

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

FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

BACTERIN INTERNATIONAL HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Delaware

*(State or other jurisdiction of
incorporation or organization)*

3841

*(Primary Standard Industrial
Classification Code Number)*

20-5313323

*(I.R.S. Employer
Identification Number)*

**600 Cruiser Lane
Belgrade, Montana 59714
(406) 388-0480**

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

**John P. Gandolfo
Chief Financial Officer
600 Cruiser Lane
Belgrade, Montana 59714
(406) 388-0480**

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

Copies to:

**Jill Gilpin
VP and Legal Counsel
600 Cruiser Lane
Belgrade, Montana 59714
(406) 388-0480**

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this registration statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company

Title of Each Class of Securities to be Registered	Amount to be Registered (1)(2)	Proposed Maximum Offering Price Per Share (3)	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, \$0.000001 par value per share	5,293,181	\$ 2.635	\$ 13,947,531.94	\$ 1,619.31

- (1) Pursuant to Rule 416 under the Securities Act, this registration statement also covers an indeterminate number of additional shares as may be issued as a result of adjustments by reason of any stock split, stock dividend, or similar transaction.
- (2) The shares are being registered for resale from time to time by the selling stockholder and include 5,000,000 shares issuable to the selling stockholder from time to time upon the delivery of purchase notice pursuant to the terms of a Purchase Agreement between the Company and the selling stockholder (the "Purchase Agreement"), 326,798 shares previously purchased by the selling stockholder, 128,506 shares previously issued to the selling stockholder as Initial Commitment shares pursuant to the Purchase Agreement, 164,675 shares issuable to the selling stockholder from time to time as Additional Commitment Shares pursuant to the terms of the Purchase Agreement, and 130,719 shares issuable upon the exercise of warrants.
- (3) Estimated pursuant to Rule 457(c) solely for the purpose of calculating the amount of the registration fee based upon the average of the high and low prices of the registrant's common stock on July 8, 2011 as reported by the NYSE Amex.

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

The information in this prospectus is not complete and may be changed. The selling security holder may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED _____, 2011

PROSPECTUS

5,293,181 Shares



Common Stock

This prospectus relates to the resale of up to an aggregate of 5,293,181 shares (the "Shares") of our common stock which may be offered by the selling stockholder, Lincoln Park Capital Fund, LLC ("LPC"), from time to time. The shares of common stock being offered by the selling stockholder are issuable pursuant to the LPC Purchase Agreement, which we refer to in this prospectus as the Purchase Agreement. Please refer to the section of this prospectus entitled "The LPC Transaction" for a description of the Purchase Agreement and the section entitled "Selling Stockholder" for additional information about the selling stockholder. The prices at which LPC may sell the shares will be determined by the prevailing market price for the shares or in negotiated transactions. We will not receive proceeds from the sale of our shares by LPC.

We expect that sales made pursuant to this prospectus will be made through ordinary brokerage transactions, in privately negotiated sales or through any other means described in the section titled "Plan of Distribution." The selling stockholder will determine when they will sell their Shares and whether the Shares are sold at market prices or negotiated discounts.

Although we will not receive any of the proceeds of sales by the selling stockholder, we will receive payment of the purchase price for shares purchased from us by the selling stockholder pursuant to the Purchase Agreement. We expect to use the proceeds from the payment of the purchase price for the shares purchased from us for working capital and general corporate purposes. We will pay the expenses incurred to register the Shares for resale, but the selling stockholder will pay any underwriting discounts, concessions, or brokerage commissions associated with the sale of their Shares.

Our common stock is registered under Section 12(b) of the Securities Exchange Act of 1934 and listed on the NYSE Amex under the symbol "BONE." On July 8, 2011, the last reported price of our common stock was \$2.60 per share. The Shares offered pursuant to this prospectus have been approved for listing on the NYSE Amex.

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 4 of this prospectus for a discussion of information that should be considered in connection with an investment in our common stock.

The selling stockholder is an "underwriter" within the meaning of the Securities Act of 1933, as amended.

