or courier service. If you use first class mail for this purpose, we recommend using registered mail, properly insured, with return receipt requested. |

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If you are a beneficial owner of shares that are registered in the name of a broker, dealer, custodian bank, or other nominee, you should instruct your broker, dealer, custodian bank, or other nominee to exercise your Subscription Rights on your behalf. Please follow the instructions of your nominee, who may require that you meet a deadline earlier than 5:00 PM Eastern Time, on June 18, 2018.

- Delivery of shares:** As soon as practicable after the expiration of the Rights Offering, the Subscription Agent will arrange for the issuance of the shares of Common Stock purchased pursuant to the Rights Offering. All shares that are purchased in the Rights Offering will be issued in book-entry, or uncertificated, form meaning that you will receive a direct registration (DRS) account statement from our transfer agent reflecting ownership of these securities if you are a holder of record of shares. If you hold your shares in the name of a custodian bank, broker, dealer, or other nominee, DTC will credit your account with your nominee with the securities you purchased in the Rights Offering.
- Non-transferability of Subscription Rights:** The Subscription Rights may not be sold, transferred, assigned or given away to anyone. The Subscription Rights will not be listed for trading on any stock exchange or market.
- No board recommendation:** Our board of directors is not making a recommendation regarding your exercise of the Subscription Rights. You are urged to make your decision to invest based on your own assessment of our business and the Rights Offering. Please see “Risk Factors” for a discussion of some of the risks involved in investing in our securities.
- No revocation:** All exercises of Subscription Rights are irrevocable, even if you later learn of information that you consider to be unfavorable to the exercise of your Subscription Rights.
- We intend to use the net proceeds from this Rights Offering:
- to provide equity capital to support the continuing execution of the Company’s growth strategy, specifically to increase surgical instruments and fixation and biologics inventory,
 - to diversify our supply of donor tissue, expand our processing capabilities and develop a hybrid sales force, and
 - for general corporate purposes, including research and development, business development and operational purposes.
- See “Use of Proceeds.”
- Material U.S. federal income tax consequences:** For U.S. federal income tax purposes, we intend to take the position that you should not recognize income or loss upon receipt or exercise of a Subscription Right. You should consult your own tax advisor as to the tax consequences of the Rights Offering in light of your particular circumstances. See “Material U.S. Federal Income Tax Consequences” beginning on page 30.
- Extension and termination:** Although we do not presently intend to do so, we may extend the Rights Offering for additional time in our sole discretion. Our board of directors may also choose to terminate the Rights Offering at any time, for any reason, before the completion of the Rights Offering.

Subscription Agent: Corporate Stock Transfer, Inc.

Questions: If you have any questions about the Rights Offering, please contact CG Capital, at (877) 889-1972.

Market for Common Stock: Our Common Stock is listed on NYSE American under the symbol “XTNT.” See “Market Price of and Dividends on our Common Stock” on page 21.

Risk factors:

Before you exercise your Subscription Rights to purchase Shares, you should be aware that there are risks associated with your investment, and you should carefully read and consider risks described in the section captioned “Risk Factors” together with all of the other information included in this prospectus.

Unless otherwise indicated, all information in this prospectus reflects or assumes the following:

- the filing of our amended and restated certificate of incorporation;
- the completion of the Restructuring;
- no exercise of outstanding options after December 31, 2017; and
- a 1-for-12 reverse split of our common stock effected on February 14, 2018.

RISK FACTORS

Before making an investment decision, you should carefully consider the following risks and the risks described in the “Risk Factors” section of our most recent Annual Report on Form 10-K, filed with the Commission on April 2, 2018, as it may be amended, and in any other documents incorporated by reference into this prospectus, as updated by our future filings.

Risks Related to the Rights Offering

Your interest in the Company may be diluted as a result of this Rights Offering or due to other transactions.

Stockholders who do not fully exercise their Subscription Rights should expect that they will, at the completion of this offering, own a smaller proportional interest in the Company than would otherwise be the case had they fully exercised their Basic Subscription Right and Over-Subscription Privilege.

On March 31, 2018, 13,077,468 shares of our Common Stock were outstanding.

Additionally, as of March 31, 2018, we had 654,959 shares of Common Stock underlying outstanding stock options, RSUs and warrants. The conversion or exercise of all or a portion of these warrants or options would result in additional dilution to your ownership interest. If we do not increase our revenue or reduce our expenses, we may need to raise additional capital, which may result in further dilution to our stockholders. We may also consider other options from time to time in order to improve our capital structure, including restructuring or amending the terms of our existing convertible notes, any of which may result in additional dilution to our stockholders.

Because the price per Share being offered may be substantially higher than the net tangible book value per share of our Common Stock, you may suffer substantial dilution in the net tangible book value of the Common Stock you purchase in this offering. If you purchase Shares in this offering at the Subscription Price, you may suffer immediate and substantial dilution in the net tangible book value of the Common Stock. See “Dilution” in this prospectus for a more detailed discussion of the dilution which may incur in connection with this offering.

Completion of the Rights Offering is not subject to us raising a minimum offering amount and we will still need additional funding to carry out our proposed operating activities after the Rights Offering.

Completion of the Rights Offering is not subject to us raising a minimum offering amount and, therefore, the net proceeds from the Rights Offering may be insufficient to meet our objectives, thereby increasing the risk to investors in this offering, including investing in a company that continues to require capital.

This Rights Offering may cause the trading price of our Common Stock to decrease.

The Subscription Price, together with the number of shares of Common Stock we propose to issue and ultimately will issue if this Rights Offering is completed, may result in an immediate decrease in the market price of our Common Stock. This decrease may continue after the completion of this Rights Offering. If that occurs, you may have committed to buy shares of Common Stock in the Rights Offering at a price greater than the prevailing market price. Further, if a substantial number of Subscription Rights are exercised and the holders of the shares received upon exercise of those Subscription Rights choose to sell some or all of the shares underlying the Subscription Rights, the resulting sales could depress the market price of our Common Stock. Following the exercise of your Subscription Rights you may not be able to sell your Common Stock at a price equal to or greater than the Subscription Price.

Because the exercise of your Subscription Rights is not revocable, you could be committed to buying shares of Common Stock above the prevailing market price.

Once you exercise your Subscription Rights, you may not revoke such exercise even if you later learn information that you consider to be unfavorable to the exercise of your Subscription Rights. The market price of our shares of Common Stock may decline prior to the expiration of this offering or a Subscribing Rights holder may not be able to sell shares of Common Stock purchased in this offering at a price equal to or greater than the Subscription Price. Until shares of our Common Stock are delivered upon expiration of the Rights Offering, you will not be able to sell or transfer the shares of our Common Stock that you purchase in the Rights Offering. Any such delivery will occur as soon as practicable after the Rights Offering has expired, payment for the shares of Common Stock has cleared, and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected.

If we terminate this offering for any reason, we will have no obligation other than to return subscription payments as soon as practicable.

We may decide, in our sole discretion and for any reason, to cancel or terminate the Rights Offering at any time prior to the expiration date. If this offering is cancelled or terminated, we will have no obligation with respect to Subscription Rights that have been exercised except to return as soon as practicable, without interest, the subscription payments deposited with the Subscription Agent.

If we terminate this offering and you have not exercised any Subscription Rights, such Subscription Rights will expire.

Our Common Stock price may be volatile.

The trading price of our Common Stock may fluctuate substantially. The price of the Common Stock that will prevail in the market after this offering may be higher or lower than the Subscription Price depending on many factors, some of which are beyond our control and may not be directly related to our operating performance. These factors include, but are not limited to, the following:

- regulatory actions with respect to our products or our competitors' products;
- actual or anticipated changes in our growth rate relative to our competitors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;
- the success of competitive products or technologies;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;

the recruitment or departure of key personnel;

the level of expenses related to any of our product candidates;

actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;

variations in our financial results or those of companies that are perceived to be similar to us;

fluctuations in the valuation of companies perceived by investors to be comparable to us;

share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;

announcement or expectation of additional financing efforts;

sales of our Common Stock by us, our insiders or our other stockholders;

market conditions in our core business sectors; and

general economic, industry and market conditions.

Additionally, the stock market historically has experienced significant price and volume fluctuations. These fluctuations are often unrelated to the operating performance of particular companies. These broad market fluctuations may cause declines in the trading price and market value of our Common Stock.

The Subscription Price determined for this offering is not an indication of the fair value of our Common Stock.

In determining the Subscription Price, our board of directors considered a number of factors, including, but not limited to, the price per share at which shares were sold in the Tier 2 Transaction and the Private Placement, our need for additional capital and liquidity and the cost of capital from other sources. The Subscription Price does not necessarily bear any relationship to the book value of our assets, results of operations, cash flows, losses, financial condition or any other established criteria for value. You should not consider the Subscription Price as an indication of the fair value of our Common Stock. After the date of this prospectus, our Common Stock may trade at prices above or below the Subscription Price.

If you do not act on a timely basis and follow the subscription instructions, your exercise of Subscription Rights may be rejected.

Holders of Subscription Rights who desire to purchase shares of our Common Stock in this offering must act on a timely basis to ensure that all required forms and payments are actually received by the Subscription Agent prior to 5:00 PM Eastern Time, on the expiration date, unless extended. If you are a beneficial owner of shares of Common Stock and you wish to exercise your Subscription Rights, you must act promptly to ensure that your broker, dealer, custodian bank, trustee or other nominee acts for you and that all required forms and payments are actually received by your broker, dealer, custodian bank, trustee or other nominee in sufficient time to deliver such forms and payments to the Subscription Agent to exercise the Subscription Rights granted in this offering that you beneficially own prior to 5:00 PM Eastern Time on the expiration date, as may be extended. We will not be responsible if your broker, dealer, custodian bank, trustee or other nominee fails to ensure that all required forms and payments are actually received by the Subscription Agent prior to 5:00 PM Eastern Time, on the expiration date.

If you fail to complete and sign the required subscription forms, send an incorrect payment amount, or otherwise fail to follow the subscription procedures that apply to your exercise in this Rights Offering, the Subscription Agent may, depending on the circumstances, reject your subscription or accept it only to the extent of the payment received. Neither we nor the Subscription Agent undertakes to contact you concerning an incomplete or incorrect subscription form or payment, nor are we under any obligation to correct such forms or payment. We have the sole discretion to determine whether a subscription exercise properly follows the subscription procedures.

You may not receive all of the Shares for which you over-subscribe.

Holders who fully exercise their Basic Subscription Rights will be entitled to subscribe for an additional number of Shares. Over-Subscription Privileges will be allocated pro rata among Rights holders who over-subscribed, based on the number of over-subscription Shares to which they have subscribed. We cannot guarantee that you will receive any or the entire number of Shares for which you over-subscribed. If the prorated number of Shares allocated to you in connection with your Over-Subscription Privilege is less than your Over-Subscription Request, then the excess funds held by the Subscription Agent on your behalf will be returned to you, without interest, as soon as practicable after the Rights Offering has expired and all prorating calculations and reductions contemplated by the terms of the Rights Offering have been effected, and we will have no further obligations to you.

The receipt of Subscription Rights may be treated as a taxable distribution to you.

We believe the distribution of the Subscription Rights in this Rights Offering should be a non-taxable distribution to holders of shares of Common Stock under Section 305(a) of the Internal Revenue Code of 1986, as amended, or the "Code." Please see the discussion on the "Material U.S. Federal Income Tax Consequences" beginning on page 30. This position is not binding on the IRS, or the courts, however. If this Rights Offering is deemed to be part of a "disproportionate distribution" under Section 305 of the Code, your receipt of Subscription Rights in this offering may be treated as the receipt of a taxable distribution to you equal to the fair market value of the Subscription Rights. Any such distribution would be treated as dividend income to the extent of our current and accumulated earnings and profits, if any, with any excess being treated as a return of capital to the extent thereof and then as capital gain. Each holder of shares of Common Stock is urged to consult his, her or its own tax advisor with respect to the particular tax consequences of this Rights Offering.

The Subscription Rights are not transferable, and there is no market for the Subscription Rights.

You may not sell, transfer, assign or give away your Subscription Rights. Because the Subscription Rights are non-transferable, there is no market or other means for you to directly realize any value associated with the

Subscription Rights. You must exercise the Subscription Rights to realize any potential value from your Subscription Rights.

Risks Related to the Restructuring

The Investors have significant influence over our Company which could make it impossible for the public stockholders to influence the affairs of the Company.

Following the Restructuring, on February 14, 2018, the Investors owned approximately 70.4% of our outstanding Common Stock. Our existing non-Noteholder stockholders were significantly diluted, from an ownership standpoint, as a result of the Restructuring. For so long as the Investors are significant stockholders, they and their affiliates may exercise significant influence over our management and affairs, including influence beyond what is expressly described under the Restructuring documents. The Investors and their affiliates will be able to determine all matters requiring stockholder approval, regardless of whether or not other stockholders believe that a potential transaction is in their own best interests. In any of these matters, the interests of the Investors and their affiliates may differ or conflict with your interests.

The high concentration of stock ownership in one stockholder may also directly or indirectly deter hostile takeovers, delay or prevent changes in control or changes in management, or limit the ability of our other stockholders to approve transactions that they may deem to be in our best interests. Additionally, the trading price of our Common Stock may be adversely effected to the extent investors perceive a disadvantage in owning stock of a company with a significant stockholder.

As a result of the Restructuring, we are a “controlled company.”

As a result of the Restructuring, we are a “controlled company” within the meaning of the corporate governance standards of the NYSE American. Under the rules of the NYSE American, a company of which more than 50% of the outstanding voting power is held by an individual, group or another company is a “controlled company” and may elect not to comply with certain stock exchange corporate governance requirements, including the requirement that a majority of the board of directors consists of independent directors and the requirement that a listed company have a nominating and governance committee and a compensation committee that is composed entirely of independent directors. As a controlled company, we are relying on NYSE American’s controlled company exemptions and do not have a majority independent Board, an independent nomination and governance committee or an independent compensation committee.

The reverse stock split may not have the intended benefits.

On February 14, 2018, following approval by the stockholders, we implemented a reverse stock split with a ratio of 1:12. We cannot predict whether the reverse stock split will increase the market price for our common stock on a sustained basis. The history of similar stock splits for companies in like circumstances is varied, and we cannot predict whether:

the reverse stock split will result in a sustained price per share that will attract brokers and investors who do not trade in lower priced stocks;

the reverse stock split will result in a price per share that will increase our ability to attract and retain employees and other service providers;

the market price per share will remain at a level in excess of the minimum bid price as required for continued listing on NYSE American; or

that, even if the reverse stock split does increase the market price of our common stock on a sustained basis, we will otherwise meet the requirements of NYSE American and be able to maintain our listing.

