

BSD MEDICAL CORP
Form 424B5
June 26, 2014

Filed Pursuant to Rule 424(b)(5)
Registration No. 333-184164

Prospectus Supplement
(To Prospectus Dated October 11, 2012)

BSD MEDICAL CORPORATION

5,500,000 SHARES OF COMMON STOCK
WARRANTS TO PURCHASE 4,400,000 SHARES OF COMMON STOCK
4,400,000 SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THE WARRANTS

This is an offering on a reasonable best efforts basis of 5,500,000 shares of our common stock and warrants to purchase up to 4,400,000 shares of our common stock (including 4,400,000 shares of common stock issuable upon exercise of the warrants) pursuant to this prospectus supplement and the accompanying prospectus. Of the 9,900,000 shares of common stock offered hereby, 4,400,000 shares are issuable upon exercise of the warrants. The securities will be sold in multiples of a fixed combination consisting of one share of common stock and a warrant to purchase 0.80 shares of common stock, at an initial exercise price of \$1.10. Each fixed combination will be sold at a negotiated price of \$0.95 per fixed combination. The warrants will be exercisable on or after the date that is six months and one day after the date the warrants are issued and will expire on the fifth anniversary of the date the warrants become exercisable.

For a more detailed description of the common stock and warrants, see the section entitled “Description of Securities We Are Offering” beginning on page S-8.

Our common stock is traded on The NASDAQ Capital Market under the symbol “BSDM”. On June 25, 2014, the last reported sale price for our common stock was \$1.06 per share. There is no established public trading market for the warrants, and we do not expect a market to develop. We do not intend to apply to list the warrants on any securities exchange.

As of June 25, 2014 the aggregate market value of our outstanding common equity held by non-affiliates was approximately \$31,016,490 based on 26,970,861 shares of outstanding common stock held by non-affiliates and a price of \$1.15 per share, which was the last reported sale price of our common stock on The Nasdaq Capital Market on April 29, 2014. The value of the securities offered hereby, as computed in accordance with Instruction I.B.6. of Form S-3, is \$10,285,000. During the twelve calendar months prior to and including the date hereof, we have sold \$50,068 of securities pursuant to General Instruction I.B.6. of Form S-3.

We have retained Maxim Group LLC as our exclusive placement agent in connection with this offering. The placement agent has no obligation to buy any of the securities from us or to arrange for the purchase or sale of any specific number or dollar amount of securities but will use reasonable best efforts to arrange for the sale of the securities up to the maximum of \$5,225,000. See “Plan of Distribution” beginning on page S-9 of this prospectus supplement for more information regarding these arrangements.

Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page S-4 of this prospectus supplement and “Risk Factors” beginning on page 4 of the accompanying prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

| | Per Fixed Combination of one share of common stock and one warrant to purchase 0.80 shares of common stock | Total |
|---------------------------------|--|----------------|
| Public Offering Price | \$ 0.95 | \$5,225,000.00 |
| Placement Agency Fees | \$ 0.06 | \$339,625.00 |
| Proceeds to us, before expenses | \$ 0.89 | \$4,885,375.00 |

Maxim Group LLC is acting as the exclusive placement agent in this offering. We estimate the total expenses of this offering, excluding the placement agency fees, will be approximately \$175,000. Because there is no minimum offering amount, the actual offering amount, the placement agency fees and net proceeds to us, if any, in this offering may be substantially less than the total offering amounts set forth above. We are not required to sell any specific number or dollar amount of the securities offered in this offering, but the placement agent will use its reasonable efforts to arrange for the sale of all of the securities offered.

Delivery of the securities will be made against payment thereon on or about July 1, 2014.

Maxim Group LLC

The date of this prospectus supplement is June 26, 2014

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a “shelf” registration statement on Form S-3, registration statement number 333-184164, that we filed with the Securities and Exchange Commission (the SEC) on September 28, 2012 and that was declared effective on October 11, 2012. Under this shelf registration process, we may offer and sell from time to time in one or more offerings the securities described in the accompanying prospectus. This prospectus supplement describes the specific details regarding this offering, including the price, the amount of our common stock and warrants being offered, the risks of investing in our common stock, warrants and other items.

This document is in two parts. The first part is this prospectus supplement, which describes the terms of this offering of our common stock and warrants and also adds, updates, and changes information contained in the accompanying prospectus and the documents incorporated by reference. The second part is the accompanying prospectus, which gives more general information, some of which may not apply to this offering. Generally, when we refer to this “prospectus,” we are referring to both documents combined. To the extent the information contained in this prospectus supplement differs or varies from the information contained in the accompanying prospectus or any document filed prior to the date of this prospectus supplement and incorporated by reference, the information in this prospectus supplement will control.

You should rely only on the information contained in this prospectus supplement and the accompanying prospectus, including any information incorporated by reference. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. You should not assume that the information appearing in this prospectus, any prospectus supplement or any document incorporated by reference is accurate at any date other than as of the date of each such document. Our business, financial condition, results of operations and prospects may have changed since the date indicated on the cover page of such documents.

References in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference to “we,” “our,” “us,” “BSD” and “the Company” refer to BSD Medical Corporation. Both this prospectus supplement and the accompanying prospectus include important information about us, our common stock and other information you should know before investing. This prospectus supplement also adds, updates, and changes certain of the information contained in the prospectus. You should read both this prospectus supplement and the accompanying prospectus as well as the additional information described under the headings “Where You Can Find More Information” and “Incorporation by Reference” before investing in our common stock and warrants.

This prospectus supplement contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus supplement is a part, and you may obtain copies of those documents as described below under the heading “Where You Can Find More Information.”

PROSPECTUS SUPPLEMENT SUMMARY

This summary is not complete and does not contain all of the information that you should consider before investing in the securities offered by this prospectus. You should read this summary together with the entire prospectus supplement and prospectus, including our financial statements, the notes to those financial statements and the additional information described in this prospectus supplement under the headings “Where You Can Find More Information” on page S-12 and “Incorporation by Reference” on page S-12, before making an investment decision. See the “Risk Factors” section of this prospectus supplement beginning on page S-4 for a discussion of the risks involved in investing in our securities.

Summary of Our Business

We develop, manufacture, market and service systems to treat cancer and benign diseases using heat therapy delivered using focused radiofrequency (“RF”) and microwave energy. Our business objectives are to commercialize our products for the treatment of cancer and to further expand our products to treat other diseases and medical conditions. Our product line for cancer therapy has been created to offer hospitals and clinics a complete solution for thermal treatment of cancer using microwave/RF systems.

In spite of the advances in cancer treatment technology, the five year survival rates for kidney, liver, and lung cancers in the United States is only 71%, 15%, 16% respectively, according to statistics published by the American Cancer Society. Our product line includes systems that have been strategically designed to offer a range of thermal treatment systems for the treatment of cancer, including both ablation and hyperthermia treatment systems. Studies have shown that both ablation and hyperthermia treatments kill cancer, but they have different clinical applications.

Our microwave ablation system is used to ablate (destroy) soft tissue with heat alone. Thermal ablation usually refers to heat treatments delivered at temperatures above 55°C for short periods of time. Thermal ablation is used to destroy local tumors using a short intense focus of heat on a specific area.

Our hyperthermia cancer treatment systems are used to treat cancer with heat (hyperthermia) while boosting the effectiveness of radiation for certain tumors through a number of biological mechanisms. Hyperthermia is usually used to increase the effectiveness of other therapies; e.g., radiation therapy and chemotherapy for the treatment of locally advanced cancers. Hyperthermia usually refers to treatments delivered at temperatures of 40-49°C for one hour.

Commercialization of our systems that are used to treat cancer is our most immediate business objective. Current and future cancer treatment sites for our systems may include cancers of the prostate, breast, head, neck, bladder, cervix, colon/rectum, ovaries, esophagus, liver, kidney, brain, bone, stomach and lung. Our cancer treatment systems have been used to treat thousands of patients throughout the world and have received many awards, including the Frost & Sullivan “Technology Innovation of the Year Award” for cancer therapy devices, which was awarded in 2005 for the development of the BSD-2000 Hyperthermia System.

Although we have not yet taken advantage of many of these market opportunities, we believe that our technology has application for a number of other medical purposes in addition to cancer.

We have experienced growth in our operating revenues from our MicroThermX® Microwave Ablation System (“MicroThermX”) line of products as a result of an exclusive, long-term, multi-million dollar distribution agreement with Terumo Europe NV (Terumo), a wholly owned subsidiary of Terumo Corporation. The agreement with Terumo, which we announced in April 2013, covers 100 countries in Europe, Western Asia, and Northern Africa. In addition, MicroThermX revenues and sales of disposable SynchronWave antennas have increased in the US market as well.

Sales of hyperthermia systems fluctuate significantly, and are affected by negative regulatory, economic and other healthcare industry factors. We have experienced declining hyperthermia revenues from our distributor in Europe, a related party, and are looking to grow our market to new geographic regions, such as Asia. We have entered into distribution agreements for our hyperthermia systems in China, South Korea and Taiwan. We anticipate that these distribution agreements may result in increased hyperthermia sales in the future. Having recently received regulatory approval in Taiwan, we have recognized product sales to our distributor there, however, certain regulatory approvals must still be obtained in China and South Korea before we will realize sales in those countries, and we cannot currently predict the outcome of these efforts.

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We recognize revenues from the sale of our ablation and hyperthermia cancer treatment systems and related parts and accessories (collectively, product sales), the sale of disposable devices used with certain of our systems, training, service support contracts and other miscellaneous revenues. We also recognize revenues from equipment rental, including fee-per-use rental income from our MicroThermX. Information regarding our revenues, assets, and results of our operations is contained in our financial statements and notes thereto and in Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations of the Company’s annual report on Form 10-K and 10-K/A.

Our current corporate strategy includes the possibility of entering into additional collaborative arrangements with third parties to expand and improve the commercialization of all our products, including our hyperthermia systems. The signing of the master distribution agreement with Terumo for our MicroThermX line of products was a result of this strategy. Consistent with this strategy, we continue to seek to identify opportunities and, if possible, secure a transaction or transaction(s) relating to BSD’s hyperthermia business, including, but not limited to, partnering or other collaborative agreements, a sale of assets and/or other strategic arrangements. There can be no assurance that the exploration of strategic alternatives will result in any agreements or transactions, or that, if completed, any agreements or transactions will be successful or on attractive terms.