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 _____, 2011

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You should rely only on the information contained in this prospectus. We have not authorized anyone to provide you with information different from that contained in this prospectus. The selling stockholder is offering to sell, and seeking offers to buy, shares of common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or of any sale of our common stock.

PROSPECTUS SUMMARY

Business

We are a Delaware corporation. Our executive offices are located at 600 Cruiser Lane, Belgrade, Montana 59714 and our telephone number is (406) 388-0480. Our website is located at www.bacterin.com. The information on our website is not part of this prospectus.

We develop, manufacture and market biologics products to domestic and international markets through our biologics division. Our products are used in a variety of applications including enhancing fusion in spine surgery, relief of back pain with a facet joint stabilization, promotion of bone growth in foot and ankle surgery, promotion of skull healing following neurosurgery and subcondral bone defect repair in knee and other joint surgeries.

Our medical devices division develops medical devices intended for use in several diverse clinical areas including orthopedic, plastic, and cardiovascular surgery. Our background and expertise is in the research, testing, and development of coatings for medical devices, particularly antimicrobial-based coatings.

The manufacturing and operations of the biologics and device divisions are organized separately while products from both are marketed through several channels including independent distributors, joint development projects and our direct sales network which we began to implement in the last half of 2009. To date, we have established 13 regions with a regional vice-president in charge of all activities within the region and have hired and trained 52 sales representatives. Our customers are located worldwide, with approximately 97% of our 2010 sales being derived from customers located in the United States. Our headquarters, laboratory and manufacturing facilities are located in Belgrade, Montana.

The Offering

On May 27, 2011, we executed a Purchase Agreement and a Registration Rights Agreement with Lincoln Park Capital Fund, LLC, pursuant to which LPC purchased 326,798 shares of our common stock together with warrants, not included in this Offering, to purchase 130,719 shares of our common stock at an exercise price of \$3.06 per share, for total consideration of \$1,000,000. Under the Purchase Agreement, we also have the right to sell to LPC up to an additional \$30,000,000 of our common stock at our discretion as described below.

Pursuant to the Registration Rights Agreement, we are filing this registration statement and prospectus with the Securities and Exchange Commission (the "SEC") covering shares that have been issued or may be issued to LPC under the Purchase Agreement. We do not have the right to commence any additional sales of our shares to LPC until the SEC has declared effective the registration statement of which this Prospectus is a part. After the registration statement is declared effective, over approximately 36 months, generally we have the right to direct LPC to purchase up to an additional \$30,000,000 of our common stock in amounts up to \$100,000 as often as every business day under certain conditions. We can also accelerate the amount of our stock to be purchased under certain circumstances up to \$1,000,000. No sales of shares may occur below \$2.00 per share. There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to LPC. The purchase price of the shares will be based on the market prices of our shares immediately preceding the time of sale as computed under the Purchase Agreement without any fixed discount. We may at any time in our sole discretion terminate the Purchase Agreement without fee, penalty or cost upon one business day notice. We also issued 128,506 shares of our stock to LPC as a commitment fee for entering into the agreement, and we may issue up to 164,675 shares pro rata as LPC purchases up to an additional \$30,000,000 of our stock as directed by us. LPC may not assign or transfer its rights and obligations under the Purchase Agreement.

As of May 23, 2011, we had 38,076,859 shares outstanding (with 22,318,617 shares held by non-affiliates). The 5,293,181 shares offered hereby consist of 128,506 shares that we issued as a commitment fee, 164,675 shares that we may issue pro rata as up to \$30,000,000 of our stock is purchased by LPC, and the remainder representing shares we may sell to LPC under the Purchase Agreement including 326,798 that we have already issued related to the \$1,000,000 purchase. If all 5,293,181 shares offered by LPC hereby were issued and outstanding as of the date hereof, such shares would represent 12.2% of the total common stock outstanding or 19.17% of the non-affiliates shares outstanding, as adjusted, based on the number of shares outstanding as of May 23, 2011, in addition to the 5,293,181 shares covered by this registration statement, most of which have not yet been issued. The number of shares ultimately offered for sale by LPC is dependent upon the number of shares purchased by LPC under the Purchase Agreement.