We may not realize the intended benefits of the Restructuring.

We believe that entering into the Restructuring Agreement was a significant step toward resolving our historical lack of cash, substantial doubt about our ability to continue as a going concern and enhancing our ability to finance operations and expansion. However, there can be no guarantee that we will realize the intended benefits of the Restructuring immediately, if at all. The Restructuring involved a significant transition at the management and Board levels. This transition could take longer, and require greater resources and management and Board attention, than anticipated. It is possible that this transition process or other factors could result in the loss or departure of key employees, the disruption of our ongoing business, or inconsistencies in standards, controls, procedures and policies. Even if we successfully implement this transition, there is no assurance that our revenues, operating results and profitability will improve as a result of the Restructuring.

Our net operating losses were likely impaired as a result of the Restructuring.

As of December 31, 2017, we had net operating loss (which we refer to as “NOL”) carryforwards of approximately \$164.8 million for U.S. federal and state income tax purposes. Under the Code, an “ownership change” with respect to a corporation can significantly limit the amount of pre-ownership change NOLs and certain other tax assets that the corporation may utilize after the ownership change to offset future taxable income, possibly reducing the amount of cash available to the corporation to satisfy its obligations. An ownership change generally occurs when the aggregate stock ownership of holders of at least 5% of our stock increases by more than 50 percentage points over the preceding three-year period. The issuance of our Common Stock to holders of Notes pursuant to the Restructuring caused an ownership change with respect to our stock. Further, the purchase of common stock pursuant to the Rights Offering may trigger an ownership change with respect to our stock.

Recent tax legislation could significantly impact us or our stockholders.

Public Law no. 115-97, an Act to provide for reconciliation pursuant to titles II and V of the concurrent resolution on the budget for fiscal year 2018, or the Tax Act, signed into law by President Trump on December 22, 2017, substantially changes U.S. federal income tax law, which could significantly impact us, our operations and our stockholders. The changes made by the Tax Act include a permanent reduction to the federal corporate income tax rate from 35% to 21%, changes in the deductibility of interest on certain debt obligations, limitations on the usability of net operating loss carry forwards, and a one-time tax on a deemed repatriation of foreign earnings. We are currently evaluating the Tax Act with our professional advisers. The full impact of the Tax Act on us in future periods cannot be predicted at this time, and no assurances in that regard are made by us. This prospectus does not discuss the Tax Act or the manner in which it might affect us. Prospective acquirers of our common stock pursuant to the Rights Offering should consult their tax advisors about the potential impact of the Act on an investment in our common stock.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain statements contained in or incorporated by reference into this prospectus, or filings with the SEC and our public releases, that are not purely historical are forward-looking statements within the meaning of applicable securities laws. Our forward-looking statements include, but are not limited to, statements regarding our “expectations,” “hopes,” “beliefs,” “intentions” or “strategies” regarding the future. In addition, any statements that refer to projections, forecasts, or other characterizations of future events or circumstances, including any underlying assumptions, are forward-looking statements. The words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “might,” “possible,” “potential,” “predict,” “project,” “should” and “would,” as well as similar expressions, may identify forward-looking statements, but the absence of these words does not mean that a statement is not forward looking. Forward-looking statements contained in or incorporated by reference into this prospectus may include, for example, statements about:

- our ability to comply with the covenants in our amended and restated credit agreement;

- our ability to maintain sufficient liquidity to fund our operations;

- our ability to obtain financing on reasonable terms;

- our ability to increase revenue;

- the ability of our sales force to achieve expected results;

- our ability to remain competitive;

- government regulations;

- our ability to innovate and develop new products;

- our ability to obtain donor cadavers for our products;

- our ability to engage and retain qualified technical personnel and members of our management team;

- the availability of our facilities;

- government and third-party coverage and reimbursement for our products;
- our ability to obtain regulatory approvals;
- our ability to successfully integrate future business combinations or acquisitions;
- our ability to use our net operating loss carry-forwards to offset future taxable income;
- our ability to deduct all or a portion of the interest payments on the notes for U.S. Federal income tax purposes;
- our ability to service our debt;
- product liability claims and other litigation to which we may be subjected;
- product recalls and defects;
- timing and results of clinical studies;
- our ability to obtain and protect our intellectual property and proprietary rights;
- infringement and ownership of intellectual property;
- our ability to remain accredited with the American Association of Tissue Banks;
- our ability to pay dividends; and
- our ability to issue preferred stock.

The forward-looking statements contained in this prospectus or in any documents incorporated by reference, are based on our current expectations and beliefs concerning future developments and their potential effects on us. There can be no assurance that future developments affecting us will be those that we have anticipated. These forward-looking statements involve a number of risks, uncertainties, or assumptions, many of which are beyond our control, which may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to, those factors described in the “Risk Factors” section of this prospectus or our Form 10-K. Should one or more of these risks or uncertainties

materialize, or should any of our assumptions prove incorrect, actual results may vary in material respects from those projected in these forward-looking statements. We caution you that the forward-looking statements contained in this prospectus are not guarantees of future performance, and we cannot assure you that those statements will be realized or that the forward-looking events and circumstances will occur. All forward-looking statements speak only as of the date of this prospectus. We do not intend to publicly update or revise any forward-looking statements as a result of new information, future events or otherwise, except as required by law. The cautionary statements qualify all forward-looking statements attributable to us or persons acting on our behalf.

You should also read carefully the factors described in the “Risk Factors” in our annual report on Form 10-K filed with the SEC on April 2, 2018, as it may be amended, and in any other documents incorporated by reference into this prospectus, as updated by our future filings, to better understand significant risks and uncertainties inherent in our business and underlying any forward-looking statements. As a result of these factors, actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements in this report and you should not place undue reliance on any forward-looking statements.

USE OF PROCEEDS

Assuming that all Shares are sold in the Rights Offering, including the full exercise of all Over-Subscription Privileges, we estimate that the net proceeds from the Rights Offering will be approximately \$8.0 million, based on the Subscription Price of \$7.20 per Share after deducting expenses payable by us.

We intend to use the net proceeds from this Rights Offering primarily for capital to support the continuing execution of the Company's growth strategy, specifically to increase surgical instruments and fixation and biologics inventory, diversify our supply of donor tissue, expand our processing capabilities and develop a hybrid sales force, and for general corporate purposes, including research and development, business development and operational purposes.

Our management will have broad discretion in the application of the net proceeds from this offering, and investors will be relying on the judgment of our management with regard to the use of these net proceeds.

CAPITALIZATION

The following table presents our cash, cash equivalents and capitalization, as of December 31, 2017:

on an actual basis;

on a pro forma basis to give effect to the Restructuring, including the Private Placement, and the 1-for-12 reverse stock split; and

on a pro forma as adjusted basis to give effect to the Restructuring, the 1-for-12 reverse stock split, and assuming the sale by us in this Rights Offering of the maximum number of Shares, including the full exercise of all Over-Subscription Privileges, at the Subscription Price of \$7.20 per Share, and our receipt of the net proceeds from that sale after deducting estimated offering expenses.

The pro forma as adjusted information set forth below is illustrative only and will be adjusted based on the number of Shares actually sold. You should read this information in conjunction with our consolidated financial statements and notes thereto incorporated by reference into this prospectus.

| | As of December 31, 2017 | | |
|---|-------------------------|--------------------------|---|
| | Actual (Audited) | Pro Forma (Unaudited) | Pro Forma as Adjusted (Unaudited) |
| Cash, cash equivalents and trade accounts receivable | \$ 15,570,345 | \$ 22,380,242 | \$ 30,401,330 |
| Debt | | | |
| Indenture Notes | 67,056,497 | 0 | 0 |
| 2016 Notes | 2,192,470 | 0 | 0 |
| 2017 Notes | 1,604,518 | 0 | 0 |
| Credit Facility | 67,108,997 | 67,108,997 | 67,108,997 |
| Capital lease obligations (less current portion) | 623,297 | 623,297 | 623,297 |
| Total debt | 138,585,779 | 67,732,294 | 67,732,294 |
| Stockholders' equity | | | |
| Preferred stock, \$0.000001 par value per share; 5,000,000 shares authorized, no shares issued and outstanding, actual; and 10,000,000 shares authorized, no shares issued and outstanding, pro forma and pro forma as adjusted | 0 | 0 | 0 |

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| | | | |
|--|----------------|-----------------|-----------------|
| Common Stock, \$0.000001 par value per share; 50,000,000 shares authorized, 1,514,899 issued and outstanding actual; and 50,000,000 shares authorized, 13,002,333 issued and outstanding pro forma, and 14,139,848 issued and outstanding pro form as adjusted | 2 | 13 | 14 |
| Additional paid-in capital | 86,246,792 | 163,910,148 (1) | 171,925,236 (1) |
| Accumulated deficit | (144,945,786) | (144,945,786) | (144,945,786) |
| Total stockholders' (deficit) equity | (58,698,992) | 18,964,375 | 26,979,464 |
| Total capitalization | \$ 79,886,787 | \$ 86,696,669 | \$ 94,711,758 |

(1) Decrease in Additional paid-in capital a result of the remaining write-off of debt issuance costs associated with 6% convertible senior unsecured notes due 2021.

The number of outstanding shares of Common Stock in the table above excludes the following as of December 31, 2017:

- 67,465 shares issuable upon the exercise of outstanding stock options with a weighted average exercise price of \$71.03 per share;

- 519,917 shares issuable upon the exercise of outstanding warrants with a weighted average exercise price of \$25.68 per share; and

- approximately 64,000 shares available for issuance under our Amended and Restated Equity Incentive Plan.

DILUTION

Purchasers of our Common Stock in the Rights Offering will experience an immediate dilution of the net tangible book value per share of our Common Stock. Our historical net tangible book value as of December 31, 2017, was negative \$43.2 million, or \$(3.58) per share of our Common Stock. Net tangible book value per share is equal to our total net tangible book value, which is our total tangible assets less our total liabilities, divided by the number of shares of our outstanding Common Stock. Dilution per share equals the difference between the amount per share paid by purchasers of shares of Common Stock in the Rights Offering and the net tangible book value per share of our Common Stock immediately after the Rights Offering. Our pro forma net tangible book value as of December 31, 2017 was negative \$36.4 million, or \$(2.80) per share, based on the total number of shares of our common stock outstanding as of December 31, 2017, after giving effect to the issuance of 11,562,752 shares in the Restructuring, including the Private Placement, and the 1-for-12 reverse stock split.

Based on the sale by us in this Rights Offering of a maximum of 1,137,515 Shares, at the Subscription Price of \$7.20 per Share, and after deducting estimated offering expenses payable by us of \$175,000, our pro forma as-adjusted net tangible book value as of December 31, 2017 would have been approximately negative \$28.4 million, or \$(2.01) per share. This represents an immediate increase in pro forma net tangible book value to existing stockholders of \$0.79 per share and an immediate dilution to purchasers in the Rights Offering of \$(2.80) per share.

The following table illustrates this per-share dilution on a pro forma as adjusted basis, after giving effect to the completion of the Restructuring and the 1-for-12 reverse stock split and assuming a fully subscribed for Rights Offering, including the exercise of all Over-Subscription Privileges, of 1,137,515 Shares at the Subscription Price of \$7.20 per Share:

| | |
|--|------------|
| Subscription Price | \$ 7.20 |
| Net tangible book value per share as of December 31, 2017 | \$ (3.58) |
| Pro forma net tangible book value per share as of December 31, 2017, after giving effect to the Restructuring and the 1-for-12 reverse stock split | \$ (2.80) |
| Increase in pro forma net tangible book value per share attributable to Rights Offering | \$ 0.79 |
| Pro forma as-adjusted net tangible book value per share as of December 31, 2017, after giving effect to Rights Offering | \$ (2.01) |
| Dilution in net tangible book value per share to purchasers | \$ 9.21 |

The information above is as of December 31, 2017 and excludes the following, all of which have been adjusted to account for the 1-for-12 reverse stock split:

· 67,465 shares issuable upon the exercise of outstanding stock options with a weighted average exercise price of \$71.03 per share;

· 519,917 shares issuable upon the exercise of outstanding warrants with a weighted average exercise price of \$25.68 per share; and

· Approximately 64,000 shares available for issuance under our Amended and Restated Equity Incentive Plan.

Each decrease of 100,000 Shares subscribed for in this Rights Offering would decrease the pro forma as-adjusted net tangible book value per share as of December 31, 2017 by approximately \$(0.06) per share and increase the dilution in net tangible book value per share to purchasers by \$(0.06). To the extent that outstanding options or warrants are exercised, the investors purchasing our Common Stock in this offering will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations. To the extent that additional capital is raised through the sale of securities, the issuance of those securities could result in further dilution to our stockholders.

MARKET PRICE OF AND DIVIDENDS ON OUR COMMON STOCK**Market Information**

Our Common Stock is listed on NYSE American under the ticker symbol “XTNT.” From April 9, 2015 until October 19, 2015, our Common Stock traded on the OTCQX marketplace under the ticker symbol “BONE,” and from March 7, 2011 to April 8, 2015, our Common Stock was listed on NYSE American under the ticker symbol “BONE.” The following table sets forth the range of high and low prices per share of our Common Stock for each quarter, as reported by NYSE American and the OTCQX marketplace, as applicable, for the periods indicated below. Prices have been adjusted to reflect the Company’s July 25, 2014 1:10 reverse stock split and the February 14, 2018 1:12 reverse stock split.

| | High | Low |
|---|-------------|------------|
| First Quarter 2016 (January 1, 2016 – March 31, 2016) | \$ 45.00 | \$ 24.24 |
| Second Quarter 2016 (April 1, 2016 – June 30, 2016) | \$ 32.64 | \$ 18.12 |
| Third Quarter 2016 (July 1, 2016 – September 30, 2016) | \$ 24.60 | \$ 11.16 |
| Fourth Quarter 2016 (October 1, 2016 – December 31, 2016) | \$ 14.64 | \$ 5.40 |
| First Quarter 2017 (January 1, 2017 – March 31, 2017) | \$ 14.16 | \$ 3.48 |
| Second Quarter 2017 (April 1, 2017 – June 30, 2017) | \$ 10.56 | \$ 4.32 |
| Third Quarter 2017 (July 1, 2017 – September 30, 2017) | \$ 14.52 | \$ 7.20 |
| Fourth Quarter 2017 (October 1, 2017 – December 31, 2017) | \$ 10.08 | \$ 5.64 |
| First Quarter 2018 (January 1, 2018 – March 31, 2018) | \$ 11.50 | \$ 3.96 |

Holders of Record

As of March 31, 2018, we had 179 holders of record. The actual number of shareholders is greater than this number of record holders and includes shareholders who are beneficial owners, but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include shareholders whose Common Stock may be held in trust or by other entities.