Our principal executive offices are located at 2188 West 2200 South, Salt Lake City, Utah 84119, and our telephone number is (801) 972-5555.

Our common stock trades on the NASDAQ Capital Market under the symbol “BSDM.”

The Offering

| | |
|---|---|
| Common stock offered by us | 5,500,000 shares |
| Common stock outstanding after this offering (assuming no exercise of the warrants offered by us) | 39,689,209 shares |
| Warrants offered by us | Warrants to purchase up to 4,400,000 shares of common stock. Each warrant may be exercised at any time on or after the date that is six months and one day after the date the warrants are issued until the fifth anniversary of the date the warrants become exercisable at an initial exercise price of \$1.10 per share of common stock, subject to adjustment. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the warrants. |
| Use of proceeds | We intend to use the net proceeds from this offering for general working capital purposes, subject to any agreed upon contractual restrictions under the terms of the purchase agreement. See “Use of Proceeds” on page S-6. |
| Market for the common stock and warrants | Our common stock is quoted and traded on the NASDAQ Capital Market under the symbol “BSDM.” However, there is no established public trading market for the offered warrants, and we do not expect a market to develop. In |

addition, we do not intend to apply to list the warrants on any securities exchange.

Risk factors

You should read the “Risk Factors” section of this prospectus and in the documents incorporated by reference in this prospectus supplement, including but not limited to the “Risk Factors” in our Annual Report on Form 10-K, as amended by Amendment No. 1 on Form 10-K/A, for the fiscal year ended August 31, 2013 (together with any material changes thereto contained in subsequent filed Quarterly Reports on Form 10-Q), for a discussion of the factors you should consider carefully before deciding to purchase these securities. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. You should be able to bear a complete loss of your investment.

NASDAQ Capital Market symbol

BSDM

The number of shares of common stock to be outstanding after this offering as reflected in the table above is based on the actual number of shares outstanding as of June 25, 2014, which was 34,189,209, and does not include, as of that date:

- 493,825 shares of our common stock issuable upon the exercise of outstanding stock options under our Fourth Amended and Restated 1998 Director Stock Plan, having a weighted average exercise price of \$5.83 per share;
- 326,236 shares of our common stock reserved for future issuance under our Fourth Amended and Restated 1998 Director Stock Plan;
- 3,399,094 shares of our common stock issuable upon the exercise of outstanding stock options under our Third Amended and Restated 1998 Stock Incentive Plan, having a weighted average exercise price of \$2.44 per share;
- 1,481,894 shares of our common stock reserved for future issuance under our Third Amended and Restated 1998 Stock Incentive Plan;
- 110,294 shares of our common stock issuable upon the exercise of warrants, at an exercise price of \$2.04 per share;
- 504,479 shares of our common stock issuable upon the exercise of warrants, at an exercise price of \$1.94 per share;
- 918,750 shares of common stock issuable upon the exercise of warrants, at an exercise price of \$3.27 per share;
- 875,000 shares of common stock issuable upon the exercise of warrants, at an exercise price of \$7.73 per share;
- 3,048,782 shares of common stock issuable upon the exercise of warrants, at an exercise price of \$1.65 per share; and
- up to 4,400,000 shares of common stock issuable upon the exercise of warrants to be issued in this offering, at an exercise price of \$1.10 per share, assuming issuance of all Warrants offered through this prospectus supplement.

Unless otherwise stated, outstanding share information throughout this prospectus supplement excludes such outstanding options and warrants to purchase shares of common stock and shares available for issuance.

RISK FACTORS

Before you make a decision to invest in our securities, you should consider carefully the risks described below, together with other information in this prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein, including any risk factors contained in our annual and other reports filed with the SEC. If any of the following events actually occur, our business, operating results, prospects or financial condition could be materially and adversely affected. This could cause the trading price of our common stock to decline and you may lose all or part of your investment. The risks described below are not the only ones that we face. Additional risks not presently known to us or that we currently deem immaterial may also significantly impair

our business operations and could result in a complete loss of your investment.

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RISKS RELATED TO THIS OFFERING

Since we have broad discretion in how we use the proceeds from this offering, we may use the proceeds in ways with which you disagree.

We have not allocated specific amounts of the net proceeds from this offering for any specific purpose. Accordingly, subject to any agreed upon contractual restrictions under the terms of the purchase agreement, our management will have some flexibility in applying the net proceeds of this offering. You will be relying on the judgment of our management with regard to the use of these net proceeds, and subject to any agreed upon contractual restrictions under the terms of the purchase agreement, you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that the net proceeds will be invested in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flow.

There is no minimum offering amount required to consummate this offering.

There is no minimum offering amount which must be raised in order for us to consummate this offering. Accordingly, the amount of money raised may not be sufficient for us to meet our business objectives. Moreover, if only a small amount of money is raised, all or substantially all of the offering proceeds may be applied to cover the offering expenses and we will not otherwise benefit from the offering. In addition, because there is no minimum offering amount required, investors will not be entitled to a return of their investment if we are unable to raise sufficient proceeds to meet our business objectives.

You will experience immediate dilution in the book value per share of the common stock you purchase.

Because the price per share of our common stock being offered is substantially higher than the book value per share of our common stock, you will suffer substantial dilution in the net tangible book value of the common stock you purchase in this offering. After giving effect to the sale by us of 5,500,000 shares of common stock in this offering, and based on a public offering price of \$0.95 per fixed combination in this offering and a pro forma net tangible book value per share of our common stock of \$0.28 as of February 28, 2014, without giving effect to the potential exercise of the warrants being offered by this prospectus supplement, if you purchase securities in this offering, you will suffer immediate and substantial dilution of \$0.59 per share in the net tangible book value of the common stock purchased. See "Dilution" on page S-12 for a more detailed discussion of the dilution you will incur in connection with this offering.

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price in this offering. We may sell shares or other securities in any other offering at a price that is less than the price paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price paid by investors in this offering.

There is no public market for the warrants to purchase common stock in this offering.

There is no established public trading market for the warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply to list the warrants on any securities exchange. Without an

active market, the liquidity of the warrants will be limited.

RISKS RELATED TO OUR BUSINESS

Successful results from our exclusive agreements with distributors in Taiwan, China and South Korea for sale and distribution of hyperthermia products sold in those countries are dependent on distributors obtaining and maintaining regulatory approvals and reaching a successful level of sales.

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In March 2013, we announced that we signed an exclusive agreement with a Taiwan corporation for the sale and distribution of our hyperthermia products in Taiwan which requires the distributor to purchase a minimum number of BSD-2000 systems annually over a five year period. In May 2013, we received an initial purchase order from the distributor, committing to purchase four BSD-2000 Hyperthermia Systems, the first of which were shipped upon the distributor's receipt of Taiwan FDA import license approval. However, there can be no assurance that the import license approval will be maintained by the distributor and that the distributor will meet the purchase order commitments of the agreement.

We have entered into similar agreements with distributors in China and South Korea, but neither of those distributors have yet received their necessary import license approvals. There can be no assurance that such approvals will be obtained, and if obtained, maintained by the distributors and that the distributors will meet any applicable purchase order commitments contained in their respective agreements.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus, and the documents incorporated by reference contain forward-looking statements. These are based on our management's current beliefs, expectations and assumptions about future events, conditions and results and on information currently available to us. Discussions containing these forward-looking statements may be found, among other places, in the Sections of this prospectus summary entitled "Prospectus Summary" and "Risk Factors." See also "Forward-Looking Statements" in the accompanying prospectus. Within the meaning of Section 27A of the Securities Act of 1933, as amended, (the Securities Act), and Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act), these forward-looking statements include, but are not limited to, statements about our business, products, technologies, prospects, partners, distributors, customers, suppliers and regulatory strategies.

All statements, other than statements of historical fact, included or incorporated herein regarding our strategy, future operations, financial position, future revenues, projected costs, plans, prospects and objectives are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "should," "will," "would" and similar expressions. Forward-looking statements involve risks, uncertainties and other factors that may cause our actual results, performance, time frames or achievements to be materially different from any future results, performance, time frames or achievements expressed or implied by the forward-looking statements. Risks, uncertainties and other factors that might cause or contribute to such differences include, but are not limited to, those discussed in the Section entitled "Risk Factors" in our most recent Annual Report on Form 10-K, as amended by Amendment No. 1 on Form 10-K/A, and in our Quarterly Reports on Form 10-Q, as well as any amendments thereto filed with the SEC. Given these risks, uncertainties and other factors, many of which are beyond our control, you should not place undue reliance on these forward-looking statements.

In addition, past financial and/or operating performance is not necessarily a reliable indicator of future performance and you should not use our historical performance to anticipate results or future period trends. We can give no assurances that any of the events anticipated by the forward-looking statements will occur or, if any of them do, what impact they will have on our results of operations and financial condition. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to revise any forward-looking statements to reflect events or developments occurring after the date of this prospectus, even if new information becomes available in the future.

USE OF PROCEEDS

We estimate that the net proceeds from the sale of the securities we are offering will be approximately \$4.7 million, assuming that we sell all of the securities we are offering, after deducting the placement agent's fees and estimated

offering expenses payable by us. This amount does not include the proceeds that we may receive in connection with any exercise of the warrants issued in this offering.

We expect to use the proceeds from this offering for general working capital purposes, subject to any agreed upon contractual restrictions under the terms of the purchase agreement. In the purchase agreement we will enter into with the purchasers in this offering, we will specifically agree not to use the proceeds of this offering for the satisfaction of any portion of our debt (other than payment of trade payables in the ordinary course of our business and prior practices), for the redemption of any common stock or common stock equivalents except with respect to any of our equity-based compensation plans, for the settlement of any outstanding litigation or in violation of FCPA or OFAC regulations.

Although we have identified some potential uses of the net proceeds to be received upon completion of this offering, we have and reserve broad discretion in the application of these proceeds. Accordingly, we reserve the right to use these proceeds for different purposes or uses which we have not listed above, particularly if there is a change in demand for our hyperthermia and thermal ablation products which may require increased investment in protocols and research studies and the hiring of additional sales staff. See “Risk Factors – Since we have broad discretion in how we use the proceeds from this offering, we may use the proceeds in ways with which you disagree.”