The Offering

Common stock to be offered by the selling stockholder

5,293,181 shares consisting of:

- 128,506 initial commitment shares issued to LPC;
- 164,675 shares that we are required to issue proportionally in the future, as a commitment fee, if and when we sell additional shares to LPC under the Purchase Agreement and
- 5,000,000 shares we may sell to LPC under the Purchase Agreement, including 326,798 which have been issued in connection with the \$1,000,000 purchase.

Use of proceeds

We will not receive any of the proceeds of sales of common stock by the selling stockholder, however, we will receive the purchase price paid for shares purchased pursuant to the Purchase Agreement. We expect to use such proceeds for working capital and other general corporate purposes.

Risk factors

See “Risk Factors” and other information included in this prospectus for a discussion of factors that you should consider before deciding to invest in shares of our common stock.

NYSE Amex Symbol

BONE

RISK FACTORS

Before you invest in our common stock, you should be aware that there are risks, including those set forth below. You should carefully consider these risk factors, together with all the other information included in this prospectus, before you decide to purchase shares of our common stock.

Risks Related to Our Business and Our Industry

Our products are relatively new and long-term results are incomplete, thus, the future of our business still remains uncertain.

Many of our current products are relatively new and have been in use for a relatively short period of time. The results of the use of these products will be monitored for many years. While preliminary results have been good, there can be no assurance that any or all of these products will perform well over longer periods of time. Future product issues may expose us to legal actions, removal of regulatory approvals or products being pulled from use. If we become subject to product or general liability or errors and omissions claims, they could be time-consuming and costly. The U.S. Food and Drug Administration, or the FDA, and foreign regulatory authorities may impose significant restrictions on the use or marketing of our products or impose additional requirements. Later discovery of previously unknown problems with any of these products or their manufacture may result in further restrictions, including withdrawal of the product from the market. Any such restrictions or withdrawals could materially affect our ability to execute our business plan. In addition, governmental authorities could seize our inventory of products, or force us to recall any product already in the market if we fail to comply with FDA or other governmental regulations.

Many competitive products exist and more will be developed, and we may not be able to successfully compete because we are smaller and have fewer financial resources.

Our business is in a very competitive and evolving field. Rapid new developments in this field have occurred over the past few years, and are expected to continue to occur. Other companies already have competing products available or about to be available or may develop products to compete with ours.

Many of these products may have short regulatory timeframes and our competitors, many with more substantial development resources, may be able to develop competing products that are equal to or better than ours. This may make our products obsolete or undesirable by comparison and reduce our revenue. Our success will depend, in large part, on our ability to maintain a competitive position concerning our intellectual property, and to develop new technologies and new applications for our technologies. Many of our competitors have substantially greater financial and technical resources, as well as greater production and marketing capabilities, than us.

The medical community and the general public may perceive synthetic materials and growth factors as safer, which could have a material adverse effect on our business.

Members of the medical community and the general public may perceive synthetic materials and growth factors as safer than our allograft-based bone tissue products.

Our products may be incapable of competing successfully with synthetic bone graft substitutes and growth factors developed and commercialized by others, which could have a material adverse effect on our business, financial condition and results of operations.

Negative publicity concerning methods of human tissue recovery and screening of donor tissue in the industry in which we operate may reduce demand for our allografts and impact the supply of available donor tissue.

Media reports or other negative publicity concerning both improper methods of tissue recovery from donors and disease transmission from donated tissue may limit widespread acceptance of our allografts. Unfavorable reports of improper or illegal tissue recovery practices, both in the United States and internationally, as well as incidents of improperly processed tissue leading to transmission of disease, may broadly affect the rate of future tissue donation and market acceptance of allograft technologies. Potential patients may not be able to distinguish our allografts, technologies and the tissue recovery and the processing procedures from those of our competitors or others engaged in tissue recovery. In addition, families of potential donors may become reluctant to agree to donate tissue to for-profit tissue processors.