Dividends

We have not paid any cash dividends and do not expect to do so in the foreseeable future. In addition, our amended and restated credit agreement with ROS precludes us from paying dividends.

THE RIGHTS OFFERING

The Subscription Rights

We are distributing to the record holders, at no charge, non-transferable Subscription Rights to purchase up to an aggregate of 1,137,515 shares of our Common Stock. Each whole Basic Subscription Right will entitle you to purchase one share of our Common Stock from the date of issuance through its expiration on June 18, 2018. Each record holder will receive 0.0869816 Subscription Rights for each whole share of our Common Stock owned by such record holder as of the Record Date. Each Subscription Right entitles the record holder to a Basic Subscription Right and an Over-Subscription Privilege.

Basic Subscription Rights

Each whole Basic Subscription Right will entitle you to purchase one share of our Common Stock. For example, if you owned 1,000 shares of Common Stock as of the Record Date, you will receive 86.9816 Subscription Rights and will have the right to purchase 86 shares of our Common Stock for a total purchase price of \$619.20. You may exercise all or a portion of your Basic Subscription Rights, or you may choose not to exercise any Basic Subscription Rights at all. If you do not exercise your Basic Subscription Rights in full, you will not be entitled to exercise your Over-Subscription Privilege.

Over-Subscription Privilege

If you exercise your Basic Subscription Rights in full, you may also choose to exercise your Over-Subscription Privilege. Subject to proration, if applicable, we will seek to honor the Over-Subscription Privilege requests in full. If Over-Subscription Privilege requests exceed the number of Shares available, however, we will allocate the available Shares pro rata among the record holders exercising the Over-Subscription Privilege in proportion to the number of shares of our Common Stock each of those record holders owned on the Record Date, relative to the number of shares owned exercising the Over-Subscription Privilege. If this pro rata allocation results in any record holder receiving a greater number of Shares than the record holder subscribed for pursuant to the exercise of the Over-Subscription Privilege, then such record holder will be allocated only that number of Shares for which the record holder oversubscribed, and the remaining Shares will be allocated among all other record holders exercising the Over-Subscription Privilege on the same pro rata basis described above. The proration process will be repeated until all Shares have been allocated.

Corporate Stock Transfer, Inc., the Subscription Agent for the Rights Offering, will determine the over-subscription allocation based on the formula described above.

To the extent the aggregate subscription payment of the actual number of unsubscribed Shares available to you pursuant to the Over-Subscription Privilege is less than the amount you actually paid in connection with the exercise of the Over-Subscription Privilege, you will be allocated only the number of unsubscribed Shares available to you, and any excess subscription payments will be returned to you, without interest or penalty, as soon as practicable after expiration of the Rights Offering.

We can provide no assurances that you will actually be entitled to purchase the number of Shares issuable upon the exercise of your Over-Subscription Privilege in full at the expiration of the Rights Offering. We will not be able to satisfy any requests for Shares pursuant to the Over-Subscription Privilege if all of our stockholders exercise their Basic Subscription Rights in full, and we will only honor an Over-Subscription Privilege to the extent sufficient Shares are available following the exercise of Basic Subscription Rights.

Limitation on the Purchase of Shares

You may only purchase the number of whole Shares purchasable upon exercise of the number of Basic Subscription Rights distributed to you in the Rights Offering, plus the Over-Subscription Privilege, if any. We will not issue fractional shares. To the extent that the number of Subscription Rights that are distributed to you on the Record Date is not a whole number, the shares of Common Stock issuable upon exercise of the Subscription Rights will be rounded down to the nearest whole share for purposes of determining the number of shares of Common Stock for which you may subscribe.

Accordingly, the number of Shares that you may purchase in the Rights Offering is limited by the number of shares of our Common Stock you held on the Record Date and by the extent to which other stockholders exercise their Basic Subscription Rights and Over-Subscription Privileges, which we cannot determine prior to completion of the Rights Offering.

Subscription Price

The Subscription Price per Share is \$7.20, which reflects the 1-for-12 reverse stock split. The Subscription Price does not necessarily bear any relationship to our past or expected future results of operations, cash flows, current financial condition, or any other established criteria for value. No change will be made to the Subscription Price by reason of changes in the trading price of our Common Stock or other factor prior to the expiration of this Rights Offering.

Determination of Subscription Price

We are conducting the Rights Offering to allow stockholders of the Company to purchase Common Stock at the same price per share at which shares were sold in the Tier 2 Transaction and the Private Placement and to raise additional capital. In determining the price per share in the Tier 2 Transaction and the Private Placement, which is equivalent to the Subscription Price, our board of directors received a fairness opinion of Duff & Phelps, LLC, which stated that as of January 10, 2018, and subject to the assumptions, limitations and qualifications contained therein, the exchange rate of 138.8889 shares per \$1,000 principal amount of notes, for an exchange price of \$7.20 is fair to the public stockholders of the Company, from a financial point of view, as an exchange rate for the Notes. The Duff & Phelps fairness opinion was made solely in connection with the Tier 2 Transaction and did not opine as to the fairness of the Subscription Price or any shares sold pursuant to the Private Placement. Our board of directors also considered, among other things, our need for additional capital and liquidity and the cost of capital from other sources.

The Subscription Price does not necessarily bear any relationship to any established criteria for value. No valuation consultant or investment banker has opined upon the fairness or adequacy of the Subscription Price. You should not consider the Subscription Price as an indication of actual value of the Company or our Common Stock. You should not assume or expect that, after the Rights Offering, our shares of Common Stock will trade at or above the Subscription Price in any given time period. The market price of our Common Stock may decline during or after the Rights Offering. We cannot assure you that you will be able to sell the shares of our Common Stock purchased during the Rights Offering at a price equal to or greater than the Subscription Price. You should obtain a current price quote for our Common Stock before exercising your Subscription Rights and make your own assessment of our business and financial condition, our prospects for the future, and the terms of this Rights Offering. Once made, all exercises of Subscription Rights are irrevocable.

Non-Transferability of Subscription Rights

The Subscription Rights are non-transferable (other than by operation of law) and, therefore, you may not sell, transfer, assign or give away your Subscription Rights to anyone. The Subscription Rights will not be listed for

trading on any stock exchange or market.

Expiration Date; Extension

The subscription period, during which you may exercise your Subscription Rights, expires at 5:00 PM Eastern Time, on June 18, 2018, which is the expiration of the Rights Offering. If you do not exercise your Subscription Rights before that time, your Subscription Rights will expire and will no longer be exercisable. We will not be required to issue shares to you if the Subscription Agent receives your Subscription Rights Statement or your subscription payment after that time. We have the option to extend the Rights Offering in our sole discretion, although we do not presently intend to do so. We may extend the Rights Offering by giving oral or written notice to the Subscription Agent before the Rights Offering expires. If we elect to extend the Rights Offering, we will issue a press release announcing the extension no later than 9:00 AM Eastern Time, on the next business day after the most recently announced expiration date of the Rights Offering.

If you hold your shares of Common Stock in the name of a broker, dealer, custodian bank or other nominee, the nominee will exercise the Subscription Rights on your behalf in accordance with your instructions. Please note that the nominee may establish a deadline that may be before 5:00 PM Eastern Time, on June 18, 2018, which is the expiration date that we have established for the Rights Offering.

Termination

Rights Offering May Be Terminated at Any Time

We may terminate the Rights Offering at any time and for any reason prior to the completion of the Rights Offering. If we terminate the Rights Offering, we will issue a press release notifying stockholders and the public of the termination.

Return of Funds upon Completion or Termination

The Subscription Agent will hold funds received in payment for Shares in a segregated account pending completion of the Rights Offering. The Subscription Agent will hold this money until the Rights Offering is completed or is terminated. To the extent you properly exercise your Over-Subscription Privilege for a number of Shares that exceeds the number of unsubscribed Shares available to you, any excess subscription payments will be returned to you as soon as practicable after the expiration of the Rights Offering, without interest or penalty. If the Rights Offering is terminated for any reason, all subscription payments received by the Subscription Agent will be returned as soon as practicable, without interest or penalty.

Shares of Our Common Stock Outstanding After the Rights Offering

On March 31, 2018, after giving effect to the Restructuring and the 1-for-12 reverse stock split, 13,077,468 shares of our Common Stock were outstanding. Based on the foregoing, and assuming no other transactions by us involving our Common Stock prior to the expiration of the Rights Offering, if the Rights Offering is fully subscribed, approximately 14,214,983 shares of our Common Stock will be issued and outstanding. The exact number of shares that we will issue in this Rights Offering will depend on the number of Shares that are subscribed for in the Rights Offering

Methods for Exercising Subscription Rights

The exercise of Subscription Rights is irrevocable and may not be cancelled or modified. You may exercise your Subscription Rights as follows:

Subscription by Record Holders

If you are a stockholder of record, the number of Shares you may purchase pursuant to your Subscription Rights is indicated on the enclosed Subscription Rights Statement. You may exercise your Subscription Rights by properly completing and executing the Subscription Rights Statement and forwarding it, together with your full payment, to the Subscription Agent at the address given below under "Subscription Agent," to be received before 5:00 PM Eastern Time, on June 18, 2018.

Subscription by Beneficial Owners

If you are a beneficial owner of shares of our Common Stock that are registered in the name of a broker, dealer, custodian bank, or other nominee, you will not receive a Subscription Rights Statement. Instead, we will issue 0.0869816 Subscription Rights to such nominee record holder for each share of our Common Stock held by such nominee at the Record Date. If you are not contacted by your nominee, you should promptly contact your nominee in order to subscribe for shares in the Rights Offering and follow the instructions provided by your nominee.

To properly exercise your Over-Subscription Privilege, you must deliver the subscription payment related to your Over-Subscription Privilege before the Rights Offering expires. Because we will not know the total number of unsubscribed Shares before the Rights Offering expires, if you wish to maximize the number of shares you purchase pursuant to your Over-Subscription Privilege, you will need to deliver payment in an amount equal to the aggregate subscription payment for the maximum number of Shares that you wish to purchase.

Payment Method

Payments must be made in full in U.S. currency by cashier's check or by wire transfer, and payable to "Corporate Stock Transfer, Inc., as Subscription Agent for Xtant Medical Holdings, Inc." You must timely pay the full subscription payment, including payment for the Over-Subscription Privilege, for the full number of Shares that you wish to acquire pursuant to the exercise of Subscription Rights by delivering a:

cashier's check, drawn on a U.S. bank payable to "Corporate Stock Transfer, Inc., as Subscription Agent for Xtant Medical Holdings, Inc."; or

wire transfer of immediately available funds directly to the account maintained by Corporate Stock Transfer, Inc., as Subscription Agent, for purposes of accepting subscriptions in this Rights Offering at Corporate Stock Transfer, Inc., Credit: Corporate Stock Transfer as Rights Agent for Xtant Medical Holdings, Inc, for further credit to Xtant Medical Holdings, Inc., and name of the Subscription Rights holder.

You should read the instruction letter accompanying the Subscription Rights Statement carefully and strictly follow it. **DO NOT SEND SUBSCRIPTION RIGHTS STATEMENTS OR PAYMENTS DIRECTLY TO US.** We will not consider your subscription received until the Subscription Agent has received delivery of a properly completed and duly executed Subscription Rights Statement and payment of the full subscription amount.

The method of delivery of Subscription Rights Statements and payment of the subscription amount to the Subscription Agent will be at the risk of the holders of Subscription Rights. If sent by mail, we recommend that you send those statements and payments by registered mail, properly insured, with return receipt requested, or by overnight courier, and that you allow a sufficient number of days to ensure delivery to the Subscription Agent before the Rights Offering expires.

Missing or Incomplete Subscription Forms or Payment

If you fail to complete and sign the Subscription Rights Statement or otherwise fail to follow the subscription procedures that apply to the exercise of your Subscription Rights before the Rights Offering expires, the Subscription Agent will reject your subscription or accept it to the extent of the payment received. Neither we nor our Subscription Agent undertakes any responsibility or action to contact you concerning an incomplete or incorrect subscription form, nor are we under any obligation to correct such forms. We have the sole discretion to determine whether a subscription exercise properly complies with the subscription procedures.

If you send a payment that is insufficient to purchase the number of shares you requested, or if the number of shares you requested is not specified in the forms, the payment received will be applied to exercise your Subscription Rights to the fullest extent possible based on the amount of the payment received. Any excess subscription payments received by the Subscription Agent will be returned, without interest or penalty, as soon as practicable following the expiration of the Rights Offering.

Issuance of Common Stock

The shares of Common Stock that are purchased in the Rights Offering will be issued in book-entry, or uncertificated, form meaning that you will receive a direct registration (DRS) account statement from our transfer agent reflecting ownership of these securities if you are a holder of record of shares. If you hold your shares of Common Stock in the name of a custodian bank, broker, dealer, or other nominee, DTC will credit your account with your nominee with the securities you purchased in the Rights Offering.

Subscription Agent

The Subscription Agent for the Rights Offering is Corporate Stock Transfer, Inc. The address to which Subscription Rights Statements and payments should be mailed or delivered by overnight courier is provided below. If sent by

mail, we recommend that you send documents and payments by registered mail, properly insured, with return receipt requested, and that you allow a sufficient number of days to ensure delivery to the Subscription Agent before the Rights Offering expires. Do not send or deliver these materials to us.

By Mail or Hand or Overnight Courier:

Corporate Stock Transfer, Inc.

3200 Cherry Creek Drive South, Suite 430

Denver, Colorado 80209

If you deliver the Subscription Rights Statements in a manner different than that described in this prospectus, we may not honor the exercise of your Subscription Rights.

Questions

You should direct any questions or requests for assistance concerning the method of subscribing for the shares of our Common Stock or for additional copies of this prospectus to CG Capital as follows:

CG Capital
271 17th Street NW, Suite 530

Atlanta, GA 30363

Attention: Rich Cockrell
Email: rich@cg.capital
Telephone: (877) 889-1972

No Fractional Shares

We will not issue fractional shares of Common Stock in the Rights Offering. Rights holders will only be entitled to purchase a whole number of shares of Common Stock, rounded down to the nearest whole number of Shares a holder would otherwise be entitled to purchase. Any excess subscription payments received by the Subscription Agent will be returned as soon as practicable after expiration of the Rights Offering, without interest or penalty.