Based on our current plans, we believe that our net proceeds from this offering, together with our existing cash, cash equivalents and restricted cash will be sufficient to fund our anticipated operating expenses and capital expenditures for at least the next twelve months.

Until we use the net proceeds of this offering, we intend to invest the funds in short-term, investment grade, interest-bearing securities.

DILUTION

Purchasers of shares of our common stock in this offering will suffer an immediate and substantial dilution in net tangible book value per share. Net tangible book value per share is total tangible assets, reduced by total liabilities, divided by the total number of outstanding shares of common stock. Our net tangible book value as of February 28, 2014 was approximately \$9.6 million, or approximately \$0.28 per outstanding share of common stock.

After giving effect to the sale of the securities and the application of the net proceeds therefrom at a public offering price of \$0.95 per fixed combination of securities (and excluding shares of common stock issued and any proceeds received upon exercise of the warrants), our adjusted net tangible book value as of February 28, 2014 would have been approximately \$14.3 million, or approximately \$0.36 per share. This represents an immediate increase in net tangible book value of \$0.08 per share to our existing stockholders and an immediate dilution of \$0.59 per share to new investors. The following table illustrates this calculation on a per share basis, assuming that we sell all of the securities we are offering:

| | |
|---|--------|
| Public offering price per fixed combination | \$0.95 |
| Net tangible book value per share as of February 28, 2014 | \$0.28 |
| Increase in net tangible book value per share attributable to new investors | \$0.08 |
| Adjusted net tangible book value per share as of February 28, 2014 after giving effect to this offering | \$0.36 |
| Dilution per share to new investors | \$0.59 |

Investors that acquire additional shares of common stock through the exercise of the warrants offered hereby may experience additional dilution depending on our net tangible book value at the time of exercise.

The amounts above are based on 34,189,209 shares of common stock outstanding as of June 25, 2014, and assume no exercise of outstanding options or warrants since that date. The number of shares of common stock anticipated to be outstanding after this offering excludes:

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493,825 shares of our common stock issuable upon the exercise of outstanding stock options under our Fourth Amended and Restated 1998 Director Stock Plan, having a weighted average exercise price of \$5.83 per share;

326,236 shares of our common stock reserved for future issuance under our Fourth Amended and Restated 1998 Director Stock Plan;

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- 3,399,094 shares of our common stock issuable upon the exercise of outstanding stock options under our Third Amended and Restated 1998 Stock Incentive Plan, having a weighted average exercise price of \$2.44 per share;
- 1,481,894 shares of our common stock reserved for future issuance under our Third Amended and Restated 1998 Stock Incentive Plan;
- 110,294 shares of common stock issuable upon the exercise of warrants, at an exercise price of \$2.04 per share;
- 504,479 shares of our common stock issuable upon the exercise of warrants, at an exercise price of \$1.94 per share;
- 918,750 shares of common stock issuable upon the exercise of warrants, at an exercise price of \$3.27 per share;
- 875,000 shares of common stock issuable upon the exercise of warrants, at an exercise price of \$7.73 per share;
- 3,048,782 shares of common stock issuable upon the exercise of warrants, at an exercise price of \$1.65 per share; and
- up to 4,400,000 shares of common stock issuable upon the exercise of warrants to be issued in this offering, at an exercise price of \$1.10 per share, assuming issuance of all Warrants offered through this prospectus supplement.

To the extent that any of our outstanding options or warrants are exercised, we grant additional options under our stock option plans or issue additional warrants, or we issue additional shares of common stock in the future, there may be further dilution to new investors.

DESCRIPTION OF SECURITIES WE ARE OFFERING

In this offering, we are offering a maximum of up to 5,500,000 shares of our common stock plus warrants to purchase up to an additional 4,400,000 shares of our common stock, as well as 4,400,000 shares of common stock that are issuable upon exercise of the warrants. The securities will be sold in multiples of a fixed combination consisting of one share of common stock and a warrant to purchase 0.80 shares of common stock, at an initial exercise price of \$1.10. We are offering the fixed combination at a negotiated price of \$0.95 per fixed combination.

Common Stock

The following description of our common stock is a summary. It is not complete and is subject to and qualified in its entirety by our Amended and Restated Certificate of Incorporation and Bylaws, as amended, a copy of each of which has been incorporated herein as an exhibit to the registration statement of which this prospectus supplement forms a part.

As of the date of this prospectus supplement, our certificate of incorporation authorizes us to issue 80,000,000 shares of common stock, par value \$0.001 per share, and 10,000,000 shares of preferred stock, par value \$0.001 per share. As of June 26, 2014, 34,189,209 shares of common stock were outstanding and no shares of preferred stock were outstanding.

The material terms and provisions of our common stock are described under the caption “Description of Capital Stock” starting on page 5 of the accompanying prospectus.

Warrants

The material terms and provisions of the warrants being offered pursuant to this prospectus supplement and the accompanying prospectus are summarized below. The summary is subject to, and qualified in its entirety by, the form of warrant which will be provided to each purchaser in this offering and will be filed as an exhibit to a Current Report on Form 8-K with the SEC in connection with this offering.

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Each purchaser will receive, for each fixed combination purchased, one share of our common stock and a warrant representing the right to purchase 0.80 shares of common stock at an initial exercise price of \$1.10 per share of common stock. The warrants will be exercisable on or after the date that is six months and one day after the date the warrants are issued and will terminate on the fifth anniversary of the date the warrants become exercisable. The warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). The number of warrant shares that may be acquired by any holder upon any exercise of the warrant will be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of common stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of common stock would be aggregated with the holder's for purposes of Section 13(d) of the Exchange Act does not exceed 4.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise). We refer to this as the beneficial ownership limitation. The holder may elect to increase or decrease this beneficial ownership limitation to any other percentage, but not in excess of 9.99% of the total number of issued and outstanding shares of common stock (including for such purpose the shares of common stock issuable upon such exercise), provided that any such increase or decrease will not be effective until 61 days after such written notice is delivered.

If at any time during the warrant exercisability period there is no effective registration statement registering, or the prospectus contained in any registration statement is not available for, the issuance of the shares of common stock issuable upon exercise of the warrants, the warrants may be exercised by means of a "cashless exercise" in which a warrant holder will be entitled to surrender a portion of the shares of common stock subject to the warrant in lieu of cash for the exercise price.

The initial exercise price of the warrants is \$1.10. The exercise price is subject to appropriate adjustment in the event of stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting our common stock.

Subject to applicable securities laws, the warrants may be transferred at the option of the holders upon surrender of the warrants to us together with the appropriate instruments of transfer. There is no established public trading market for the warrants and we do not expect a market to develop. In addition, we do not intend to apply for listing of the warrants on any national securities exchange. Any term of a warrant may be amended or waived with our written consent and the written consent of the holder of warrants.

If, while any warrants are outstanding, we consummate any fundamental transaction, as described in the warrants and generally including any consolidation or merger into another corporation, the consummation of a transaction whereby another entity acquires more than 50% of our outstanding voting stock, or the sale, lease, license, assignment, transfer, conveyance or other disposition of substantially all of our assets, the holder of any outstanding warrants will receive upon exercise of the warrants, the securities or other consideration to which a holder of the number of shares of common stock then deliverable upon the exercise of such warrants would have been entitled upon the fundamental transaction. Additionally, in the event of a fundamental transaction, under certain circumstances the warrant holder has the ability to require us or any successor entity to purchase the warrant for a price equal to the "Black Scholes Value" as defined in the warrant.

THE HOLDER OF A WARRANT WILL NOT POSSESS ANY RIGHTS AS A STOCKHOLDER UNDER THAT WARRANT UNTIL THE HOLDER EXERCISES THE WARRANT. THE WARRANTS MAY BE TRANSFERRED INDEPENDENT OF THE COMMON STOCK WITH WHICH THEY WERE ISSUED, SUBJECT TO APPLICABLE LAWS.

PLAN OF DISTRIBUTION

Placement Agency Agreement and Securities Purchase Agreement

We are offering the securities offered pursuant to this prospectus supplement through our placement agent, Maxim Group LLC. Subject to the terms and conditions contained in the engagement agreement, dated June 20, 2014, Maxim Group LLC has agreed to act as the placement agent for the offering on a reasonable best efforts basis. The placement agent is not purchasing or selling any securities by this prospectus supplement or the accompanying prospectus.

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The letter agreement provides that the obligations of the placement agent and the investors are subject to certain conditions precedent, including approval of the listing of the shares by Nasdaq.

We will sell the offered securities to selected accredited investors under one or more securities purchase agreements entered into between us and each of the investors, pursuant to which we will sell to the purchasers 5,500,000 shares of our common stock, and warrants to purchase up to an additional 4,400,000 shares of our common stock, at a price of \$0.95 per fixed combination. Each fixed combination consists of one share of our common stock and a warrant to purchase 0.80 shares of our common stock at an initial exercise price of \$1.10 per share. We negotiated the price for the fixed combination offered in this offering with the purchasers. The factors considered in determining the price included the recent market price of our common stock, the general condition of the securities market at the time of this offering, the history of, and the prospects, for the industry in which we compete, our past and present operations, and our prospects for future revenues.

We currently anticipate that the closing of the sale of the securities offered hereby will take place on or about July 1, 2014. Investors will also be informed of the date and manner in which they must transmit the purchase price for their common stock. Funds received will be placed into an escrow account, and released to us upon the closing.

On the scheduled closing date, the following will occur:

- we will receive funds in the amount of the aggregate purchase price for the securities we sell;
- we will deliver to each of the investors, through the DWAC system or by book-entry, the securities being purchased; and
- Maxim Group LLC will receive a placement agent fee in accordance with the terms of the letter agreement.

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any fees or commissions received by it and any profit realized on the resale of securities sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the placement agent is required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares of common stock and warrants by the placement agent. Under these rules and regulations, the placement agent:

- may not engage in any stabilization activity in connection with our securities; and
- may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

From time to time in the ordinary course of their respective businesses, the placement agent or its affiliates have in the past or may in the future engage in investment banking and/or other services with us and our affiliates for which it has or may in the future receive customary fees and expenses.

We have granted the placement agent a right of first refusal to act as sole lead managing underwriter and sole book runner for any and all of our future public and private equity, equity-linked and debt financings that may occur in the 12 months following the closing of this offering.