We are highly dependent on the availability of human donors; any disruptions could cause our customers to seek alternative providers or technologies.

We are highly dependent on our ability to obtain donor cadavers as the raw material for many of our products. The availability of acceptable donors is relatively limited and we compete with many other companies for this limited availability. The availability of donors is also impacted by regulatory changes, general public opinion of the donor process and our reputation for our handling of the donor process. In addition, due to seasonal changes in the mortality rates, some scarce tissues are at times in short supply. Any disruption in the supply of this crucial raw material could have significant consequences for our revenue, operating results and continued operations.

We will need to continue to innovate and develop new products to be desirable to our customers.

The markets for our products and services are characterized by rapid technological change, frequent new introductions, changes in customers' demands and evolving industry standards. Accordingly, we will need to continue to innovate and develop additional products. These efforts can be costly, subject to long development and regulatory delays and may not result in products approved for sale. These costs may hurt operating results and may require additional capital. If additional capital is not available, we may be forced to curtail development activities. In addition, any failure on our behalf to react to changing market conditions could create an opportunity for other market participants to capture a critical share of the market within a short period of time.

Our success will depend on our ability to engage and retain qualified technical personnel who are difficult to attract.

Our success will depend on our ability to attract and retain qualified technical personnel to assist in research and development, testing, product implementation, low-scale production and technical support. Competition for qualified technical personnel is intense, and we may encounter difficulty in engaging and retaining qualified personnel needed to implement our growth plan. The demand for such personnel is high and the supply of qualified technical personnel is limited. A significant increase in the wages paid by competing employers could result in a reduction of our technical work force and increases in the wage rates that we must pay or both. If either of these events were to occur, our cost structure could increase and our growth potential could be impaired.

Loss of key members of our management who we need to succeed could adversely affect our business.

We are highly dependent on the services of Guy Cook, our President and Chief Executive Officer, and other key members of our management team and the loss of his or any of their services could have an adverse effect on our future operations. We do not currently maintain a key-man life insurance policy insuring the life of Mr. Cook or any other member of our management team.

We are highly dependent on the continued availability of our facilities and would be harmed if they were unavailable for any prolonged period of time.

Any failure in the physical infrastructure of our facilities or services could lead to significant costs and disruptions that could reduce our revenues and harm our business reputation and financial results. We are highly reliant on our Belgrade, Montana facilities. Any natural or man-made event that impacts our ability to utilize these facilities could have a significant impact on our operating results, reputation and ability to continue operations. The regulatory process for approval of facilities is time-consuming and our ability to rebuild facilities would take a considerable amount of time and expense and cause a significant disruption in service to our customers. Further, the FDA or some other regulatory agency could identify deficiencies in future inspections of our facilities or our supplies that could disrupt our business, reducing profitability. We carry business interruption insurance of up to \$1 million per location to help in these instances, but it may not cover all costs or our standing in the market.

We will be required to invest in facilities and equipment on a continuing basis, which will put pressure on us to finance these investments.

We have invested, and intend to continue to invest, in facilities and state-of-the-art equipment in order to increase, expand or update our capabilities and facilities. Changes in technology or sales growth beyond currently established production capabilities, which we anticipate, will require further investment. We currently anticipate that we will need to spend between \$4 and \$5 million over the next five years in order to increase, expand or update our existing facilities to meet our expected growth over that period. However, there can be no assurance that we will generate sufficient funds from operations to maintain our existing facilities and equipment or to finance any required capital investments or that other sources of funding will be available. Additionally, there can be no guarantee that any future expansion will not negatively affect earnings.

Future revenue will depend on our ability to develop new sales channels and there can be no assurance that these efforts will result in significant sales.

We are in the process of developing sales channels for our products but there can be no assurance that these channels can be developed or that we will be successful in selling our products. We currently sell our products through direct sales by our employees and indirectly through distributor relationships. We recently engaged in a major initiative to build and further expand our direct sales force. In 2010, we incurred sales and marketing expenses of approximately \$8 million and expect this amount to be approximately \$20 million in 2011. The increased sales and marketing expenses are anticipated to be funded from operating cash flow. The incurrence of these additional expenses may impact our operating results and there can be no assurance of their effectiveness. Many of our competitors have well-developed sales channels and it may be difficult for us to break through these competitors to take market share. If we are unable to develop these sales channels, we may not be able to grow revenue or maintain our current level of revenue generation.