Notice to Brokers and Nominees

If you are a broker, dealer, bank, or other nominee holder that holds shares of our Common Stock for the account of others on the Record Date, you should notify the beneficial owners of the shares for whom you are the nominee of the Rights Offering as soon as possible to learn their intentions with respect to exercising their Subscription Rights. If a beneficial owner of our Common Stock so instructs, you should complete the Subscription Rights Statement and submit it to the Subscription Agent with the proper subscription payment by the expiration date. You may exercise the number of Subscription Rights to which all beneficial owners in the aggregate otherwise would have been entitled had they been direct holders of our Common Stock on the Record Date, provided that you, as a nominee record holder, make a proper showing to the Subscription Agent by submitting the form entitled "Nominee Holder Certification," which is provided with your Rights Offering materials. If you did not receive this form, you should contact our Subscription Agent to request a copy.

Validity of Subscriptions

We will resolve all questions regarding the validity and form of the exercise of your Subscription Rights, including time of receipt and eligibility to participate in the Rights Offering. Our determination will be final and binding. Once made, subscriptions are irrevocable; we will not accept any alternative, conditional, or contingent subscriptions. We reserve the absolute right to reject any subscriptions not properly submitted or the acceptance of which would be unlawful. You must resolve any irregularities in connection with your subscriptions before the expiration date of the Rights Offering, unless we waive them in our sole discretion. Neither we nor the Subscription Agent is under any duty to notify you or your representative of defects in your subscriptions. A subscription will be considered accepted, subject to our right to withdraw or terminate the Rights Offering, only when the Subscription Agent receives a properly completed and duly executed Subscription Rights Statement and any other required documents and the full subscription payment. Our interpretations of the terms and conditions of the Rights Offering will be final and binding.

Stockholder Rights

You will have no rights as a holder of the shares of our Common Stock you purchase in the Rights Offering until shares are issued in book-entry form or your account at your broker, dealer, bank, or other nominee is credited with the shares of our Common Stock purchased in the Rights Offering.

Foreign Stockholders

We will not mail this prospectus or Subscription Rights Statements to stockholders with addresses that are outside the United States or that have an army post office or foreign post office address. The Subscription Agent will hold these Subscription Rights Statements for their account. To exercise Subscription Rights, our foreign stockholders must notify the Subscription Agent prior 5:00 PM Eastern Time, on June 13, 2018, the third business day prior to the expiration date, of your exercise of Subscription Rights and provide evidence satisfactory to us, such as a legal opinion from local counsel, that the exercise of such Subscription Rights does not violate the laws of the jurisdiction in which such stockholder resides and payment by a U.S. bank in U.S. dollars before the expiration of the offer. If no notice is received by such time or the evidence presented is not satisfactory to us, the Subscription Rights represented thereby will expire.

No Revocation or Change

Once you submit the Subscription Rights Statement or have instructed your nominee of your subscription request, you are not allowed to revoke or change the exercise or request a refund of monies paid. All exercises of Subscription Rights are irrevocable, even if you learn information about us that you consider to be unfavorable. You should not exercise your Subscription Rights unless you are certain that you wish to purchase shares at the Subscription Price.

U.S. Federal Income Tax Treatment of Rights Distribution

For U.S. federal income tax purposes, we intend to take the position that holders of shares of our Common Stock should not recognize income or loss upon receipt or exercise of a Subscription Right. See “Material U.S. Federal Income Tax Consequences” beginning on page 30.

No Recommendation to Rights Holders

Our board of directors is not making a recommendation regarding your exercise of the Subscription Rights. Stockholders who exercise Subscription Rights risk investment loss on money invested. We cannot assure you that the market price of our Common Stock will reach or exceed the Subscription Price, and even if it does so, that it will not decline during or after the Rights Offering. We also cannot assure you that you will be able to sell shares of our Common Stock purchased in the Rights Offering at a price equal to or greater than the Subscription Price. You should make your investment decision based on your assessment of our business and financial condition, our prospects for the future and the terms of this Rights Offering. Please see “Risk Factors” for a discussion of some of the risks involved in investing in our Common Stock.

Fees and Expenses

We will pay all fees charged by the Subscription Agent. You are responsible for paying any other commissions, fees, taxes or other expenses incurred in connection with the exercise of your Subscription Rights.

Listing

The Subscription Rights may not be sold, transferred, assigned or given away to anyone, and will not be listed for trading on any stock exchange or market.

Important

Please follow the directions regarding delivery of Subscription Rights Statements and payments described above. Do not send Subscription Rights Statements directly to us. You are responsible for choosing the payment and delivery method for your Subscription Rights Statement and you bear the risks associated with such delivery. If you choose to deliver your Subscription Rights Statement and payment by mail, we recommend that you use registered mail, properly insured, with return receipt requested. We also recommend that you allow a sufficient number of days to ensure delivery to the Subscription Agent prior to the expiration time.

DESCRIPTION OF THE RESTRUCTURING

Restructuring Agreement

Below is a summary of the material terms of the Restructuring Agreement, the Charter Amendment, the Investor Rights Agreement, and the Registration Rights Agreement. This summary is subject to and qualified in its entirety by copies of the Restructuring Agreement, the Charter Amendment, the Investor Rights Agreement, and the Registration Rights Agreement, filed as Exhibits 10.65, 3.1, 4.7, 4.8, respectively, to the registration statement that includes this prospectus. You should review a copy of the Restructuring Agreement, the Charter Amendment, the Investor Rights Agreement and the Registration Rights Agreement for a complete description of the terms and conditions applicable each.

On January 17, 2018, the Investors converted certain Notes issued to the Investors in January 2017 in the aggregate principal amount of \$1.627 million, plus accrued and unpaid interest, at the \$0.7589 per share conversion rate originally provided thereunder, into 2,275,745 shares of Common Stock (or approximately 189,645 shares of Common Stock after giving effect to the 1-for-12 reverse stock split). After completion of the Tier 1 Transaction, following approval by the stockholders, and after completion of the 1-for-12 reverse stock split, the remaining \$70.238 million aggregate principal amount of the Notes held by the Noteholders, plus accrued and unpaid interest, were exchanged for newly-issued shares of Common Stock at an exchange rate of 138.8889 shares per \$1,000 principal amount of Notes, for an exchange price of \$7.20 per share. The Remaining Notes were exchanged for approximately 10.4 million newly-issued shares of Common Stock in the Tier 2 Transaction. Furthermore, on February 14, 2018, the Company entered into a Securities Purchase Agreement with the Investors. Pursuant to the Securities Purchase Agreement, on February 14, 2018, the Investors purchased from the Company in a private placement, simultaneously with the consummation of the Tier 2 Transaction, an aggregate of \$6,809,896 of Common Stock at a price per share of \$7.20, or 945,819 shares of Common Stock. Immediately following the consummation of the Restructuring on February 14, 2018, the Investors owned, in the aggregate, approximately 70.4%, and the Noteholders owned, in the aggregate, approximately 88.5%, of the outstanding Common Stock of the Company. Consequently, existing non-Noteholder stockholders of the Company owned approximately 11.3% of the Company's outstanding Common Stock immediately following the consummation of the Restructuring.

The primary purposes of our entry into the Restructuring Agreement and the Rights Offering are to reform our capital structure, meet our liquidity needs, to reposition the Company for long-term growth, and to regain compliance with NYSE American LLC (formerly the NYSE MKT) listing standards. In conjunction with the consummation of the Restructuring, the Company regained compliance with NYSE American listing standards on February 15, 2018.

Actions Required to Be Completed On the Closing of the Restructuring Agreement.

In addition to other standard obligations, approvals and securities filings that the Company needed to complete under the terms of the Restructuring Agreement, the following actions were required to be completed or delivered by or at the final closing of the Restructuring:

Stockholder Approval

At the Special Meeting of Stockholders, held on February 13, 2018, our stockholders (1) approved the issuance of shares of Common Stock for purposes of Section 713(a) and 713(b) of the NYSE American Company Guide (2) approved an amendment to our certificate of incorporation to effect a reverse stock split of the Common Stock at a ratio of 1:12 and to change the number of authorized shares of common stock and preferred stock available for issuance, as requested by the Investors pursuant to the Restructuring Agreement; and (3) elected six directors to serve on the Company's Board of Directors, effective upon the closing of the Restructuring on February 14, 2018, until their respective successors have been duly elected and qualified. All three of these proposals, or the Proposals, were required in order to complete the Restructuring.

Upon stockholder approval of the Proposals, the Noteholders fully converted the Notes into shares of Common Stock. Based on the number of shares of our common stock outstanding at the closing of the Restructuring, upon the full conversion and exercise of their Notes at the initial conversion prices and issuance of shares of the Company's Common Stock in the Private Placement, on February 14, 2018, the Investors (ROS and OrbiMed) owned approximately 70.4% of our outstanding Common Stock. Our existing non-Noteholder stockholders were significantly diluted, from an ownership standpoint, as a result of the Restructuring.

For so long as the Investors are significant stockholders, the Investors and their affiliates may exercise significant influence over our management and affairs, including influence beyond what is expressly permitted under the Restructuring documents. The Investors and their affiliates also will be able to strongly influence or determine all matters requiring stockholder approval, regardless of whether or not other stockholders believe that a potential transaction is in their own best interests. In any of these matters, the interests of the Investors and their affiliates may differ or conflict with your interests.

The high concentration of stock ownership in one stockholder may also directly or indirectly deter hostile takeovers, delay or prevent changes in control or changes in management, or limit the ability of our other stockholders to approve transactions that they may deem to be in our best interests. Additionally, the trading price of our Common Stock may be adversely effected to the extent investors perceive a disadvantage in owning stock of a company with a significant stockholder.

Charter Amendment

On February 13, 2018, following the Special Meeting, the Company filed with the Secretary of State of the State of Delaware a Certificate of Amendment to its Certificate of Incorporation that (i) effected a reverse stock split at a ratio of 1-for-12 on February 14, 2018 and (ii) changed the number of authorized shares of Common Stock and preferred stock available for issuance.

Registration Rights Agreement

Effective February 14, 2018, the Company entered into a Registration Rights Agreement with the Noteholders. Upon demand by the Noteholders, the Registration Rights Agreement requires us to, among other things, file with the SEC a shelf registration statement (which, initially, will be on Form S-1 and, as soon as we are eligible, on Form S-3) covering the resale, from time to time, of the Common Stock issuable upon conversion or exchange of the Notes within 90 days of such demand and use our best efforts to cause the shelf registration statement to become effective under the Securities Act no later than the 180th day after such demand.

Investor Rights Agreement

Effective February 14, 2018, the Company entered into an Investor Rights Agreement with OrbiMed and ROS. Under the Investor Rights Agreement, ROS and OrbiMed are permitted to nominate a majority of the directors and designate

the chairperson of the Board at subsequent annual meetings, as long as they maintain an ownership threshold in the Company of at least 40% of the then outstanding Common Stock, or the Ownership Threshold. If ROS and OrbiMed are unable to maintain the Ownership Threshold, the Investor Rights Agreement contemplates a reduction of nomination rights commensurate with the Company ownership interests.

For so long as the Ownership Threshold is met, the Company must obtain the approval of a majority of the common stock held by ROS and OrbiMed to proceed with the following actions: (i) issue new securities; (ii) incur over \$250,000 of debt in a fiscal year; (iii) sell or transfer over \$250,000 of assets or businesses of the Company or its subsidiaries in a fiscal year; (iv) acquire over \$250,000 of assets or properties in a fiscal year; (v) make capital expenditures over \$125,000 individually, or \$1,500,000 in the aggregate during a fiscal year; (vi) approve the Company's annual budget; (vii) hire or terminate the Company's chief executive officer; (viii) appoint or remove the chairperson of the Board; and (ix) make, loans to, investments in, or purchase, or permit any subsidiary to purchase, any stock or other securities in another entity in excess of \$250,000 in a fiscal year. As long as the Ownership Threshold is met, the Company may not increase the size of the Board beyond seven directors without the approval of a majority of the directors nominated by ROS and OrbiMed.

The Investor Rights Agreement grants OrbiMed, ROS, PWPI and PWIMF the right to purchase from the Company a pro rata amount of any new securities that the Company may propose to issue and sell. The Investor Rights Agreement may be terminated (a) upon the mutual written agreement of all the parties, (b) upon written notice of the Company, ROS or OrbiMed if ROS and OrbiMed's ownership percentage of the then outstanding Common Stock is less than 10%, or (c) upon written notice of ROS and OrbiMed. PWPI and PWIMF's right to purchase from the Company a pro rata amount of any new securities will also terminate at such time as their aggregate ownership percentage of the then outstanding Common Stock is less than 8.5%.

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES

The following discussion is a summary of material U.S. federal income tax consequences relating to the receipt and exercise (or expiration) of the Subscription Rights acquired through the Rights Offering and the ownership and disposition of shares of our Common Stock. The legal conclusions as to matters of U.S. federal income tax law included in the following discussion constitute the opinion of our counsel, Ballard Spahr LLP. In this section, all references to “we” and “our” refer to the Company and not to Ballard Spahr LLP.

This summary deals only with Subscription Rights acquired through the Rights Offering and shares of our Common Stock acquired upon exercise of Subscription Rights that are held, in each case, as capital assets. This discussion does not address all aspects of U.S. federal income taxation that may be relevant to such a beneficial owner in light of their personal circumstances, including the alternative minimum tax and the Medicare contribution tax on investment income. This discussion also does not address tax consequences to holders that may be subject to special tax rules, including, without limitation, insurance companies, real estate investment trusts, regulated investment companies, grantor trusts, tax-exempt organizations, employee stock purchase plans, partnerships and other pass-through entities, persons holding Subscription Rights or shares of our Common Stock as part of a hedging, integrated, conversion or constructive sale transaction or a straddle, financial institutions, brokers, dealers in securities or currencies, traders that elect to mark-to-market their securities, persons that acquired Subscription Rights or shares of our Common Stock in connection with employment or other performance of services, U.S. Holders (as defined below) that have a functional currency other than the U.S. dollar, U.S. expatriates, and certain former citizens or residents of the United States. In addition, the discussion does not describe any tax consequences arising out of the tax laws of any state, local or foreign jurisdiction, or any U.S. federal tax considerations other than income taxation (such as estate, generation skipping or gift taxation).

The discussion below is based upon the provisions of the Internal Revenue Code of 1986, as amended, or the Code, the United States Treasury regulations promulgated thereunder, rulings and judicial decisions, as of the date hereof, and such authorities may be repealed, revoked or modified, perhaps retroactively. We have not sought, and will not seek, any rulings from the Internal Revenue Service, or the IRS, regarding the matters discussed below. There can be no assurance that the IRS or a court (if the matter were contested) will not take positions concerning the tax consequences of the receipt of Subscription Rights acquired through the Rights Offering by persons holding shares of our Common Stock, the exercise (or expiration) of the Subscription Rights, the acquisition, ownership and disposition of shares of our Common Stock that are different from those discussed below.