Under the securities purchase agreement, we will also agree with the purchasers that for a period of four years following the date of the agreement, we will not effect or enter into an agreement to effect a “Variable Rate Transaction,” which means a transaction in which we:

- issue or sell any convertible securities either (A) at a conversion, exercise or exchange rate or other price that is based upon and/or varies with the trading prices of, or quotations for, the shares of our common stock at any time after the initial issuance of such convertible securities, or (B) with a conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such convertible securities or upon the occurrence of specified or contingent events directly or indirectly related to our business or the market for our common stock, other than pursuant to a customary “weighted average” anti-dilution provision; or
- enter into any agreement (including, without limitation, an “equity line of credit”) whereby we may sell securities at a future determined price.

We will also agree to indemnify the purchasers against certain losses resulting from our breach of any of our representations, warranties, or covenants under agreements with the purchasers as well as under certain other circumstances described in the securities purchase agreement.

We have agreed to indemnify the placement agent against certain liabilities arising under the letter agreement and to contribute to payments that the placement agent may be required to make in respect of those liabilities.

Fees

The placement agent will be entitled to a cash fee of 6.5% of the gross proceeds paid to us for the securities we sell in this offering. We will also reimburse the placement agent for all travel and other out-of-pocket expenses that have been incurred by the placement agent in connection with the offering, which shall not exceed the lesser of (i) \$70,000 or (ii) 1% of the gross proceeds received by us from the sale of the common stock and warrants, less the placement agent’s placement fee of 6.5%, subject to compliance with FINRA Rule 5110(f)(2)(D). In the event the engagement of the placement agent terminates prior to the consummation of this offering, the placement agent shall be entitled to reimbursement for actual expenses in an amount not to exceed \$40,000.

The following table shows the per fixed combination and total placement agency fees we will pay to the placement agent in connection with the sale of the securities offered pursuant to this prospectus supplement assuming the purchase of all of the securities offered hereby:

| | |
|---|-----------|
| Placement agency fees per fixed combination | \$0.618 |
| Total | \$339,625 |

Because there is no minimum offering amount required, the actual total placement agency fees, if any, are not presently determinable and may be substantially less than the maximum amount set forth above. The maximum fees to be received by any member of the Financial Industry Regulatory Association, or FINRA, or independent broker-dealer may not be greater than 8% of the gross proceeds from the sale of any securities being offered hereby.

The sale of up to 5,500,000 shares of common stock and warrants to purchase up to 4,400,000 shares of common stock will be completed on or about July 1, 2014, subject to customary closing conditions. We estimate the total offering expenses of this offering that will be payable by us, excluding the placement agency fees, will be approximately \$175,000, which include legal and printing costs, various other fees and reimbursement of the

placement agent's expenses. At the closing, The Depository Trust Company will credit the shares of common stock to the respective accounts of the investors. We will mail warrants directly to the investors at the respective addresses set forth in the securities purchase agreement.

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Restrictions on Future Issuances of Securities

In the securities purchase agreement, we will agree, subject to certain exceptions, that we will not within 75 days following the close of this offering directly or indirectly issue, offer, sell, grant any option or right to purchase, or otherwise dispose of (or announce any issuance, offer, sale, grant of any option or right to purchase or other disposition of) any equity security or any equity-linked or related security, any convertible security, any debt, any preferred stock or any purchase rights subject to certain exceptions, including:

- the issuance of employee stock options or shares of restricted stock pursuant to equity compensation plans; and
- issuance of shares of our common stock upon the conversion or exercise of convertible or exercisable securities.

The foregoing does not purport to be a complete statement of the terms and conditions of the placement agency agreement and securities purchase agreement. Copies of the placement agency agreement and the securities purchase agreement will be included as exhibits to our current report on Form 8-K that will be filed with the SEC and incorporated by reference into the Registration Statement of which this prospectus supplement forms a part. See “Where You Can Find More Information” on page S-12.

LEGAL MATTERS

Certain legal matters in connection with the offering and the validity of the securities offered by this prospectus supplement will be passed upon for us by Dorsey & Whitney LLP. Ellenoff Grossman & Schole LLP, is acting as counsel for the placement agent in connection with various matters relating to the securities offered hereby.

EXPERTS

Tanner LLC, independent registered public accountants, have audited our financial statements and the effectiveness of our internal control over financial reporting incorporated by reference in this prospectus for the year ended August 31, 2013, as set forth in their report which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Tanner LLC’s report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are a reporting company and file annual, quarterly and current reports, proxy statements and other information with the SEC. We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the securities we are offering under this prospectus supplement and the accompanying prospectus. This prospectus supplement and the accompanying prospectus do not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities we are offering under this prospectus supplement and the accompanying prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. You may read and copy the registration statement, as well as our reports, proxy statements and other information, at the SEC’s Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the Public Reference Room. The SEC maintains an internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, where our SEC filings are also available. The address of the SEC’s web site is “<http://www.sec.gov>.” We maintain a website at

www.bsdmc.com. Information contained in or accessible through our website does not constitute a part of this prospectus.

INCORPORATION BY REFERENCE

The SEC allows us to “incorporate by reference” information that we file with it into this prospectus supplement and the accompanying prospectus, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus supplement and the accompanying prospectus. The information incorporated by reference is considered to be a part of this prospectus supplement and the accompanying prospectus, and information that we file later with the Commission will automatically update and supersede information contained in this prospectus supplement and the accompanying prospectus. We incorporate by reference the documents listed below that we have previously filed with the Commission:

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- our Annual Report on Form 10-K, as amended by Amendment No. 1 on Form 10-K/A, for the year ended August 31, 2013;
- the information specifically incorporated by reference into our Annual Report on Form 10-K, as amended by Amendment No. 1 on Form 10-K/A, for the year ended August 31, 2013 from our definitive proxy statement on Schedule 14A filed with the SEC on December 30, 2013;
- our Quarterly Reports on Form 10-Q for the quarterly periods ended November 30, 2013, and February 28, 2014;
- our current reports on Form 8-K filed with the SEC on February 7, 2014, April 18, 2014, April 23, 2014, April 29, 2014, and May 9, 2014, and two current reports on Form 8-K filed with the SEC on June 23, 2014; and
- the description of the Company's Common Stock, par value \$0.001 per share, as contained in Item 1 of the Registration Statement on Form 8-A filed on April 22, 2008, including any amendment or report filed for the purpose of updating such description.

We also incorporate by reference into this prospectus additional documents that we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, excluding, in each case, information deemed furnished and not filed, until we sell all of the securities we are offering or the termination of the offering. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the information that has been incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits that are specifically incorporated by reference into such documents. Requests should be directed to: BSD Medical Corporation, Attention: Investor Relations, 2188 West 2200 South, Salt Lake City, UT 84119, telephone: (801) 972-5555.

5,500,000 Shares of Common Stock

Warrants to Purchase 4,400,000 Shares of Common Stock

4,400,000 Shares of Common Stock Issuable Upon Exercise of the Warrants

BSD MEDICAL CORPORATION

PROSPECTUS SUPPLEMENT

Maxim Group LLC

June 26, 2014

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PROSPECTUS

\$50,000,000

COMMON STOCK, PREFERRED STOCK,
DEBT SECURITIES,
WARRANTS AND UNITS

BSD MEDICAL CORPORATION

From time to time, we may offer up to \$50,000,000 of any combination of the securities described in this prospectus, either individually or in units.

The common stock that we offer pursuant to this prospectus includes the common stock that may be issued pursuant to the following currently outstanding warrants, which we refer to collectively in this prospectus as the Outstanding Warrants. The Outstanding Warrants were previously registered under the registrant's registration statement on Form S-3, initially filed with the Securities and Exchange Commission (the "SEC") on September 23, 2009 (No. 333-162080) (the "Prior Registration Statement"):

- up to 110,294 shares of common stock issuable pursuant to warrants exercisable at an exercise price of \$2.04 per share through August 18, 2015, which we refer to in this prospectus as the February 2010 warrants;
- up to 504,479 shares of common stock issuable pursuant to warrants exercisable at an exercise price of \$1.94 per share through November 7, 2015, which we refer to in this prospectus as the May 2010 warrants;
- up to 918,750 shares of common stock issuable pursuant to warrants exercisable at an exercise price of \$3.27 per share through February 25, 2016, which we refer to in this prospectus as the August 2010 warrants; and
- up to 875,000 shares of common stock issuable pursuant to warrants exercisable at an exercise price of \$7.73 per share through May 19, 2016, which we refer to in this prospectus as the November 2010 warrants.

This prospectus provides a general description of the securities we may offer. Other than the issuance of common stock pursuant to Outstanding Warrants, each time we sell securities, we will provide specific terms of the securities offered in a supplement to this prospectus. We may also authorize one or more free writing prospectuses to be provided to you in connection with these offerings. The prospectus supplement and any related free writing prospectus may also add, update or change information contained in this prospectus. You should carefully read this prospectus, the applicable prospectus supplement and any related free writing prospectus, as well as any documents incorporated by reference before you invest in any securities. Except in the case of issuances of common stock pursuant to the Outstanding Warrants, this prospectus may not be used to consummate a sale of securities unless accompanied by the applicable prospectus supplement.

Our common stock is listed on The Nasdaq Capital Market under the symbol "BSDM." On September 26, 2012, the last reported sale price for our common stock was \$1.29 per share. The applicable prospectus supplement will contain information, where applicable, as to any other listing on The Nasdaq Capital Market or any securities market or other exchange of the securities, if any, covered by the prospectus supplement.

INVESTING IN OUR SECURITIES INVOLVES RISKS. YOU SHOULD REVIEW CAREFULLY THE RISKS AND UNCERTAINTIES DESCRIBED UNDER THE HEADING “RISK FACTORS” ON PAGE 5 AND CONTAINED IN THE APPLICABLE PROSPECTUS SUPPLEMENT AND ANY RELATED FREE WRITING PROSPECTUS AND UNDER SIMILAR HEADINGS IN THE OTHER DOCUMENTS THAT ARE INCORPORATED BY REFERENCE INTO THIS PROSPECTUS.