There may be fluctuations in our operating results, which will impact our stock price.

Significant annual and quarterly fluctuations in our results of operations may be caused by, among other factors, our volume of revenues, the timing of new product or service announcements, releases by us and our competitors in the marketplace of new products or services, and general economic conditions. There can be no assurance that the level of revenues and profits, if any, achieved by us in any particular fiscal period will not be significantly lower than in other comparable fiscal periods. Our expense levels are based, in part, on our expectations as to future revenues. As a result, if future revenues are below expectations, net income or loss may be disproportionately affected by a reduction in revenues, as any corresponding reduction in expenses may not be proportionate to the reduction in revenues.

We are dependent on the ability of our licensees and development partners for obtaining regulatory approvals and market acceptance of their products, for which we may have no control.

A large part of our success will depend on our ability, or that of our licensees, to obtain timely regulatory approval for products employing our technology. Moreover, our success will also depend on whether, and how quickly, our licensees gain market acceptance of products incorporating our technology, compared to competitors using competing technologies.

Our revenues will depend upon prompt and adequate reimbursement from public and private insurers and national health systems.

Political, economic and regulatory influences are subjecting the healthcare industry in the United States to fundamental change. The ability of hospitals to pay fees for allograft bone tissue products depends in part on the extent to which reimbursement for the costs of such materials and related treatments will continue to be available from governmental health administration authorities, private health coverage insurers and other organizations. We may have difficulty gaining market acceptance for our products if government and third-party payors do not provide adequate coverage and reimbursement to hospitals. Major third-party payors of hospital services and hospital outpatient services, including Medicare, Medicaid and private healthcare insurers, annually revise their payment methodologies, which can result in stricter standards for reimbursement of hospital charges for certain medical procedures or the elimination of reimbursement. Further, Medicare, Medicaid and private healthcare insurer cutbacks could create downward price pressure on our products.

Our operating results will be harmed if we are unable to effectively manage and sustain our future growth.

We might not be able to manage our future growth efficiently or profitably. Our business is unproven on a large scale and actual revenue and operating margins, or revenue and margin growth, may be less than expected. If we are unable to scale our production capabilities efficiently, we may fail to achieve expected operating margins, which would have a material and adverse effect on our operating results. Growth may also stress our ability to adequately manage our operations, quality of products, safety and regulatory compliance. If growth significantly decreases our reserves, we may be required to obtain additional financing, which may increase our indebtedness or result in dilution to our stockholders. Further, there can be no assurance that we would be able to obtain any additional financing.

Future business combinations or acquisitions may be difficult to integrate and cause our attention to be diverted.

We may pursue various business combinations with other companies or strategic acquisitions of complementary businesses, product lines or technologies. There can be no assurance that such acquisitions will be available at all, or on terms acceptable to us. These transactions may require additional financing which may increase our indebtedness or outstanding shares, resulting in dilution to stockholders. The inability to obtain such future financing may inhibit our growth and operating results. Integration of acquisitions or additional products can be time consuming, difficult and expensive and may significantly impact operating results. Furthermore, the integration of any acquisition may divert management's time and resources from our core business. We may sell some or all of our product lines to other companies or may agree to combine with another company. Selling some of our product lines may inhibit our ability to generate positive operating results going forward.

We may be subject to future product liability litigation that could be expensive and our insurance coverage may not be adequate in a catastrophic situation.

Although we are not currently subject to any product liability proceedings, and we have no reserves for product liability disbursements, we may incur material liabilities relating to product liability claims in the future, including product liability claims arising out of the usage of our products. We currently carry product liability insurance of up to \$10 million at an annual premium cost of approximately \$140,000, however, our insurance coverage and any reserves we may maintain in the future for product related liabilities may not be adequate and our business could suffer material adverse consequences.