As used herein, a “U.S. Holder” means a beneficial owner of shares of our Common Stock or Subscription Rights, that is for U.S. federal income tax purposes: (1) an individual who is a citizen or resident of the United States; (2) a domestic corporation; (3) an estate the income of which is subject to U.S. federal income taxation regardless of its source; or (4) a trust (a) the administration of which is subject to the primary supervision of a court within the United States and one or more United States persons have authority to control all substantial decisions of the trust or (b) that has a valid election under the Treasury Regulations in effect to be treated as a United States person. A “Non-U.S.

Holder” is such a beneficial owner (other than an entity or arrangement that is treated as a partnership for U.S. federal income tax purposes) that is not a U.S. Holder.

If any entity or arrangement that is treated as a partnership for U.S. federal income tax purposes is the record owner, the U.S. federal income tax treatment of a partner generally will depend upon the status of the partner and the activities of the partnership. Holders that are partnerships (and partners in such partnerships) are urged to consult their own tax advisors.

HOLDERS OF SHARES OF OUR COMMON STOCK SHOULD CONSULT THEIR OWN TAX ADVISORS REGARDING THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS AND THE CONSEQUENCES UNDER FEDERAL ESTATE AND GIFT TAX LAWS, FOREIGN, STATE AND LOCAL LAWS AND TAX TREATIES OF THE RECEIPT, OWNERSHIP AND EXERCISE OF SUBSCRIPTION RIGHTS AND THE ACQUISITION, OWNERSHIP AND DISPOSITION OF SHARES OF OUR COMMON STOCK.

Tax Consequences to U.S. Holders

Taxation of Subscription Rights

Receipt of Subscription Rights

Although the authorities governing transactions such as this Rights Offering are complex and do not speak directly to the consequences of certain aspects of this Rights Offering or the distribution of Subscription Rights and the effects of the Over-Subscription Privilege, we do not believe your receipt of Subscription Rights pursuant to the Rights Offering should be treated as a taxable distribution with respect to your existing shares of Common Stock for U.S. federal income tax purposes. Pursuant to Section 305(a) of the Code, in general, the receipt by a stockholder of a right to acquire stock should not be included in the taxable income of the recipient. The general rule of non-recognition in Section 305(a) is subject to exceptions in Section 305(b), which include “disproportionate distributions.” A disproportionate distribution is a distribution or a series of distributions, including deemed distributions, that has the effect of the receipt of cash or other property by some stockholders or holders of debt instruments convertible into stock and an increase in the proportionate interest of other stockholders in a corporation’s assets or earnings and profits. During the last 36 months, we have not made any distributions of cash or non-stock property with respect to our Common Stock. In addition, within the last 36 months, we have not made any distributions of cash or non-stock property on previously outstanding convertible notes. Currently we do not intend to make any future distributions of cash or non-stock property with respect to our Common Stock; however, there is no guarantee that we will not make such distributions in the future. Further, the fact that we have outstanding options could cause, under certain circumstances that cannot currently be predicted (such as a failure to properly adjust the option price in connection with a stock distribution), the receipt of Subscription Rights pursuant to this Rights Offering to be part of a disproportionate distribution, as contemplated in Section 305(b) of the Code.

Our position regarding the tax-free treatment of the Subscription Rights distribution is not binding on the IRS or the courts. If this position is finally determined by the IRS or a court to be incorrect, whether on the basis that the issuance of the Subscription Rights is a “disproportionate distribution” or otherwise, the fair market value of the Subscription Rights will be taxable to holders of our Common Stock as a dividend to the extent of the holder’s pro rata share of our current and accumulated earnings and profits, if any. Any excess will be treated as a return of capital to the extent thereof and then as capital gain. Although no assurance can be given, it is anticipated that we will not have current and accumulated earnings and profits through the end of 2018.

The following discussion is based upon the treatment of the Subscription Rights issuance as a non-taxable distribution with respect to your existing shares of Common Stock for U.S. federal income tax purposes.

Tax Basis in the Subscription Rights

If the fair market value of the Subscription Rights you receive is less than 15% of the fair market value of your existing shares of Common Stock (with respect to which the Subscription Rights are distributed) on the date you receive the Subscription Rights, the Subscription Rights will be allocated a zero dollar basis for U.S. federal income tax purposes, unless you elect to allocate your basis in your existing shares of Common Stock between your existing shares of Common Stock and the Subscription Rights in proportion to the relative fair market values of the existing shares of Common Stock and the Subscription Rights, determined on the date of receipt of the Subscription Rights. If you choose to allocate basis between your existing common shares and the Subscription Rights, you must make this election on a statement included with your timely filed tax return (including extensions) for the taxable year in which you receive the Subscription Rights. Such an election is irrevocable.

However, if the fair market value of the Subscription Rights you receive is 15% or more of the fair market value of your existing shares of Common Stock on the date you receive the Subscription Rights, then you must allocate your basis in your existing shares of Common Stock between those shares and the Subscription Rights you receive in proportion to their fair market values determined on the date you receive the Subscription Rights.

The fair market value of the Subscription Rights on the date that the Subscription Rights are distributed is uncertain, and we have not obtained, and do not intend to obtain, an appraisal of the fair market value of the Subscription Rights on that date. In determining the fair market value of the Subscription Rights, you should consider all relevant facts and circumstances, including any difference between the Subscription Price of the Subscription Rights and the trading price of our shares of Common Stock on the date that the Subscription Rights are distributed, the length of the period during which the Subscription Rights may be exercised and the fact that the Subscription Rights are non-transferable. Holders of shares of our Common Stock should consult with their own tax advisors regarding their tax basis in shares of our Common Stock and Subscription Rights received.

Exercise of Subscription Rights

Generally, you will not recognize gain or loss upon the exercise of a Subscription Right acquired in the Rights Offering. Your initial tax basis in Common Stock acquired pursuant to the exercise of a Subscription Right will equal the subscription price you pay, plus the tax basis, if any, in the subscription right you exercised, determined as described in “Taxation of Subscription Rights – Tax Basis in the Subscription Rights” above. The holding period of shares of Common Stock acquired upon exercise of a Subscription Right in the Rights Offering will begin on the date of exercise.

If you exercise a Subscription Right received in the Rights Offering after disposing of the shares of our Common Stock with respect to which such Subscription Right is received, then certain aspects of the tax treatment of the exercise of the Subscription Right are unclear, including (1) the allocation of the tax basis between the shares of Common Stock previously sold and the Subscription Right, (2) the impact of such allocation on the amount and

timing of gain or loss recognized with respect to the shares of our Common Stock previously sold and (3) the impact of such allocation on the tax basis of the shares of our Common Stock acquired upon exercise of the Subscription Right. If you exercise a Subscription Right received in the Rights Offering after disposing of shares of our Common Stock with respect to which the Subscription Right is received, you should consult with your own tax advisor.

Expiration of Subscription Rights

If you allow Subscription Rights received in the Rights Offering to expire, you should not recognize any gain or loss for U.S. federal income tax purposes, and you should re-allocate any portion of the tax basis in your existing Common Stock previously allocated to the Subscription Rights that have expired to the existing Common Stock.

Taxation of Common Stock

Distributions

Distributions with respect to shares of our Common Stock acquired upon exercise of Subscription Rights will be taxable as dividend income when actually or constructively received to the extent of our current or accumulated earnings and profits as determined for U.S. federal income tax purposes.

Dividend income received by certain non-corporate U.S. Holders with respect to shares of our Common Stock generally will be “qualified dividends” subject to preferential rates of U.S. federal income tax, provided that the U.S. Holder meets applicable holding period and other requirements. Subject to similar exceptions for short-term and hedged positions, dividend income on our shares of Common Stock paid to U.S. Holders that are domestic corporations generally will qualify for the dividends-received deduction. To the extent that the amount of a distribution exceeds our current and accumulated earnings and profits, such distribution will be treated first as a tax-free return of capital to the extent of your adjusted tax basis in such shares of our Common Stock and thereafter as capital gain.

Dispositions

If you sell or otherwise dispose of shares of Common Stock acquired upon exercise of Subscription Rights in a taxable transaction, you will generally recognize capital gain or loss equal to the difference between the amount realized and your adjusted tax basis in the shares. Such capital gain or loss will be long-term capital gain or loss if your holding period for such shares is more than one year at the time of disposition. Long-term capital gain of a non-corporate U.S. Holder is generally taxed at preferential rates of U.S. federal income tax. The deductibility of capital losses is subject to limitations.

Information Reporting and Backup Withholding

You may be subject to information reporting and backup withholding with respect to the gross proceeds from the disposition of shares of our Common Stock acquired through the exercise of Subscription Rights or dividend payments. Backup withholding (currently at the rate of 24%) may apply under certain circumstances if you (1) fail to furnish a correct social security or other taxpayer identification number, or TIN, (2) fail to report interest or dividends properly or (3) fail to provide a certified statement, signed under penalty of perjury, that the TIN provided is correct, that you are not subject to backup withholding and that you are a U.S. person for U.S. federal income tax purposes on IRS Form W-9. Any amount withheld from a payment under the backup withholding rules is allowable as a credit against (and may entitle you to a refund with respect to) your U.S. federal income tax liability, provided that the required information is timely furnished to the IRS. Certain persons are exempt from information reporting and backup withholding, including corporations and certain financial institutions, provided that they demonstrate this fact, if requested. You are urged to consult your own tax advisor as to your qualification for exemption from backup withholding and the procedure for obtaining such exemption.

Tax Consequences to Non-U.S. Holders

Taxation of the Subscription Rights

Receipt, Exercise and Expiration of the Subscription Rights

The discussion below assumes that the receipt of Subscription Rights will be treated as a non-taxable distribution. See “Tax Consequences to U.S. Holders—Taxation of Subscription Rights—Receipt of Subscription Rights” above. You will not be subject to the U.S. federal income tax for exercise or expiration of the subscription rights. See “Tax Consequences to U.S. Holders—Taxation of Subscription Rights—Exercise of Subscription Rights” and “Tax Consequences to U.S. Holders—Taxation of Subscription Rights—Expiration of Subscription Rights” above.

Taxation of Distributions on Common Stock

Any distributions of cash or property made with respect to our Common Stock generally will be subject to withholding tax to the extent paid out of our current or accumulated earnings and profits as determined for U.S. federal income tax purposes, if any, at a rate of 30% (or a lower rate prescribed by an applicable income tax treaty). In order to obtain a reduced withholding tax rate, if applicable, you will be required to provide a properly completed IRS Form W-8BEN or IRS Form W-8BEN-E, as applicable, certifying your entitlement to benefits under a treaty. In addition, you will not be subject to withholding tax if you provide an IRS Form W-8ECI certifying that the distributions are effectively connected with your conduct of a trade or business within the United States (and, if an applicable income tax treaty so provides, are attributable to a permanent establishment within the United States); instead, you generally will be subject to U.S. federal income tax, net of certain deductions, with respect to such income at the same rates applicable to U.S. persons. If you are a corporation, a “branch profits tax” of 30% (or a lower rate prescribed by an applicable income tax treaty) also may apply to effectively connected earnings and profits.

Any distribution will also be subject to the discussion below under the headings “Information Reporting and Backup Withholding” and “FATCA.”

Sale or Other Disposition of Our Common Stock

Subject to the discussion below regarding backup withholding and FATCA, you generally will not be subject to U.S. federal income tax on any gain realized on a sale or other disposition of shares of our Common Stock unless:

the gain is effectively connected with your conduct of a trade or business within the United States (and, if an applicable income tax treaty so provides, is attributable to a permanent establishment in the United States);

you are an individual, you hold your Subscription Rights and shares of Common Stock as capital assets, you are present in the United States for 183 days or more in the taxable year of disposition and certain other conditions are met (in which case you will be subject to a 30% tax, or such lower rate as may be specified by an applicable income tax treaty, on the net gain derived from the disposition, which may be offset by your U.S.-source capital losses, if any); or

we are, or have been, a “United States real property holding corporation,” or USRPHC, for U.S. federal income tax purposes at any time within the shorter of the five-year period preceding the disposition and your holding period for our Common Stock (the “relevant period”) and you (i) dispose of our Common Stock during a calendar year when our Common Stock is no longer regularly traded on an established securities market or (ii) owned (directly, indirectly,

and constructively) more than 5% of our common stock at any time during the relevant period (in which case you will be subject to tax on the gain on the disposition of shares of our Common Stock generally as if the gain were effectively connected with the conduct of a trade or business in the United States, except that the “branch profits tax” will not apply).

Gain that is effectively connected with your conduct of a trade or business within the United States (and, if an applicable income tax treaty so provides, is attributable to a permanent establishment within the United States) generally will be subject to U.S. federal income tax, net of certain deductions, at the same rates applicable to U.S. persons. If you are a corporation, a “branch profits tax” of 30% (or a lower rate prescribed in an applicable income tax treaty) also may apply to such effectively connected gain.

A domestic corporation is treated as a USRPHC if the fair market value of its United States real property interests equals or exceeds 50% of the sum of (1) the fair market value of its United States real property interests, (2) the fair market value of its non-United States real property interests and (3) the fair market value of any other of its assets which are used or held for use in a trade or business. We believe that we are not currently, and have not been within the relevant period, a USRPHC. However, no assurance can be given that we will not become a USRPHC in the future. You are urged to consult your own tax advisor regarding the U.S. federal income tax considerations that could result if we are, or become, a USRPHC.

Information Reporting and Backup Withholding

Distributions on our Common Stock paid to each non-U.S. Holder and the amount of tax withheld, if any, with respect to such distributions will generally be subject to information reporting. Copies of these reports may be made available to tax authorities in the country where the non-U.S. Holder resides. If you comply with certification procedures to establish that you are not a United States person, backup withholding should not generally apply to distributions on our Common Stock and information reporting and backup withholding should not generally apply to the proceeds from a sale or other disposition of our Common Stock. Generally, a Non-U.S. Holder will comply with such procedures if it provides a properly executed IRS Form W-8BEN or W-8BEN-E, as applicable, (or other applicable IRS Form W-8) or otherwise meets documentary evidence requirements for establishing that it is a Non-U.S. Holder, or otherwise establishes an exemption. The amount of any backup withholding will generally be allowed as a refund or credit against your U.S. federal income tax liability, provided that the required information is timely furnished to the IRS.

FATCA

Payments of dividends on our Common Stock and, starting in 2019, payments of the gross proceeds from a sale or exchange of our Common Stock or other securities to a Non-U.S. Holder will be subject to a 30% withholding tax if the Non-U.S. Holder fails to provide the withholding agent with documentation sufficient to show that it is compliant with FATCA. Generally such documentation is provided on an executed and properly completed IRS Form W-8BEN or IRS Form W-8BEN-E, as applicable. If dividends are subject to the 30% withholding tax under FATCA, they will not be subject to the 30% withholding tax described above under “Tax Consequences to Non-U.S. Holders—Taxation of Distributions on Common Stock.”