We will sell these securities directly to investors, through agents designated from time to time or to or through underwriters or dealers. For additional information on the methods of sale, you should refer to the section entitled “Plan of Distribution” in this prospectus. If any underwriters or agents are involved in the sale of any securities with respect to which this prospectus is being delivered, the names of such underwriters or agents and any applicable commissions or discounts and over-allotment options will be set forth in a prospectus supplement. The price to the public of such securities and the net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED IF THIS PROSPECTUS IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus is October 11, 2012

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ABOUT THIS PROSPECTUS

This prospectus is a part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, utilizing a “shelf” registration process. Under this shelf registration process, we may sell any combination of the securities described in this prospectus in one or more offerings up to a total dollar amount of \$50,000,000. This prospectus provides you with a general description of the securities we may offer. Other than the issuance of common stock pursuant to Outstanding Warrants, each time we sell securities under this shelf registration, we will provide a prospectus supplement that will contain specific information about the terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. The prospectus supplement and any related free writing prospectus that we may authorize to be provided to you may also add, update or change information contained in this prospectus or in any documents that we have incorporated by reference into this prospectus. You should read this prospectus, any applicable prospectus supplement and any related free writing prospectus, together with the information incorporated herein by reference as described under the heading “Incorporation by Reference.”

You should rely only on the information that we have provided or incorporated by reference in this prospectus, any applicable prospectus supplement and any related free writing prospectus that we may authorize to be provided to you. We have not authorized any dealer, salesman or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus, any applicable prospectus supplement or any related free writing prospectus that we may authorize to be provided to you. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or the accompanying prospectus supplement. This prospectus and the accompanying supplement to this prospectus do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and the accompanying supplement to this prospectus constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus, any applicable prospectus supplement or any related free writing prospectus is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus, any applicable prospectus supplement or any related free writing prospectus is delivered or securities sold on a later date.

SUMMARY

Prospectus Summary

This summary highlights selected information from this prospectus and does not contain all of the information that you need to consider in making your investment decision. You should carefully read the entire prospectus, including the risks of investing discussed under “Risk Factors” beginning on page 5, the information incorporated by reference, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part.

Throughout this prospectus, references to “BSD,” the “Company,” “we,” “us,” and “our” refer to BSD Medical Corporation.

Our Company

We develop, manufacture, market and service systems to treat cancer and benign diseases using heat therapy delivered using focused radiofrequency (RF) and microwave energy. Our business objectives are to commercialize our products for the treatment of cancer and to further expand our products to treat other diseases and medical conditions. Our product lines for cancer therapy have been created to offer hospitals and clinics a complete solution for thermal

treatment of cancer using microwave/RF systems.

While our primary developments to date have been cancer treatment systems, we also pioneered the use of microwave thermal therapy for the treatment of symptoms associated with enlarged prostate, and we are responsible for technology that has contributed to a new medical industry addressing the needs of men's health. In accordance with our strategic plan, we subsequently sold our interest in TherMatrix, Inc., the company established to commercialize our technology to treat enlarged prostate symptoms, to provide substantial funding. We utilized that funding to commercialize our systems used in the treatment of cancer and to achieve other business objectives.

In spite of the advances in cancer treatment technology, nearly 40% of cancer patients continue to die from the disease in the United States. Our product line includes systems that have been strategically designed to offer a range of thermal treatment systems for the treatment of cancer, including both ablation and hyperthermia treatment systems. Studies have shown that both ablation and hyperthermia treatments kill cancer, but they have different clinical applications.

Our MicroThermX® Microwave Ablation System (the“MicroThermX®”) has been developed as a stand-alone therapy to employ precision-guided microwave energy to ablate (destroy) soft tissue. Thermal ablation usually refers to heat treatments delivered at temperatures above 55°C for short periods of time. The MicroThermX® introduces into our product line innovative, high-end disposable SynchroWave antennas that are used in each ablation treatment and that, we believe, will provide a significant ongoing revenue stream.

Our hyperthermia cancer treatment systems, which have been used for several years in the United States, Europe and Asia, are used to treat certain tumors with heat (hyperthermia) while increasing the effectiveness of other therapies such as radiation therapy. Hyperthermia usually refers to treatments of locally advanced cancers delivered at temperatures of 40-49°C for one hour.

Commercialization of our systems that are used to treat cancer is our most immediate business objective. Current and future cancer treatment sites for our systems may include cancers of the prostate, breast, head, neck, bladder, cervix, colon/rectum, ovaries, esophagus, liver, kidney, brain, bone, stomach and lung. Our cancer treatment systems have been used to treat thousands of patients throughout the world and have received many awards, including the Frost & Sullivan “Technology Innovation of the Year Award” for cancer therapy devices, which was awarded in 2005 for the development of the BSD-2000 Hyperthermia System.

Although we have not yet taken advantage of many of these market opportunities, we believe that our technology has application for a number of other medical purposes in addition to cancer.

Additional Information

Our principal executive offices are located at 2188 West 2200 South, Salt Lake City, Utah 84101, and our telephone number is (801) 972-5555.

The Securities We May Offer

We may offer shares of our common stock and preferred stock, various series of debt securities and warrants to purchase any of such securities, either individually or in units, with a total value of up to \$50 million from time to time under this prospectus, together with any applicable prospectus supplement and related free writing prospectus, at prices and on terms to be determined by market conditions at the time of offering. The common stock that we offer pursuant to this prospectus includes the common stock that may be issued pursuant to the Outstanding Warrants. This prospectus provides you with a general description of the securities we may offer. Other than the issuance of common stock pursuant to Outstanding Warrants, each time we offer a type or series of securities, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities, including, to the extent applicable:

- designation or classification;
- aggregate principal amount or aggregate offering price;
- maturity, if applicable;

· original issue discount, if any;

- rates and times of payment of interest or dividends, if any;
- redemption, conversion, exchange or sinking fund terms, if any;
- conversion or exchange prices or rates, if any, and, if applicable, any provisions for changes to or adjustments in the conversion or exchange prices or rates and in the securities or other property receivable upon conversion or exchange;
- ranking;
- restrictive covenants, if any;
- voting or other rights, if any; and
- important United States federal income tax considerations.

A prospectus supplement and any related free writing prospectus that we may authorize to be provided to you may also add, update or change information contained in this prospectus or in documents we have incorporated by reference. However, no prospectus supplement or free writing prospectus will offer a security that is not registered and described in this prospectus at the time of the effectiveness of the registration statement of which this prospectus is a part.

We may sell the securities directly to or through underwriters, dealers or agents. We, and our underwriters or agents, reserve the right to accept or reject all or part of any proposed purchase of securities. If we do offer securities through underwriters or agents, we will include in the applicable prospectus supplement:

- the names of those underwriters or agents;
- applicable fees, discounts and commissions to be paid to them;
- details regarding over-allotment options, if any; and
- the net proceeds to us.

Common Stock. We may offer shares of our common stock from time to time. Holders of our common stock are entitled to one vote per share on all matters that require stockholder approval. Subject to any preferential rights of any outstanding preferred stock, holders of our common stock are entitled to dividends when and if declared by the board of directors. The common stock that we offer pursuant to this prospectus includes the common stock that may be issued pursuant to the Outstanding Warrants, as described in more detail in this prospectus under “Description of Capital Stock—Outstanding Warrants.” Our common stock is described in greater detail in this prospectus under “Description of Capital Stock — Common Stock.”

Preferred Stock. We currently have authorized 10,000,000 shares of preferred stock, \$0.001 par value per share. We may offer shares of our preferred stock from time to time, in one or more series. Under our certificate of incorporation, our board of directors currently has the authority to designate the shares of preferred stock in one or more series and to fix the privileges, preferences and rights of each series of preferred stock, any or all of which may be greater than the rights of the common stock. Our Preferred Stock is described in greater detail in this prospectus under “Description of Capital Stock — Preferred Stock.”

We will fix the rights, preferences, privileges, qualifications and restrictions of the preferred stock of each series that we sell under this prospectus and applicable prospectus supplements in the certificate of designation relating to that series. We will incorporate by reference into the registration statement of which this prospectus is a part the form of any certificate of designation that describes the terms of the series of preferred stock we are offering before the issuance of the related series of preferred stock. We urge you to read the prospectus supplements and any free writing prospectus that we may authorize to be provided to you related to the series of preferred stock being offered, as well as the complete certificate of designation that contains the terms of the applicable series of preferred stock.

Debt Securities. We may offer debt securities from time to time, in one or more series, as either senior or subordinated debt or as senior or subordinated convertible debt. The debt securities will be issued under one or more documents called indentures, which are contracts between us and a trustee for the holders of the debt securities. In this prospectus, we have summarized certain general features of the debt securities under “Description of Debt Securities.” We urge you, however, to read the prospectus supplements and any free writing prospectus that we may authorize to be provided to you related to the series of debt securities being offered, as well as the complete indentures that contain the terms of the debt securities. Forms of indentures have been filed as exhibits to the registration statement of which this prospectus is a part, and supplemental indentures and forms of debt securities containing the terms of debt securities being offered will be filed as exhibits to the registration statement of which this prospectus is a part, or incorporated by reference from a current report on Form 8-K that we file with the SEC.

Warrants. We may offer warrants for the purchase of our common stock, preferred stock and/or debt securities in one or more series, from time to time. We may issue warrants independently or together with common stock, preferred stock and/or debt securities, and the warrants may be attached to or separate from those securities.

In this prospectus, we have summarized certain general features of the warrants under “Description of Warrants.” We urge you, however, to read the prospectus supplements and any free writing prospectus that we may authorize to be provided to you related to the particular warrants being offered, as well as the complete warrant document or agreement that contain the terms of the warrants. Specific warrant documents or agreements will contain additional important terms and provisions and will be filed as exhibits to the registration statement of which this prospectus is a part, or incorporated by reference from a current report on Form 8-K that we file with the SEC.

Units. We may offer units consisting of common stock, preferred stock, debt securities and/or warrants to purchase any of such securities in one or more series. In this prospectus, we have summarized certain general features of the units under “Description of Units.” We urge you, however, to read the prospectus supplements and any free writing prospectus that we may authorize to be provided to you related to the particular units being offered, as well as the unit agreements that contain the terms of the units. We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from a current report on Form 8-K that we file with the SEC, the form of unit agreement and any supplemental agreements that describe the terms of the units we are offering before the issuance of the related units.

THIS PROSPECTUS MAY NOT BE USED TO OFFER OR SELL ANY SECURITIES UNLESS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.