THE PRECEDING DISCUSSION OF MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES IS NOT TAX ADVICE. HOLDERS OF SUBSCRIPTION RIGHTS, SHARES OF OUR COMMON STOCK SHOULD CONSULT THEIR OWN TAX ADVISORS REGARDING THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS AND THE CONSEQUENCES UNDER FEDERAL ESTATE AND GIFT TAX LAWS, FOREIGN, STATE AND LOCAL LAWS AND TAX TREATIES OF THE RECEIPT, OWNERSHIP AND EXERCISE OF SUBSCRIPTION RIGHTS AND THE ACQUISITION, OWNERSHIP AND DISPOSITION OF SHARES OF OUR COMMON STOCK.

DESCRIPTION OF SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplement, summarizes the material terms and provisions of our Common Stock and preferred stock. For the complete terms of our Common Stock and preferred stock, please refer to our Amended and Restated Certificate of Incorporation and Second Amended and Restated Bylaws that are filed as exhibits to the registration statement that includes this prospectus. The Delaware General Corporation Law may also affect the terms of our Common Stock and preferred stock.

Authorized and Outstanding Capital Stock

Our Amended and Restated Certificate of Incorporation provides that we have authority to issue (i) 50,000,000 shares of Common Stock, par value \$0.000001 per share, 13,077,468 of which are issued and outstanding as of March 31, 2018, after giving effect to the Restructuring and the 1-for-12 reverse stock split, and (ii) 10,000,000 shares of preferred stock, par value \$0.000001 per share, none of which are issued and outstanding as of the date of this prospectus. As of March 31, 2018, after giving effect to the Restructuring and the 1-for-12 reverse stock split, we also had outstanding warrants to purchase approximately 519,917 shares of our Common Stock and 135,042 shares authorized for issuance under our Amended and Restated Equity Incentive Plan.

Common Stock

Principal Market for our Common Stock

Our Common Stock is listed on NYSE American under the symbol “XTNT.”

Dividends

Our board of directors may authorize, and we may make, distributions to our stockholders, subject to any restriction in our Amended and Restated Certificate of Incorporation and to those limitations prescribed by law and contractual restrictions. Subject to preferences that may apply to any shares of preferred stock outstanding at the time, the holders of our Common Stock will be entitled to share equally, identically and ratably in any dividends that our board of

directors may determine to issue from time to time. However, we have never paid cash dividends on our Common Stock or any other securities. We anticipate that we will retain all of our future earnings, if any, for use in the expansion and operation of our business and do not anticipate paying any cash dividends in the foreseeable future.

Fully Paid and Non-Assessable

All shares of our outstanding Common Stock are fully paid and non-assessable.

Voting Rights

Each share of our Common Stock is entitled to one vote in each matter submitted to a vote at a meeting of stockholders, including in all elections for directors. Stockholders are not entitled to cumulative voting in the election for directors. Our stockholders may vote either in person or by proxy. Except in respect of matters relating to the election of directors and as otherwise provided in our Amended and Restated Certificate of Incorporation or required by law, all matters to be voted on by our stockholders must be approved by holders of a majority of the shares present in person or by proxy at the meeting and entitled to vote on the subject matter. In the case of election of directors, all matters to be voted on by our stockholders must be approved by a plurality of the votes entitled to be cast by holders of all outstanding shares of Common Stock.

Preemptive and Other Rights

Holders of our Common Stock have no preemptive rights and have no other rights to subscribe for additional securities of ours under Delaware law, nor does our Common Stock have any conversion rights or rights of redemption. Upon liquidation, all holders of our Common Stock are entitled to participate pro rata in our assets available for distribution, subject to the rights of any class of preferred stock then outstanding.

Preferred Stock

Though we currently have no plans to issue any shares of preferred stock, our board of directors has the authority, without further action by our stockholders, to designate and issue up to 10,000,000 shares of preferred stock in one or more series. Our board of directors may also designate the rights, preferences and privileges of the holders of each such series of preferred stock, any or all of which may be greater than or senior to those granted to the holders of Common Stock. Though the actual effect of any such issuance on the rights of the holders of Common Stock will not be known until our board of directors determines the specific rights of the holders of preferred stock, the potential effects of such an issuance include:

diluting the voting power of the holders of Common Stock;

reducing the likelihood that holders of Common Stock will receive dividend payments;

reducing the likelihood that holders of Common Stock will receive payments in the event of our liquidation, dissolution or winding up; and

delaying, deterring or preventing a change in control or other corporate takeover.

Anti-Takeover Provisions

Certificate of Incorporation and Bylaws

Because our stockholders do not have cumulative voting rights, our stockholders holding a majority of the shares of Common Stock outstanding will be able to elect all of our directors. Our Second Amended and Restated Bylaws provide that only our board of directors, Chairman of the board or Chief Executive Officer may call a special meeting of stockholders.

The combination of these factors, in addition to the fact that we are a “controlled company” within the meaning of the corporate governance standards of the NYSE American, will make it more difficult for our existing stockholders to replace our board of directors as well as for another party to obtain control of us by replacing our board of directors. Since our board of directors has the power to retain and discharge our officers, these provisions could also make it more difficult for existing stockholders or another party to effect a change in management. In addition, these provisions may have the effect of deterring hostile takeovers or delaying changes in our control or management. These provisions are designed to reduce our vulnerability to an unsolicited acquisition proposal. The provisions also are intended to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our stock and, as a consequence, they also may inhibit fluctuations in the market price of our stock that could result from actual or rumored takeover attempts.

Section 203 of the Delaware General Corporation Law

We have elected to be subject to Section 203 of the Delaware General Corporation Law (“Section 203”), and we are prohibited from engaging in any business combination with any interested stockholder for a period of three years after

the date that such stockholder became an interested stockholder, with the following exceptions:

before such date, the board of directors approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;

upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting shares outstanding at the time the transaction began, excluding for purposes of determining the voting shares outstanding (but not the outstanding voting shares owned by the interested stockholder) those shares owned (i) by persons who are directors and also officers and (ii) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

on or after such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66-2/3% of the outstanding voting shares that are not owned by the interested stockholder.

In general, Section 203 defines business combination to include the following:

any merger or consolidation involving the Company and the interested stockholder;

any sale, transfer, pledge or other disposition of 10% or more of the assets of the Company involving the interested stockholder;

subject to certain exceptions, any transaction that results in the issuance or transfer by the Company of any shares of the Company to the interested stockholder;

any transaction involving the Company that has the effect of increasing the proportionate share of the shares or any class or series of shares of the Company beneficially owned by the interested stockholder; or

the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits by or through the Company.

In general, by reference to Section 203, an “interested stockholder” is an entity or person who, together with the person’s affiliates and associates, beneficially owns, or within three years prior to the time of determination of interested stockholder status owned, 15% or more of the outstanding voting shares of the Company.

Limitations of Liability and Indemnification Matters

We have adopted provisions in our Amended and Restated Certificate of Incorporation that limit or eliminate the liability of our directors for monetary damages for breach of their fiduciary duties, except for a breach of the duty of loyalty to the Company or its stockholders, for acts or omissions not in good faith or involving intentional misconduct or a knowing violation of law, or for any transaction from which a director derived an improper personal benefit. Accordingly, our directors will not be personally liable for monetary damages for breach of their fiduciary duties as directors, except with respect to the following:

- any breach of their duty of loyalty to us or our stockholders;
- acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law; or
- any transaction from which the director derived an improper personal benefit.

This limitation of liability does not apply to liabilities arising under the federal securities laws and does not affect the availability of equitable remedies such as injunctive relief or rescission. If Delaware law is amended to authorize the further elimination or limiting of director liability, then the liability of our directors will be eliminated or limited to the fullest extent permitted by Delaware law as so amended.

Our Second Amended and Restated Bylaws provide for mandatory indemnification of directors and officers to the maximum extent allowed by applicable law. We believe that indemnification under our Second Amended and Restated Bylaws covers at least negligence and gross negligence on the part of indemnified parties. In addition, we have also entered into indemnification agreements with our directors and officers, pursuant to which we must:

- indemnify officers and directors against certain liabilities that may arise because of their status as officers and directors;
- advance expenses, as incurred, to officers and directors in connection with a legal proceeding subject to limited exceptions; and

·cover officers and directors under any general or directors' and officers' liability insurance policy maintained by us.

We also maintain directors' and officers' liability insurance. We believe that these provisions and agreements are necessary to attract and retain qualified persons as directors and executive officers. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling the Company pursuant to the foregoing provisions, the opinion of the SEC is that such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Transfer Agent

The transfer agent for our Common Stock is Corporate Stock Transfer, Inc.

PLAN OF DISTRIBUTION

On or about May 18, 2018, we will distribute the Subscription Rights, Subscription Rights Statements and copies of this prospectus to the holders of our Common Stock on the Record Date. Subscription Rights holders who wish to exercise their Subscription Rights and purchase Shares must complete the Subscription Rights Statement and return it with payment for the Shares to the Subscription Agent at the following address:

By Mail or Hand or Overnight Courier:
Corporate Stock Transfer, Inc.
3200 Cherry Creek Drive South, Suite 430
Denver, Colorado 80209

See “The Rights Offering—Methods for Exercising Subscription Rights.”

If you have any questions, you should contact CG Capital as follows:

CG Capital
271 17th Street NW, Suite 530

Atlanta, GA 30363

Attention: Rich Cockrell
Email: rich@cg.capital
Telephone: (877) 889-1972

The Subscription Rights are non-transferrable and will not be listed for trading on NYSE American or any other stock exchange or market. The shares of Common Stock issuable upon exercise of the Subscription Rights are listed on the NYSE American under the symbol “XTNT.”

We have agreed to pay the Subscription Agent customary fees plus certain expenses in connection with the Rights Offering. We have not employed any brokers, dealers or underwriters in connection with the solicitation of exercise of Subscription Rights, and we do not know of any existing agreements between any stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the Common Stock underlying the Subscription Rights.

Except as described in this section, we are not paying any other commissions, underwriting fees or discounts in connection with the Rights Offering. Some of our employees may solicit responses from you as a holder of Subscription Rights, but we will not pay our employees any commissions or compensation for these services other than their normal employment compensation. We estimate that our total expenses in connection with the Rights Offering will be approximately \$175,000.

LEGAL MATTERS

The validity of the Subscription Rights and the Common Stock issuable upon exercise of the Subscription Rights offered by this prospectus and certain U.S. federal income tax considerations pertaining to the Subscription Rights offered by this prospectus were passed upon for us by Ballard Spahr LLP.

EXPERTS

The financial statements for the years ended December 31, 2017 and 2016 incorporated by reference into this prospectus and registration statement have been audited by EKS&H LLLP, an independent registered public accounting firm, as set forth in their report thereon, dated April 2, 2018, appearing in our Annual Report on Form 10-K for the year ended December 31, 2017 and incorporated by reference into this prospectus and registration statement, and such report is included in reliance upon the authority of such firm as experts in accounting and auditing.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus.

We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC:

- our Annual Report on Form 10-K for the year ended December 31, 2017, filed on April 2, 2018, as amended;

our Current Reports on Form 8-K (other than portions thereof furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits accompanying such reports that are related to such items) filed on January 2, 2018, January 12, 2018, January 23, 2018, January 31, 2018, February 13, 2018, February 15, 2018 and February 16, 2018;

all documents filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, after the date of the initial filing of the registration statement of which this prospectus is a part and prior to the effectiveness of such registration statement; and

all documents filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date of this prospectus and before we stop offering the securities under this prospectus.

We are not, however, incorporating by reference any documents, or portions of documents, which are not deemed “filed” with the SEC.

You can obtain a copy of any or all of the documents incorporated by reference in this prospectus (other than an exhibit to a document unless that exhibit is specifically incorporated by reference into that document) from the SEC on its website at www.sec.gov. You may also obtain these documents from us, free of charge, by visiting our internet website www.xtantmedical.com or by writing to us or calling us at the following address and phone number:

Xtant Medical Holdings, Inc.
600 Cruiser Lane
Belgrade, Montana 59714
Attn: Corporate Secretary
(406) 388-0480

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement under the Securities Act that registers the distribution of the securities offered under this prospectus. The registration statement, including the attached exhibits and schedules and the information incorporated by reference, contains additional relevant information about us and the securities. The rules and regulations of the SEC allow us to omit from this prospectus certain information included in the registration statement. In addition, we file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy this information and the registration statement at the SEC’s Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference room.

You may also obtain the documents that we file electronically on the SEC's website at www.sec.gov or on our website at www.xtantmedical.com. Information contained on our website is not incorporated by reference herein and does not constitute part of this prospectus.

XTANT MEDICAL HOLDINGS, INC.

PROSPECTUS

Subscription Rights to Purchase Up to 1,137,515 Shares of Common Stock

, 2018

PART II — INFORMATION NOT REQUIRED IN PROSPECTUS**Item 13. Other Expenses of Issuance and Distribution.**

The following table sets forth all expenses, other than the underwriting discounts and commissions, payable by the registrant in connection with the sale of the common stock being registered. All the amounts shown are estimates except the SEC registration fee.

| | Amount to be paid |
|------------------------------|----------------------|
| SEC registration fee | \$ 1,020 |
| Printing expenses | \$ 5,000 |
| Accounting fees and expenses | \$ 10,000 |
| Legal fees and expenses | \$ 150,000 |
| Miscellaneous | \$ 9,000 |
| Total | \$ 175,020 |

Item 14. Indemnification of Directors and Officers.***Delaware General Corporation Law***

Section 145(a) of the General Corporation Law of the State of Delaware, (the “DGCL”), provides that a corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that the 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, partnership, joint venture, trust or other enterprise, against expenses (including attorneys’ fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person’s conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction or upon a plea of nolo contendere or its equivalent, shall not, of itself, create a presumption that the person did not act in good faith and in a manner which the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had reasonable cause to believe that the person’s conduct was unlawful.

Section 145(b) of the DGCL states that a corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that the 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, partnership, joint venture, trust or other enterprise against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which the person shall have been adjudged to be liable to the corporation unless and only to the extent that the Delaware Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, the person is fairly and reasonably entitled to indemnity for such expenses as the Delaware Court of Chancery or such other court shall deem proper.

Section 145(c) of the DGCL provides that to the extent that a present or former director or officer of a corporation has been successful on the merits or otherwise in defense of any action, suit or proceeding referred to in subsections (a) and (b) of Section 145, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith.

Section 145(d) of the DGCL states that any indemnification under subsections (a) and (b) of Section 145 (unless ordered by a court) shall be made by the corporation only as authorized in the specific case upon a determination that indemnification of the present or former director, officer, employee or agent is proper in the circumstances because the person has met the applicable standard of conduct set forth in subsections (a) and (b) of Section 145. Such determination shall be made with respect to a person who is a director or officer at the time of such determination (1) by a majority vote of the directors who are not parties to such action, suit or proceeding, even though less than a quorum, (2) by a committee of such directors designated by majority vote of such directors, even though less than a quorum, (3) if there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion or (4) by the stockholders.

Section 145(f) of the DGCL states that the indemnification and advancement of expenses provided by, or granted pursuant to, the other subsections of Section 145 shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity while holding such office.

Section 145(g) of the DGCL provides that a corporation shall have the power to purchase and maintain insurance on behalf of any person who 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, partnership, joint venture, trust or other enterprise, against any liability asserted against such person and incurred by such person in any such capacity or arising out of such person's status as such, whether or not the corporation would have the power to indemnify such person against such liability under the provisions of Section 145.

Section 145(j) of the DGCL states that the indemnification and advancement of expenses provided by, or granted pursuant to, Section 145 shall, unless otherwise provided when authorized or ratified, continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of the heirs, executors and administrators of such a person.

Certificate of Incorporation

The Company has adopted provisions in its Amended and Restated Certificate of Incorporation that limit director liability to the maximum extent permitted under the DGCL.

Bylaws

The Company's Second Amended and Restated Bylaws provide for the indemnification of directors and officers to the fullest extent permitted by applicable law.

Indemnification Agreements

We have entered into agreements with our directors and executive officers that require us to indemnify them against certain liabilities that may arise by reason of their status or service as directors or executive officers to the fullest extent not prohibited by Delaware law.

Insurance Policies

We have purchased an insurance policy that purports to insure our directors and officers against certain liabilities incurred by them in the discharge of their functions as directors and officers.

The foregoing description of our Amended and Restated Certificate of Incorporation, Second Amended and Restated Bylaws, 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 Securities and Exchange Commission 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 15. Recent Sales of Unregistered Securities

Aspire Capital Transaction

On April 17, 2015, the Company entered into an Amended and Restated Common Stock Purchase Agreement (the “Purchase Agreement”) with Aspire Capital Fund, LLC, an Illinois limited liability company (“Aspire Capital”), which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital is committed to purchase up to an aggregate of \$10.0 million of shares of the Company’s Common Stock (the “Purchase Shares”) over the 24-month term of the Purchase Agreement. Pursuant to the terms of the Purchase Agreement, we issued 207,182 shares of our Common Stock (not taking into account the 1-for-12 reverse stock split) (the “Initial Purchase Shares”) to Aspire Capital for \$750,000 in aggregate proceeds. We also issued 154,189 shares of our Common Stock (not taking into account the 1-for-12 reverse stock split) to Aspire Capital as a commitment fee (the “Commitment Shares”). Subsequent to the issuance of the Initial Purchase Shares and the Commitment Shares, pursuant to the Purchase Agreement, we issued 417,000 shares of our Common Stock (not taking into account the 1-for-12 reverse stock split) to Aspire Capital for \$1,387,439 in aggregate proceeds. The Purchase Agreement expired in accordance with its terms on April 17, 2017.

The issuance of the Initial Purchase Shares, the Commitment Shares and all other shares of Common Stock that were issued from time to time to Aspire Capital under the Purchase Agreement was exempt from registration under the Securities Act, pursuant to the exemption for transactions by an issuer not involving any public offering under Section 4(a)(2) of the Securities Act.

Other Sales of Unregistered Securities

In addition to the shares we issued to Aspire Capital pursuant to the Purchase Agreement, during the past three years, we issued unregistered securities as outlined below. Unless otherwise specifically noted, no commissions were paid in connection with the issuances described below and each issuance was effected pursuant to Section 4(a)(2) of the Securities Act, as a transaction by an issuer not involving any public offering.

Issuances of Capital Stock

On February 14, 2018, the Company entered into a Securities Purchase Agreement (the “Private Placement SPA”) with ROS and OrbiMed. Pursuant to the Private Placement SPA, on February 14, 2018, the Investors purchased (1) from the Company a total of 945,819 shares of the Company’s common stock at a price of \$7.20 per share, for aggregate proceeds of \$6,809,896. Under the Private Placement SPA, 603,687 of such shares of Common Stock were issued to ROS and 342,132 of such shares of Common Stock were issued to OrbiMed.

Effective January 17, 2017, we issued in a private placement to OrbiMed and ROS an aggregate principal amount of approximately \$1.6 million of 6.00% convertible senior unsecured promissory notes due in 2021. On January (2) 17, 2018, the Investors converted the aggregate principal amount of such notes, plus accrued and unpaid interest, into 2,275,745 shares of Common Stock (not taking into account the 1-for-12 reverse stock split) in the Tier 1 Transaction.

On November 17, 2016, we closed a rights offering, pursuant to which we sold an aggregate of 5,055,345 units, consisting of a total of 5,055,345 shares of common stock and 5,055,345 warrants (not taking into account the (3) 1-for-12 reverse stock split), with each warrant exercisable to purchase one share of common stock at an exercise price of \$0.90 for five years from the date of issuance. The subscription price was \$0.75 per unit, with gross proceeds of approximately \$3.8 million.

(4) On September 4, 2015, we issued 140,053 shares of our Common Stock (not taking into account the 1-for-12 reverse stock split) to certain directors for aggregate proceeds of \$515,395.

On July 31, 2015, in connection with our acquisition of X-spine, we issued 4,242,655 shares of our Common (5) Stock (not taking into account the 1-for-12 reverse stock split) at an assumed value of \$4.00 per share to the owners of the issued and outstanding shares of X-spine's capital stock.

Convertible Note Financing

(1) On April 14, 2016, we issued in a private placement to the OrbiMed purchasers an aggregate principal amount of approximately \$2.2 million of 6.00% convertible senior promissory notes due 2021.

(2) On July 31, 2015, we issued 6.00% convertible senior unsecured notes due 2021 ("Notes") to qualified institutional buyers for an aggregate principal amount of \$65 million, and on August 10, 2015, we issued additional Notes in the aggregate principal amount of \$3 million pursuant to the initial purchaser's partial exercise of its over-allotment option.

After completion of the Tier 1 Transaction, following approval by the stockholders, and after completion of the 1-for-12 reverse stock split, the aggregate principal amount of the notes referenced in (4) and (5), plus accrued and unpaid interest, were exchanged for approximately 10.4 million newly-issued shares of Common Stock in the Tier 2 Transaction.

Item 16. Exhibits and Financial Statement Schedules

(a) Exhibits

Exhibit Index

| Exhibit No. | Description |
|--------------------|--|
| <u>2.1</u> | <u>Agreement and Plan of Merger, dated as of June 30, 2010, by and among K-Kitz, Inc., KB Merger Sub, Inc. and Bacterin International, Inc. (filed as Exhibit 2.1 to Form 8-K filed June 30, 2010 and incorporated by reference herein).</u> |
| <u>2.2</u> | <u>Common Stock Purchase Agreement dated March 16, 2015 by and between Bacterin and Aspire Capital Fund, LLC (filed as Exhibit 10.1 to Form 8-K filed March 17, 2015 and incorporated by reference herein).</u> |
| <u>2.3</u> | <u>Amended and Restated Common Stock Purchase Agreement dated April 17, 2015 by and between Bacterin and Aspire Capital Fund, LLC (filed as Exhibit 10.23 to Form S-1 filed April 17, 2015 and incorporated by reference herein).</u> |
| <u>2.4</u> | <u>Stock Purchase Agreement dated July 27, 2015 by and among Bacterin, X-spine Systems, Inc. and the sellers named therein (filed as Exhibit 10.1 to Form 8-K filed July 28, 2015 and incorporated by reference herein).</u> |

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- 3.1 Amended and Restated Certificate of Incorporation (filed as Exhibit 3.1 to Form 8-K filed on February 13, 2018 and incorporated by reference herein).
- 3.2 Second Amended and Restated Bylaws (filed as Exhibit 3.1 to Form 8-K filed February 16, 2018 and incorporated by reference herein).
- 4.1 Form of Common Stock Certificate (filed as Exhibit 4.2 to Form S-1 filed December 21, 2015 and incorporated by reference herein).
- 4.2 Registration Rights Agreement dated March 16, 2015 by and between Bacterin and Aspire Capital Fund, LLC (filed as Exhibit 4.1 to Form 8-K filed on March 17, 2015 and incorporated by reference herein).
- 4.3 Registration Rights Agreement dated July 31, 2015 by and among Bacterin, Leerink Partners LLC, OrbiMed Royalty Opportunities II, LP and ROS Acquisition Offshore LP (filed as Exhibit 10.3 to Form 8-K filed on August 3, 2015 and incorporated by reference herein).
- 4.4 Registration Rights Agreement, dated April 14, 2016, among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.4 to Form 8-K filed on April 19, 2016 and incorporated by reference herein).
- 4.5 Registration Rights Agreement (for Common Stock underlying the Indenture Notes), dated January 17, 2017, among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.9 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 4.6 Registration Rights Agreement (for Common Stock underlying the PIK Notes), dated January 17, 2017, among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.13 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 4.7 Investor Rights Agreement (for Common Stock issued upon the exchange of the Notes and pursuant to the Private Placement) among Xtant Medical Holdings, Inc., OrbiMed Royalty Opportunities II, LP, ROS Acquisition Offshore LP, Park West Partners International, Limited and Park West Investors Master Fun, Limited (filed as Exhibit 10.3 to Form 8-K filed on February 16, 2018 and incorporated by reference herein).
- 4.8 Registration Rights Agreement (for Common Stock issued upon the exchange of the Notes and pursuant to the Private Placement) among Xtant Medical Holdings, Inc., OrbiMed Royalty Opportunities II, LP, ROS Acquisition Offshore LP, Telemetry Securities, L.L.C., Bruce Fund, Inc., Park West Investors Master Fun, Limited, and Park West Partners International, Limited (filed as Exhibit 10.4 to Form 8-K filed on February 16, 2018 and incorporated by reference herein).
- 4.9 Indenture dated July 31, 2015 by and between Bacterin and Wilmington Trust, National Association (filed as Exhibit 10.2 to Form 8-K filed on August 3, 2015 and incorporated by reference herein).
- 4.10 Amendment Number 1 to Indenture, dated as of August 16, 2017, by and between Xtant Medical Holdings, Inc. and Wilmington Trust, National Association (filed as Exhibit 10.2 to Form 8-K filed on August 17, 2017 and incorporated by reference herein).
- 4.11 Amendment Number 2 to Indenture, dated as of October 2, 2017, by and between Xtant Medical Holdings, Inc. and Wilmington Trust, National Association (filed as Exhibit 10.2 to Form 8-K filed on October 3, 2017 and incorporated by reference herein).
- 4.12 Amendment Number 3 to Indenture, dated as of October 31, 2017, by and between Xtant Medical Holdings, Inc. and Wilmington Trust, National Association (filed as Exhibit 10.2 to Form 8-K filed on October 31, 2017 and incorporated by reference herein).
- 4.13 Amendment Number 4 and Waiver to Indenture, dated as of December 1, 2017, by and between Xtant Medical Holdings, Inc. and Wilmington Trust, National Association (filed as Exhibit 10.2 to Form 8-K filed on December 4, 2017 and incorporated by reference herein).
- 4.14 Amendment Number 5 to Indenture, dated as of December 29, 2017, by and between Xtant Medical Holdings, Inc. and Wilmington Trust, National Association (filed as Exhibit 10.2 to Form 8-K filed on December 29, 2017 and incorporated by reference herein).
- 4.15

- Amendment Number 6 to Indenture, dated as of January 30, 2018, by and between Xtant Medical Holdings, Inc. and Wilmington Trust, National Association (filed as Exhibit 10.2 to Form 8-K filed on January 31, 2018 and incorporated by reference herein).
- 4.16 Form of 6.00% Convertible Senior Note due 2021 (filed as Exhibit 10.2 to Form 8-K filed on August 3, 2015 and incorporated by reference herein).
- 4.17* Form of Subscription Rights Statement
- 5.1* Opinion of Ballard Spahr LLP
- 8.1* Opinion of Ballard Spahr LLP as to Certain Tax Matters
- 10.1• Form of Indemnification Agreement (filed as Exhibit 10.6 to Form 10-Q filed on November 21, 2017 and incorporated by reference herein).
- 10.2• Amended and Restated Xtant Medical Equity Incentive Plan (filed as Exhibit 10.8 to Form 10-Q filed on November 16, 2015 and incorporated by reference herein).
- 10.3• Form of Stock Option Agreement (filed as Exhibit 10.23 to Form 10-Q filed on May 4, 2012 and incorporated by reference herein).