RISK FACTORS

An investment in our securities involves a high degree of risk. The prospectus supplement applicable to each offering of our securities will contain a discussion of the risks applicable to an investment in our securities. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed under the heading “Risk Factors” in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under Item 1A, “Risk Factors,” in our Annual Report on Form 10-K for the fiscal year ended August 31, 2011, and our Quarterly Reports on Form 10-Q for the quarterly periods ended November 30, 2011, February 29, 2012 and May 31, 2012, all of which are incorporated herein by reference, and may be amended, supplemented or superseded from time to time by other reports we file with the Securities and Exchange Commission in the future. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference contain forward-looking statements. These are based on our management's current beliefs, expectations and assumptions about future events, conditions and results and on information currently available to us. Discussions containing these forward-looking statements may be found, among other places, in the Sections entitled "Business," "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" incorporated by reference from our most recent Annual Report on Form 10-K and in our Quarterly Reports on Form 10-Q, as well as any amendments thereto, filed with the SEC. Within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, these forward-looking statements include, but are not limited to, statements about our business, technologies, prospects, partners, customers, suppliers and regulatory strategies.

All statements, other than statements of historical fact, included or incorporated herein regarding our strategy, future operations, financial position, future revenues, projected costs, plans, prospects and objectives are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as “anticipate,” “believe,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “will,” “would” and similar expressions. Forward-looking statements involve risks, uncertainties and other factors that may cause our actual results, performance, time frames or achievements to be materially different from any future results, performance, time frames or achievements expressed or implied by the forward-looking statements. Risks, uncertainties and other factors that might cause or contribute to such differences include, but are not limited to, those discussed in the Section entitled “Risk Factors” in our most recent Annual Report on Form 10-K and in our Quarterly Reports on Form 10-Q, as well as any amendments thereto filed with the SEC. Given these risks, uncertainties and other factors, many of which are beyond our control, you should not place undue reliance on these forward-looking statements.

Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to revise any forward-looking statements to reflect events or developments occurring after the date of this prospectus, even if new information becomes available in the future.

USE OF PROCEEDS

Except as described in any applicable prospectus supplement and in any free writing prospectuses in connection with a specific offering, we currently intend to use the net proceeds from the sale of the securities offered hereby for operating costs, capital expenditures and for general corporate purposes, including working capital. We may also use a portion of the net proceeds to invest in or acquire businesses or technologies that we believe are complementary to our own, although we have no current plans, commitments or agreements with respect to any acquisitions as of the date of this prospectus.

RATIO OF EARNINGS TO FIXED CHARGES

We do not currently have any indebtedness or outstanding preferred stock. In addition, we own our facilities and so we do not have any rental expense.

If we offer debt securities or preferred stock, then we will, if required, at that time, provide a ratio of combined fixed charges and preference dividends to earnings, respectively, in the applicable prospectus supplement for such offering.

DESCRIPTION OF CAPITAL STOCK

As of the date of this prospectus, our certificate of incorporation authorizes us to issue 80,000,000 shares of common stock, par value \$0.001 per share, and 10,000,000 shares of preferred stock, par value \$0.001 per share. As of September 28, 2012, 29,753,191 shares of common stock were outstanding and no shares of preferred stock were outstanding. In addition, as of September 28, 2012, there were outstanding warrants to purchase an additional 2,408,523 shares of our common stock and options to purchase 3,182,239 shares of our common stock.

The following description of our capital stock is a summary. It is not complete and is subject to and qualified in its entirety by our Amended and Restated Certificate of Incorporation and Bylaws, as amended, a copy of each of which has been incorporated as an exhibit to the registration statement of which this prospectus forms a part.

Our Amended and Restated Certificate of Incorporation and Bylaws contain certain provisions that are intended to enhance the likelihood of continuity and stability in the composition of the board of directors, which may have the effect of delaying, deferring or preventing a future takeover or change in control of BSD unless such takeover or change in control is approved by our board of directors.

Common Stock

Holders of common stock are entitled to one vote per share on all matters to be voted upon by the stockholders. Holders of common stock do not have cumulative voting rights, and, therefore, holders of a majority of the shares voting for the election of directors can elect all of the directors. In such event, the holders of the remaining shares will not be able to elect any directors. Subject to preferences that may be applicable to any then-outstanding preferred stock, holders of common stock are entitled to receive such dividends as may be declared from time to time by our board of directors out of funds legally available therefore. We have never declared or paid cash dividends on our capital stock. We expect to retain future earnings, if any, for use in the operation and expansion of our business, and do not anticipate paying any cash dividends in the foreseeable future.

In the event of our liquidation, dissolution or winding up, holders of common stock are entitled to share ratably in all assets legally available for distribution after payment of all debts and other liabilities and subject to the prior rights of the holders of any preferred stock then outstanding. Holders of common stock have no preemptive or other subscription or conversion rights, and there are no redemption or sinking fund provisions applicable to the common stock.

All outstanding shares of common stock are, and all shares of common stock to be outstanding upon the closing of this offering will be, fully paid and nonassessable.

Additional shares of authorized common stock may be issued, as authorized by our board of directors from time to time, without stockholder approval, except as may be required by applicable stock exchange requirements.

The transfer agent and registrar for our common stock is OTC Stock Transfer, Inc. Our common stock is listed on The Nasdaq Global Market under the symbol "BSDM."

Outstanding Warrants

The shares of common stock registered under the registration statement of which this prospectus is a part include 2,408,523 shares of common stock that underlie the warrants that were issued under the Prior Registration Statement. Such warrants are described below.

| Grant Date | Shares of Common Stock Subject to Warrants* | Exercise Price Per Share* | Expiration Date |
|----------------------|--|------------------------------|-------------------|
| February 17, 2010 | 110,294 | \$2.04 | August 18, 2015 |
| May 6, 2010 | 504,479 | \$1.94 | November 7, 2015 |
| August 24, 2010 | 918,750 | \$3.27 | February 25, 2016 |
| November 18, 2010 | 875,000 | \$7.73 | May 19, 2016 |

*Adjustments to these amounts may occur as a result of stock splits, stock dividends, reorganizations or similar events as described more fully below.

Material Terms of All of the Outstanding Warrants

The exercise price and the number of shares for which each warrant may be exercised is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock and the exercise price of warrants held by a purchaser (or such purchaser's direct or indirect transferee) is subject to appropriate adjustment in the event of cash dividends or other distributions to holders of shares of our common stock.

There is no established public trading market for the warrants, and we do not expect a market to develop. We do not intend to apply to list the warrants on any securities exchange. Without an active market, the liquidity of the warrants will be limited. In addition, in the event our common stock price does not exceed the per share exercise price of the warrants during the period when the warrants are exercisable, the warrants will not have any value.

Holders of the warrants may exercise their warrants to purchase shares of our common stock by delivering an exercise notice, appropriately completed and duly signed. Payment of the exercise price for the number of shares for which the warrant is being exercised is required to be delivered within one trading day after exercise of the warrant. In certain circumstances, a holder of warrants will have the right to exercise its warrants for a net number of warrant shares pursuant to the cashless exercise procedures specified in the warrants. Warrants may be exercised in whole or in part, and any portion of a warrant not exercised prior to the termination date shall be and become void and of no value. The absence of an effective registration statement or applicable exemption from registration does not alleviate our obligation to deliver common stock issuable upon exercise of a warrant.

Upon the holder's exercise of a warrant, we will issue the shares of common stock issuable upon exercise of the warrant within three trading days of our receipt of notice of exercise.

The shares of common stock issuable on exercise of the warrants will be, when issued in accordance with the warrants, duly and validly authorized, issued and fully paid and non-assessable. We will authorize and reserve at least that number of shares of common stock equal to the number of shares of common stock issuable upon exercise of all outstanding warrants.

If, at any time warrants are outstanding, we consummate any fundamental transaction, as described in the warrants and generally including any consolidation or merger into another corporation, the consummation of a transaction whereby another entity acquires more than 50% of our outstanding voting stock, or the sale of all or substantially all of our assets, the successor entity must assume in writing all of our obligations to the warrant holders.

Additionally, in the event of a fundamental transaction, each warrant holder will have the right to require us, or our successor, to repurchase its warrant for an amount of cash equal to the Black-Scholes value of the remaining unexercised portion of the warrant on the date of the consummation of such fundamental transaction.

The exercisability of the warrants may be limited in certain circumstances if, upon exercise, the holder or any of its affiliates would beneficially own more than 4.9% of our common stock.

Preferred Stock

As of the date of this prospectus, there were no shares of preferred stock outstanding. Our Amended and Restated Certificate of Incorporation authorizes 10,000,000 shares of undesignated preferred stock. Our board of directors will have the authority, without any further vote or action by our stockholders, to issue from time to time the preferred stock in one or more series and to fix the price, rights, preferences, privileges and restrictions thereof, including dividend rights, dividend rates, conversion rights, voting rights, terms of redemption, redemption prices, liquidation preferences and the number of shares constituting a series or the designation of such series. The issuance of preferred stock, while providing desirable flexibility in connection with possible acquisitions and other corporate purposes, could decrease the amount of earnings and assets available for distribution to holders of common stock or adversely affect the rights and powers, including voting rights, of the holders of common stock, and may have the effect of delaying, deferring or preventing a change in control without further action by the stockholders. We have no current plans to issue any shares of preferred stock.

Future Preferred Stock. Our board of directors will fix the rights, preferences, privileges, qualifications and restrictions of the preferred stock of each series that we sell under this prospectus and applicable prospectus supplements in the certificate of designation relating to that series. We will file as an exhibit to the registration statement of which this prospectus is a part, or incorporate by reference into the registration statement of which this prospectus is a part the form of any certificate of designation that describes the terms of the series of preferred stock we are offering before the issuance of the related series of preferred stock. This description will include:

- the title and stated value;
- the number of shares we are offering;
- the liquidation preference per share;
- the purchase price per share;
- the dividend rate per share, dividend period and payment dates and method of calculation for dividends;
- whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;
- our right, if any, to defer payment of dividends and the maximum length of any such deferral period;
- the procedures for any auction and remarketing, if any;
- the provisions for a sinking fund, if any;
- the provisions for redemption or repurchase, if applicable, and any restrictions on our ability to exercise those redemption and repurchase rights;
- any listing of the preferred stock on any securities exchange or market;
- whether the preferred stock will be convertible into our common stock or other securities of ours, including warrants, and, if applicable, the conversion period, the conversion price, or how it will be calculated, and under what circumstances it may be adjusted;
- whether the preferred stock will be exchangeable into debt securities, and, if applicable, the exchange period, the exchange price, or how it will be calculated, and under what circumstances it may be adjusted;
- voting rights, if any, of the preferred stock;
- preemption rights, if any;
- restrictions on transfer, sale or other assignment, if any;
- a discussion of any material or special United States federal income tax considerations applicable to the preferred stock;
- the relative ranking and preferences of the preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs;
- any limitations on issuances of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock being issued as to dividend rights and rights if we liquidate, dissolve or wind up our affairs; and
-

any other specific terms, rights, preferences, privileges, qualifications or restrictions of the preferred stock.