- 10.4• Form of Amended and Restated Restricted Stock Agreement (filed as Exhibit 10.4 to Form 10-K filed on March 24, 2016 and incorporated by reference herein).
- 10.5• Daniel Goldberger Separation Agreement (filed as Exhibit 10.1 to Form 8-K filed on January 23, 2017 and incorporated by reference herein).
- 10.6• Carl O’Connell Employment Agreement (filed as Exhibit 10.1 to Form 8-K filed on October 6, 2016 and incorporated by reference herein).
Amendment No. 1 to Carl O’Connell Employment Agreement, dated effective as of February 17, 2017, between
- 10.7• Xtant Medical Holdings, Inc. and Carl O’Connell (filed as Exhibit 10.1 to Form 8-K filed on February 23, 2017 and incorporated by reference herein).
- 10.8• Carl O’Connell Stock Option Agreement (filed as Exhibit 10.2 to Form 8-K filed on October 6, 2016 and incorporated by reference herein).
- 10.9• Form of Director Agreement (filed as Exhibit 10.3 to Form 10-Q filed on August 10, 2016 and incorporated by reference herein).
- 10.10• Amended and Restated Credit Agreement dated July 27, 2015 by and between Bacterin and ROS Acquisition Offshore LP (filed as Exhibit 10.2 to Form 8-K filed on July 28, 2015 and incorporated by reference herein).
- 10.11• Securities Purchase Agreement dated July 27, 2015 by and between Bacterin and the investors named therein (filed as Exhibit 10.4 to Form 8-K filed on July 28, 2015 and incorporated by reference herein).
- 10.12• Purchase Agreement dated July 27, 2015 by and between Bacterin and Leerink Partners LLC (filed as Exhibit 10.5 to Form 8-K filed on July 28, 2015 and incorporated by reference herein).
First Amendment to Amended and Restated Credit Agreement, dated March 31, 2016, by and among Bacterin
- 10.13• International, as the Borrower, and Orbimed Royalty Opportunities II, LP and ROS Acquisition Offshore LP, as the Lenders (filed as Exhibit 10.1 to Form 8-K filed on April 1, 2016 and incorporated by reference herein).
Securities Purchase Agreement, dated April 14, 2016, among Xtant Medical Holdings, Inc., ROS Acquisition
- 10.14• Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on April 19, 2016 and incorporated by reference herein).
Convertible Promissory Note, dated April 14, 2016, made by Xtant Medical Holdings, Inc. in favor of ROS
- 10.15• Acquisition Offshore LP (filed as Exhibit 10.2 to Form 8-K filed on April 19, 2016 and incorporated by reference herein).
Convertible Promissory Note, dated April 14, 2016, made by Xtant Medical Holdings, Inc. in favor of OrbiMed
- 10.16• Royalty Opportunities II, LP (filed as Exhibit 10.3 to Form 8-K filed on April 19, 2016 and incorporated by reference herein).
Amendment to Amended and Restated Credit Agreement, dated as of April 14, 2016, by and among Bacterin
- 10.17• International, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.5 to Form 8-K filed on April 19, 2016 and incorporated by reference herein).
Fourth Amendment to Amended and Restated Credit Agreement, dated as of July 29, 2016, by and among
- 10.18• Bacterin International, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on August 2, 2016 and incorporated by reference herein).
Sixth Amendment to Amended and Restated Credit Agreement, dated as of September 27, 2016, by and among
- 10.19• Bacterin International, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on September 28, 2016 and incorporated by reference herein).
Loan and Security Agreement, dated May 25, 2016, among Xtant Medical Holdings, Inc., Bacterin
- 10.20• International, Inc., X-spine Systems, Inc., Xtant Medical, Inc. and Silicon Valley Bank (filed as Exhibit 10.1 to Form 8-K filed on May 31, 2016 and incorporated by reference herein).
First Loan Modification Agreement, dated August 12, 2016, among Xtant Medical Holdings, Inc., Bacterin
- 10.21• International, Inc., X-spine Systems, Inc., Xtant Medical, Inc. and Silicon Valley Bank (filed as Exhibit 10.1 to Form 8-K filed on August 16, 2016 and incorporated by reference herein).
- 10.22

Intellectual Property Security Agreement, dated May 25, 2016, among Xtant Medical Holdings, Inc., Bacterin International, Inc., X-spine Systems, Inc., Xtant Medical, Inc. and Silicon Valley Bank (filed as Exhibit 10.2 to Form 8-K filed on May 31, 2016 and incorporated by reference herein).

10.23 Securities Purchase Agreement, dated January 17, 2017, between Xtant Medical Holdings, Inc. and Bruce Fund, Inc. (filed as Exhibit 10.2 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).

10.24 Securities Purchase Agreement, dated January 17, 2017, between Xtant Medical Holdings, Inc. and Park West Partners International, Limited (filed as Exhibit 10.3 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).

10.25 Securities Purchase Agreement, dated January 17, 2017, between Xtant Medical Holdings, Inc. and Park West Investors Master Fund, Limited (filed as Exhibit 10.4 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).

- 10.26 Securities Purchase Agreement, dated January 17, 2017, between Xtant Medical Holdings, Inc. and Telemetry Securities, L.L.C. (filed as Exhibit 10.5 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 10.27 Securities Purchase Agreement (for sale of the Indenture Notes), dated January 17, 2017, among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP. (filed as Exhibit 10.6 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 10.28 Securities Purchase Agreement (for sale of the PIK Notes), dated January 17, 2017, among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.10 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 10.29 Convertible Promissory Note in the principal amount of \$995,700, dated January 17, 2017, made by Xtant Medical Holdings, Inc. in favor of ROS Acquisition Offshore LP (filed as Exhibit 10.7 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 10.30 Convertible Promissory Note in the principal amount of \$564,300, dated January 17, 2017, made by Xtant Medical Holdings, Inc. in favor of OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.8 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 10.31 Convertible Promissory Note in the principal amount of \$42,856.59, dated January 17, 2017, made by Xtant Medical Holdings, Inc. in favor of ROS Acquisition Offshore LP (filed as Exhibit 10.11 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 10.32 Convertible Promissory Note in the principal amount of \$24,288.41, dated January 17, 2017, made by Xtant Medical Holdings, Inc. in favor of OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.12 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 10.33 Securities Purchase Agreement, dated as of February 14, 2018, by and among Xtant Medical Holdings, Inc., OrbiMed Royalty Opportunities II, LP, ROS Acquisition Offshore LP (filed as Exhibit 10.2 to Form 8-K filed on February 16, 2018 and incorporated by reference herein).
- 10.34 Eighth Amendment to Amended and Restated Credit Agreement, dated as of January 13, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on January 20, 2017 and incorporated by reference herein).
- 10.35 Ninth Amendment to Amended and Restated Credit Agreement, dated as of January 31, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on February 1, 2017 and incorporated by reference herein).
- 10.36 Tenth Amendment to Amended and Restated Credit Agreement, dated as of February 14, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on February 15, 2017 and incorporated by reference herein).
- 10.37 Eleventh Amendment to Amended and Restated Credit Agreement, dated as of February 28, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on March 2, 2017 and incorporated by reference herein).
- 10.38 Twelfth Amendment and Waiver to Amended and Restated Credit Agreement, dated as of March 31, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on April 6, 2017 and incorporated by reference herein).
- 10.39 Thirteenth Amendment and Waiver to Amended and Restated Credit Agreement, dated as of April 30, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1

to Form 8-K filed on May 4, 2017 and incorporated by reference herein).

10.40 Fourteenth Amendment and Waiver to Amended and Restated Credit Agreement, dated as of May 11, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on May 12, 2017 and incorporated by reference herein).

10.41 Fifteenth Amendment and Waiver to Amended and Restated Credit Agreement, dated as of June 30, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on July 7, 2017 and incorporated by reference herein).

10.42 Sixteenth Amendment and Waiver to Amended and Restated Credit Agreement, dated as of July 15, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on July 20, 2017 and incorporated by reference herein).

- 10.43 Seventeenth Amendment and Waiver to Amended and Restated Credit Agreement, dated as of August 11, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on August 17, 2017 and incorporated by reference herein).
- 10.44 Eighteenth Amendment and Waiver to Amended and Restated Credit Agreement, dated as of September 29, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on October 3, 2017 and incorporated by reference herein).
- 10.45 Nineteenth Amendment to Amended and Restated Credit Agreement, dated as of October 31, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on October 31, 2017 and incorporated by reference herein).
- 10.46 Twentieth Amendment and Waiver to Amended and Restated Credit Agreement, dated as of November 30, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on December 4, 2017 and incorporated by reference herein).
- 10.47 Twenty-First Amendment to Amended and Restated Credit Agreement, dated as of December 28, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on December 29, 2017 and incorporated by reference herein).
- 10.48 Twenty-Second Amendment to Amended and Restated Credit Agreement, dated as of January 30, 2018, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on January 31, 2018 and incorporated by reference herein).
- 10.49 Twenty-Third Amendment to Amended and Restated Credit Agreement, dated as of February 14, 2018, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on February 16, 2018 and incorporated by reference herein).
- 10.50 Waiver Letter, dated as of March 31, 2017, by and among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.2 to Form 8-K filed on April 6, 2017 and incorporated by reference herein).
- 10.51 Waiver, dated as of March 31, 2017, by ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.3 to Form 8-K filed on April 6, 2017 and incorporated by reference herein).
- 10.52 Omnibus Waiver, dated as of July 15, 2017, by ROS Acquisition Offshore LP, OrbiMed Royalty Opportunities II, LP, Bruce Fund Inc., Park West Partners International, Limited, Park West Investors Master Fund, Limited and Telemetry Securities, L.L.C. (filed as Exhibit 10.2 to Form 8-K filed on July 20, 2017 and incorporated by reference herein).
- 10.53 Amendment and Waiver, dated as of August 15, 2017, by and among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.3 to Form 8-K filed on August 17, 2017 and incorporated by reference herein).
- 10.54 Second Amendment and Waiver, dated as of September 29, 2017, by and among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.3 to Form 8-K filed on October 3, 2017 and incorporated by reference herein).
- 10.55 Third Amendment and Waiver, dated as of October 31, 2017, by and among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.3 to Form 8-K filed on October 31, 2017 and incorporated by reference herein).
- 10.56

Waiver, dated as of November 14, 2017, by and among Bacterin International, Inc., Xtant Medical Holdings, Inc., X-Spine Systems, Inc., Xtant Medical, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on November 14, 2017 and incorporated by reference herein).

10.57 Fourth Amendment and Waiver, dated as of November 30, 2017, by and among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.3 to Form 8-K filed on December 4, 2017 and incorporated by reference herein).

10.58 Fifth Amendment and Waiver, dated as of December 28, 2017, by and among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.3 to Form 8-K filed on December 29, 2017 and incorporated by reference herein).

10.59 Sixth Amendment, dated as of January 17, 2018, by and among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.1 to Form 8-K filed on January 23, 2018, and incorporated by reference herein).

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- Sixth Amendment and Waiver, dated as of January 30, 2018, by and among Xtant Medical Holdings, Inc., ROS Acquisition Offshore LP and OrbiMed Royalty Opportunities II, LP (filed as Exhibit 10.3 to Form 8-K filed on January 31, 2018, and incorporated by reference herein).
- 10.60 Forbearance Agreement, dated April 17, 2017, among Xtant Medical Holdings, Inc., Bacterin International, Inc., X-spine Systems, Inc., Xtant Medical, Inc. and Silicon Valley Bank (filed as Exhibit 10.1 to Form 8-K filed on April 19, 2017 and incorporated by reference herein).
- 10.61 Forbearance Agreement, dated April 21, 2017, among Xtant Medical Holdings, Inc., Bacterin International, Inc., X-spine Systems, Inc., Xtant Medical, Inc. and Silicon Valley Bank (filed as Exhibit 10.1 to Form 8-K filed on April 24, 2017 and incorporated by reference herein).
- 10.62 Forbearance Agreement, dated April 30, 2017, by and among Xtant Medical Holdings, Inc., Bacterin International, Inc., X-spine Systems, Inc., Xtant Medical, Inc. and Silicon Valley Bank (filed as Exhibit 10.2 to Form 8-K filed on May 4, 2017 and incorporated by reference herein).
- 10.63 Agreement, dated May 8, 2017, between Xtant Medical Holdings, Inc. and Aurora Management Partners Inc. (filed as Exhibit 10.2 to Form 8-K filed on May 12, 2017 and incorporated by reference herein).
- 10.64 Restructuring and Exchange Agreement, dated January 11, 2018, by and among ROS Acquisition Offshore LP, OrbiMed Royalty Opportunities II, LP, Bruce Fund, Inc., Park West Partners International, Limited, Park West Investors Master Fund, Limited, and Telemetry Securities, L.L.C. (filed as Exhibit 10.1 to Form 8-K filed on January 12, 2018 and incorporated by reference herein).
- 10.65 Subsidiaries of the Registrant (filed as Exhibit 21.1 to Form S-1/A filed on August 25, 2015 and incorporated by reference herein).
- 21.1
- 23.1* Consent of Independent Accounting Firm, EKS&H LLLP
- 23.2* Consent of Ballard Spahr LLP (included in Exhibits 5.1 and 8.1)
- 24.1* Power of Attorney (included on signature page)
- 99.1* Form of Instructions as to Use of Subscription Rights Statements
- 99.2* Form of Letter to Stockholders who are Record Holders
- 99.3* Form of Letter to Brokers, Dealers, Banks and Other Nominees
- 99.4* Form of Broker Letter to Clients Who are Beneficial Holders
- 99.5* Form of Beneficial Owner Election Form
- 99.6* Form of Nominee Holder Certification
- 99.7* Form of Notice of Important Tax Information

• Indicates a management contract or compensatory plan.

* Filed herewith.

**Furnished herewith.

(b) Financial Statement Schedules

Schedules have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.

Item 17. Undertakings

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the provisions described under Item 14 above, 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 Securities 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 Securities Act and will be governed by the final adjudication of such issue.

(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;

(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 a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(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.

(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 this offering.

(4) That, for the purpose of determining liability under the Securities Act to any purchaser: if the registrant is subject to Rule 430C (§230.430C of this chapter), each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A (§230.430A of this chapter), shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness; provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration

statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

(5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424 (§230.424 of this chapter);

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(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.

(d) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b) (1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus 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.

(e) The undersigned registrant hereby undertakes to supplement the prospectus, after the expiration of the subscription period, to set forth the results of the subscription offer, the transactions by the underwriters during the subscription period, the amount of unsubscribed securities to be purchased by the underwriters, and the terms of any subsequent reoffering thereof. If any public offering by the underwriters is to be made on terms differing from those set forth on the cover page of the prospectus, a post-effective amendment will be filed to set forth the terms of such offering.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-1 and has duly caused this amendment to the registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Belgrade, State of Montana, on April 17, 2018.

XTANT MEDICAL HOLDINGS, INC.

By: /s/ Carl O'Connell
Name: Carl O'Connell
Title: Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, as amended, this amendment to the registration statement has been signed by the following persons in the capacities and on the dates indicated.

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that the undersigned officers and directors of Xtant Medical Holdings, Inc., a Delaware corporation (the "Corporation" hereby constitute and appoint Carl O'Connell the true and lawful agent and attorney-in-fact of the undersigned with full power and authority in said agent and attorney-in-fact to sign for the undersigned and in their respective names as an officer/director of the Corporation, any and all amendments (including post-effective amendments) to this registration statement on Form S-1 (or any other registration statement for the same offering that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act) and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, and with full power of substitution, hereby ratifying and confirming all that said attorney-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

| Signature | Capacity | Date |
|--------------------------------------|---|----------------|
| /s/ Carl O'Connell Carl O'Connell | Chief Executive Officer (Principal Executive Officer) | April 17, 2018 |
| /s/ Laura Kendall Laura Kendall | Deputy Chief Restructuring Officer (Principal Financial Officer) | April 17, 2018 |

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|--|----------|----------------|
| /s/ John K. Bakewell John K. Bakewell | Director | April 17, 2018 |
| /s/ Michael Eggenberg Michael Eggenberg | Director | April 17, 2018 |
| /s/ Michael Mainelli Michael Mainelli | Director | April 17, 2018 |
| /s/ Robert McNamara Robert McNamara | Director | April 17, 2018 |
| /s/ Jeffrey Peters Jeffrey Peters | Director | April 17, 2018 |
| /s/ Matthew Rizzo Matthew Rizzo | Director | April 17, 2018 |