When we issue shares of preferred stock under this prospectus, the shares will be fully paid and nonassessable and will not have, or be subject to, any preemptive or similar rights.

The General Corporation Law of the State of Delaware, the state of our incorporation, provides that the holders of preferred stock will have the right to vote separately as a class on any proposal involving fundamental changes in the rights of holders of that preferred stock. This right is in addition to any voting rights that may be provided for in the applicable certificate of designation.

Antitakeover Effects of Provisions of Charter Documents and Delaware Law

Certain provisions of our Amended and Restated Certificate of Incorporation and Bylaws could make the following more difficult:

- acquisition of us by means of a tender offer;
- acquisition of us by means of a proxy contest or otherwise; and
- the removal of our incumbent officers and directors.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection resulting from our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging such proposals because we believe that the negotiation of such proposals could result in an improvement of their terms.

Stockholder Meetings. Our Amended and Restated Certificate of Incorporation provides that only the board of directors, the Chairman of the Board, the Chief Executive Officer or our President may call special meetings of stockholders. The provision may not be amended without the affirmative vote of holders of at least 66 2/3% of our outstanding voting stock.

Elimination of Stockholder Action By Written Consent. Our charter documents eliminate the right of stockholders to act by written consent without a meeting.

Elimination of Cumulative Voting. Our charter documents do not provide for cumulative voting in the election of directors.

Undesignated Preferred Stock. The ability to authorize undesignated preferred stock makes it possible for the board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of us.

Delaware Takeover Statute. We are subject to Section 203 of the General Corporation Law of the State of Delaware, or DGCL, which regulates acquisitions of some Delaware corporations. In general, Section 203 prohibits, with some exceptions, a publicly held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years following the date of the transaction in which the person became an interested stockholder, unless:

- the board of directors of the corporation approved the business combination or the other transaction in which the person became an interested stockholder prior to the date of the business combination or other transaction;
- upon consummation of the transaction that resulted in the person becoming an interested stockholder, the person owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding shares owned by persons who are directors and also officers of the corporation and shares issued under employee stock plans under 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 subsequent to the date the person became an interested stockholder, the board of directors of the corporation approved the business combination and the stockholders of the corporation authorized the business combination at an annual or special meeting of stockholders by the affirmative vote of at least 66-2/3% of the outstanding stock of the corporation not owned by the interested stockholder.

Section 203 of the DGCL generally defines a “business combination” to include any of the following:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition to the interested stockholder of assets with a value equal to 10% or more of the corporation’s assets or outstanding stock;
- in general, any transaction that results in the issuance or transfer by the corporation of any of its stock to the interested stockholder;
- any transaction involving the corporation that has the effect of increasing the proportionate share of its stock 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 provided by or through the corporation.

In general, Section 203 defines an “interested stockholder” as any person who, together with the person’s affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation’s voting stock.

Section 203 of the DGCL could depress our stock price and delay, discourage or prohibit transactions not approved in advance by our board of directors, such as takeover attempts that might otherwise involve the payment to our stockholders of a premium over the market price of our common stock.

The provisions of Delaware law and our Amended and Restated Certificate of Incorporation and Bylaws could have the effect of discouraging others from attempting unsolicited takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored unsolicited takeover attempts. Such provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions, which stockholders may otherwise deem to be in their best interests.

DESCRIPTION OF DEBT SECURITIES

This section describes the general terms and provisions of the debt securities that we may offer using this prospectus and the related indentures. This section is only a summary and does not purport to be complete. You must look to the relevant form of debt security and the related indenture for a full understanding of all terms of any series of debt securities. The form of debt security and the related indenture have been or will be filed or incorporated by reference as exhibits to the registration statement of which this prospectus is a part. See “Where You Can Find More Information” for information on how to obtain copies.

We may issue senior or subordinated debt securities from time to time in one or more series under one of two separate indentures, which may be supplemented or amended from time to time. Senior debt securities will be issued under a senior indenture and subordinated debt securities will be issued under a subordinated indenture. The senior debt indenture and the subordinated debt indenture are referred to individually in this prospectus as the “indenture” and collectively as the “indentures.” This prospectus outlines briefly the provisions of the indentures. The particular terms of a series of debt securities and the extent, if any, to which the particular terms of the issue modify the terms of the indenture will be described in the accompanying prospectus supplement relating to such series of debt securities. In some instances, certain of the precise terms of debt securities you are offered may be described in a further prospectus supplement, known as a pricing supplement. The indentures are subject to and governed by the Trust Indenture Act of

1939, as amended, and may be supplemented or amended from time to time following their execution.

The debt securities may be denominated and payable in U.S. dollars or foreign currencies. We may also issue debt securities with the principal amount, interest or other amounts payable to be determined by reference to one or more currency exchange rates, securities or baskets of securities, commodity prices, indices or any other financial, economic or other measure or instrument, including the occurrence or non-occurrence of any event or circumstance. Debt securities may bear interest at a fixed rate, which may be zero, or a floating rate.

Some of the debt securities may be issued as original issue discount debt securities. Original issue discount securities bear no interest or bear interest at below-market rates and will be sold at a discount from their stated principal amount. The prospectus supplement relating to an issue of original issue discount securities will contain information relating to United States federal income tax, accounting, and other special considerations applicable to original issue discount securities.

Holders may present debt securities for exchange or transfer, in the manner, at the places and subject to the restrictions stated in the debt securities and described in the applicable prospectus supplement and other offering material we will provide. We will provide these services without charge except for any tax or other governmental charge payable in connection with these services and subject to any limitations provided in the applicable indenture pursuant to which such debt securities are issued.

Holders may transfer debt securities in definitive bearer form and the related coupons, if any, by delivery to the transferee. If any of the securities are held in global form, the procedures for transfer of interests in those securities will depend upon the procedures of the depository for those global securities.

We will generally have no obligation to repurchase, redeem, or change the terms of debt securities upon any event (including a change in control) that might have an adverse effect on our credit quality.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements and free writing prospectuses, summarizes the material terms and provisions of the warrants that we may offer under this prospectus, which may consist of warrants to purchase common stock, preferred stock or debt securities and may be issued in one or more series. This information does not relate to the Outstanding Warrants. Warrants may be offered independently or together with common stock, preferred stock or debt securities offered by any prospectus supplement, and may be attached to or separate from those securities. While the terms we have summarized below will apply generally to any warrants that we may offer under this prospectus, we will describe the particular terms of any warrants that we may offer in more detail in the applicable prospectus supplement and any applicable free writing prospectus. The terms of any warrants offered under a prospectus supplement may differ from the terms described below. However, no prospectus supplement will fundamentally change the terms that are set forth in this prospectus or offer a security that is not registered and described in this prospectus at the time of its effectiveness.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from a current report on Form 8-K that we file with the SEC, the form of warrant document or agreement that describes the terms of the particular warrants we are offering before the issuance of the related warrants. The following summaries of material provisions of the warrants are subject to, and qualified in their entirety by reference to, all the provisions of the warrant document or agreement applicable to particular warrants. We urge you to read the applicable prospectus supplement and any applicable free writing prospectus related to the particular warrants that we sell under this prospectus, as well as the complete warrant document or agreement that contain the terms of the warrants.

General

We will describe in the applicable prospectus supplement the terms relating to the warrants, including, if applicable:

- the offering price and aggregate number of warrants offered;
- the currency for which the warrants may be purchased;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
- if applicable, the date on and after which the warrants and the related securities will be separately transferable;
- in the case of warrants to purchase debt securities, the principal amount of debt securities purchasable upon exercise of one warrant and the price at, and currency in which, this principal amount of debt securities may be purchased upon such exercise;
- in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;
- the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreements and the warrants;
- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
- the dates on which the right to exercise the warrants will commence and expire;
- the manner in which the warrant agreements and warrants may be modified;
- material United States federal income tax consequences of holding or exercising the warrants;
- the terms of the securities issuable upon exercise of the warrants; and
- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including:

- in the case of warrants to purchase debt securities, the right to receive payments of principal of, or premium, if any, or interest on, the debt securities purchasable upon exercise or to enforce covenants in the applicable indenture; or
- in the case of warrants to purchase common stock or preferred stock, the right to receive dividends, if any, or, payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to the specified time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth in the warrant agreement or documents and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant documents properly completed and duly executed at the office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

DESCRIPTION OF UNITS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the units that we may offer under this prospectus. While the terms we have summarized below will apply generally to any units that we may offer under this prospectus, we will describe the particular terms of any series of units in more detail in the applicable prospectus supplement. The terms of any units offered under a prospectus supplement may differ from the terms described below. However, no prospectus supplement will fundamentally change the terms that are set forth in this prospectus or offer a security that is not registered and described in this prospectus at the time of its effectiveness.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from a current report on Form 8-K that we file with the SEC, the form of unit agreement that describes the terms of the units we are offering, and any supplemental agreements, before the issuance of the related units. The following summaries of material terms and provisions of the units are subject to, and qualified in their entirety by reference to, all the provisions of the unit agreement and any supplemental agreements applicable to particular units. We urge you to read the applicable prospectus supplements related to the particular units that we sell under this prospectus, as well as the complete unit agreement and any supplemental agreements that contain the terms of the units.

General

We may issue units comprised of one or more debt securities, shares of common stock, shares of preferred stock and warrants in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We will describe in the applicable prospectus supplement the terms of the units, including:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement that differ from those described below; and
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The provisions described in this section, as well as those described under “Description of Capital Stock,” “Description of Debt Securities” and “Description of Warrants” will apply to each unit and to any common stock, preferred stock, debt security or warrant included in each unit, respectively.

Issuance in Series

We may issue units in such amounts and in numerous distinct series as we determine.

Enforceability of Rights by Holders of Units

Each unit agent will act solely as our agent under the applicable unit agreement and will not assume any obligation or relationship of agency or trust with any holder of any unit. A single bank or trust company may act as unit agent for more than one series of units. A unit agent will have no duty or responsibility in case of any default by us under the applicable unit agreement or unit, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a unit may, without the consent of the related unit agent or the holder of any other unit, enforce by appropriate legal action its rights as holder under any security included in the unit.

We, the unit agents, and any of their agents may treat the registered holder of any unit certificate as an absolute owner of the units evidenced by that certificate for any purpose and as the person entitled to exercise the rights attaching to the units so requested, despite any notice to the contrary.

PLAN OF DISTRIBUTION

We may sell the securities to or through underwriters or dealers, through agents, directly to one or more purchasers, or through any combination of these methods. The distribution of the securities may be effected from time to time in one or more transactions at a fixed price or prices, which may be changed, at market prices prevailing at the time of sale, at prices related to the prevailing market prices or at negotiated prices.

We may also sell and effect the distribution of up to 2,408,523 shares of common stock issuable pursuant to the Outstanding Warrants, which includes:

- up to 110,294 shares of common stock issuable pursuant to warrants exercisable at an exercise price of \$2.04 per share through August 18, 2015;
- up to 504,479 shares of common stock issuable pursuant to warrants exercisable at an exercise price of \$1.94 per share through November 7, 2015;
- up to 918,750 shares of common stock issuable pursuant to warrants exercisable at an exercise price of \$3.27 per share through February 25, 2016; and
- up to 875,000 shares of common stock issuable pursuant to warrants exercisable at an exercise price of \$7.73 per share through May 19, 2016.

Shares issued upon exercise of the Outstanding Warrants will be issued by us directly to the holders of the warrants upon such warrant holder's election to exercise the warrants for cash, or, in specified circumstances pursuant to cashless exercise provisions. Additional information on the exercise provisions of the Outstanding Warrants is described above under the heading "Description of Capital Stock—Outstanding Warrants."

Other than the issuance of common stock pursuant to Outstanding Warrants, a prospectus supplement or supplements (and any related free writing prospectus that we may authorize to be provided to you) will describe the terms of the offering of the securities, including, to the extent applicable:

- the name or names of any underwriters or dealers, if any;
- the purchase price of the securities and the proceeds we will receive from the sale;
- any over-allotment options under which underwriters may purchase additional securities from us;

- any agency fees or underwriting discounts and other items constituting agents' or underwriters' compensation;
- any public offering price;
- any discounts or concessions allowed or reallocated or paid to dealers; and
- any securities exchange or market on which the securities may be listed.

Only underwriters named in the prospectus supplement are underwriters of the securities offered by the prospectus supplement.

By Underwriters

If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions at a fixed public offering price or at varying prices determined at the time of sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Subject to certain conditions, the underwriters will be obligated to purchase all of the securities offered by the prospectus supplement. Any public offering price and any discounts or concessions allowed or reallocated may change from time to time. We may use underwriters with whom we have a material relationship. We will describe in the prospectus supplement, naming the underwriter, the nature of any such relationship.

By Dealers

If a dealer is utilized in the sale of any securities offered by this prospectus, we will sell those securities to the dealer, as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale. We will set forth the names of the dealers and the terms of the transaction in the applicable prospectus supplement.

By Agents

We may sell securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best-efforts basis for the period of its appointment.

By Direct Sales

We may also directly sell securities offered by this prospectus. In this case, no underwriters or agents would be involved. We will describe the terms of those sales in the applicable prospectus supplement.

General Information

Underwriters, dealers and agents that participate in the distribution of the securities offered by this prospectus may be deemed underwriters under the Securities Act, and any discounts or commissions they receive from us and any profit on their resale of the securities may be treated as underwriting discounts and commissions under the Securities Act.

We may authorize agents, dealers or underwriters to solicit offers by certain types of institutional investors to purchase securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. We will describe the conditions to these contracts and the commissions we must pay for solicitation of these contracts in the prospectus supplement.

We may provide agents and underwriters with indemnification against civil liabilities related to this offering, including liabilities under the Securities Act, or contribution with respect to payments that the agents or underwriters may make with respect to these liabilities. Agents and underwriters may engage in transactions with, or perform services for, us in the ordinary course of business.

Some or all of the securities we offer, other than common stock, will be new issues of securities with no established trading market. Any underwriters may make a market in these securities, but will not be obligated to do so and may discontinue any market making at any time without notice. We cannot guarantee the liquidity of the trading markets for any securities.

We may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third parties may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of stock, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of stock. The third parties in such sale transactions will be identified in the applicable prospectus supplement.

One or more firms, referred to as “remarketing firms,” may also offer or sell the securities, if the prospectus supplement so indicates, in connection with a remarketing arrangement upon their purchase. Remarketing firms will act as principals for their own accounts or as agents for us. These remarketing firms will offer or sell the securities in accordance with the terms of the securities. The prospectus supplement will identify any remarketing firm and the terms of its agreement, if any, with us and will describe the remarketing firm’s compensation. Remarketing firms may be deemed to be underwriters in connection with the securities they remarket.

Any underwriter may engage in overallotment, stabilizing transactions, short covering transactions and penalty bids in accordance with Regulation M under the Exchange Act. Overallotment involves sales in excess of the offering size, which create a short position. This short sales position may involve either “covered” short sales or “naked” short sales. Covered short sales are short sales made in an amount not greater than the underwriters’ over-allotment option to purchase additional securities in this offering described above. The underwriters may close out any covered short position either by exercising their over-allotment option or by purchasing securities in the open market. To determine how they will close the covered short position, the underwriters will consider, among other things, the price of securities available for purchase in the open market, as compared to the price at which they may purchase securities through the over-allotment option. Naked short sales are short sales in excess of the over-allotment option. The underwriters must close out any naked short position by purchasing securities in the open market. A naked short position is more likely to be created if the underwriters are concerned that, in the open market after pricing, there may be downward pressure on the price of the securities that could adversely affect investors who purchase securities in this offering. Stabilizing transactions permit bids to purchase the underlying security for the purpose of fixing the price of the security so long as the stabilizing bids do not exceed a specified maximum. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a covering transaction to cover short positions.

Any underwriters who are qualified market makers on the NASDAQ Global Market may engage in passive market making transactions in our common stock, preferred stock, warrants and debt securities, as applicable, on the NASDAQ Global Market in accordance with Rule 103 of Regulation M, during the business day prior to the pricing of the offering, before the commencement of offers or sales of the securities. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; if all independent bids are lowered below the passive market maker’s bid, however, the passive market maker’s bid must then be lowered when certain purchase limits are exceeded.

In compliance with the guidelines of the Financial Industry Regulatory Authority, Inc. (“FINRA”), the aggregate maximum discount, commission, agency fees or other items constituting underwriting compensation to be received by any FINRA member or independent broker-dealer will not exceed 8% of the gross offering proceeds from any

offering pursuant to this prospectus and any applicable prospectus supplement or pricing supplement, as the case may be.

Similar to other purchase transactions, an underwriter's purchase to cover the syndicate short sales or to stabilize the market price of our securities may have the effect of raising or maintaining the market price of our securities or preventing or mitigating a decline in the market price of our securities. As a result, the price of our securities may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of the securities if it discourages resales of the securities.

Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of the securities. If such transactions are commenced, they may be discontinued without notice at any time.

Our common stock is listed on The Nasdaq Global Market under the symbol “BSDM.”

LEGAL MATTERS

Dorsey & Whitney LLP, Salt Lake City, Utah will pass for us upon the validity of the securities being offered by this prospectus and applicable prospectus supplement, and counsel named in the applicable prospectus supplement will pass upon legal matters for any underwriters, dealers or agents.

EXPERTS

Tanner LLC, independent registered public accountants, have audited our financial statements and the effectiveness of the Company’s internal control over financial reporting incorporated by reference in this prospectus for the year ended August 31, 2011, as set forth in their report contained in our annual report on Form 10-K, which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Tanner LLC’s report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are a reporting company and file annual, quarterly and current reports, proxy statements and other information with the SEC. We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the securities we are offering under this prospectus. This prospectus does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities we are offering under this prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. You may read and copy the registration statement, as well as our reports, proxy statements and other information, at the SEC’s Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the Public Reference Room. The SEC maintains an internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, where our SEC filings are also available. The address of the SEC’s web site is “<http://www.sec.gov>.” We maintain a website at www.bsdmc.com. Information contained in or accessible through our website does not constitute a part of this prospectus.

INCORPORATION BY REFERENCE

The SEC allows us to “incorporate by reference” information that we file with it into this prospectus, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus. The information incorporated by reference is considered to be a part of this prospectus, and information that we file later with the Commission will automatically update and supersede information contained in this prospectus and any accompanying prospectus supplement. We incorporate by reference the documents listed below that we have previously filed with the Commission:

- Our Annual Report on Form 10-K for the year ended August 31, 2011;
- Our Quarterly Reports on Form 10-Q for the quarters ended November 30, 2011, February 29, 2012 and May 31, 2012;
- Our Current Reports on Form 8-K filed on January 10, 2012 and February 7, 2012 and Form 8-K/A filed on December 20, 2011 and
- the description of the Company's Common Stock, par value \$0.001 per share, as contained in Item 1 of the Registration Statement on Form 8 A filed on April 22, 2008, including any amendment or report filed for the purpose of updating such description.

We also incorporate by reference into this prospectus additional documents that we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, excluding, in each case, information deemed furnished and not filed until we sell all of the securities we are offering or the termination of the offering. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the information that has been incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits that are specifically incorporated by reference into such documents. Requests should be directed to: BSD Medical Corporation, Attention: Investor Relations, 2188 West 2200 South, Salt Lake City, UT 84119, telephone: (801) 972-5555.

SD MEDICAL CORPORATION

\$50,000,000

Common Stock, Preferred Stock,
Debt Securities,
Warrants and Units

PROSPECTUS

October 11, 2012