We may implement a product recall or voluntary market withdrawal due to product defects or product enhancements and modifications, which would significantly increase our costs.

The manufacturing and marketing of our biologic products, medical devices and coating technologies involves an inherent risk that our products may prove to be defective. In that event, we may voluntarily implement a recall or market withdrawal or may be required to do so by a regulatory authority. A recall of one of our products, or a similar product manufactured by another manufacturer, could impair sales of the products we market as a result of confusion concerning the scope of the recall or as a result of the damage to our reputation for quality and safety.

Risks Related to the Regulatory Environment in which We Operate

U.S. governmental regulation could restrict the use of our products or our procurement of tissue.

In the United States, the procurement and transplantation of allograft bone tissue is subject to federal law pursuant to the National Organ Transplant Act, or NOTA, a criminal statute which prohibits the purchase and sale of human organs used in human transplantation, including bone and related tissue, for “valuable consideration.” NOTA permits reasonable payments associated with the removal, transportation, processing, preservation, quality control, implantation and storage of human bone tissue. We provide services in all of these areas in the United States, with the exception of removal and implantation, and receive payments for all such services. We make payments to certain of our clients and tissue banks for their services related to recovering allograft bone tissue on our behalf. If NOTA is interpreted or enforced in a manner which prevents us from receiving payment for services we render or which prevents us from paying tissue banks or certain of our clients for the services they render for us, our business could be materially and adversely affected.

We are engaged through our marketing employees, independent sales agents and sales representatives in ongoing efforts designed to educate the medical community as to the benefits of our products, and we intend to continue our educational activities. Although we believe that NOTA permits payments in connection with these educational efforts as reasonable payments associated with the processing, transportation and implantation of our products, payments in connection with such education efforts are not exempt from NOTA’s restrictions and our inability to make such payments in connection with our education efforts may prevent us from paying our sales representatives for their education efforts and could adversely affect our business and prospects. No federal agency or court has determined whether NOTA is, or will be, applicable to every allograft bone tissue-based material which our processing technologies may generate. Assuming that NOTA applies to our processing of allograft bone tissue, we believe that we comply with NOTA, but there can be no assurance that more restrictive interpretations of, or amendments to, NOTA will not be adopted in the future which would call into question one or more aspects of our method of operations.

Our business is subject to continuing regulatory compliance by the FDA and other authorities which is costly and could result in delays in the commercialization of our products.

As a manufacturer and marketer of medical devices, we are subject to extensive regulation by the FDA and the Center for Medicare Services of the U.S. Department of Health and Human Services and other federal governmental agencies and, in some jurisdictions, by state and foreign governmental authorities. These regulations govern the introduction of new medical devices, the observance of certain standards with respect to the design, manufacture, testing, labeling, promotion and sales of the devices, the maintenance of certain records, the ability to track devices, the reporting of potential product defects, the import and export of devices and other matters. We are facing an increasing amount of scrutiny and compliance costs as more states are implementing regulations governing medical devices, pharmaceuticals and/or biologics which affect many of our products.

Medical devices that incorporate coatings technology are subject to FDA regulation and compliance. Generally, any medical device manufacturer that wishes to incorporate our coatings technology into its products will be responsible for obtaining FDA approval for the medical devices it intends to market though we will assist in the 510(k) filing submitted by licensees. The FDA process can take several months to several years in the United States. The time required to obtain approval for international sales may be longer or shorter, depending on the laws of the particular country. There can be no assurance that our licensees will be able to obtain FDA or international approval on a timely basis. The FDA may also require the more extensive Premarket Approval Application, or PMA, process for certain products, which results, in effect, in a private license being granted to the applicant for marketing a particular medical device and requires an additional level of FDA scientific review to ensure the safety and effectiveness of such devices. Approval or clearance may place substantial restrictions on the indications for which the product may be marketed or to whom it may be marketed, warnings that may be required to accompany the product or additional restrictions placed on the sale and/or use of the product. Changes in regulations or adoption of new regulations could also cause delays in obtaining product approval. In addition, regulatory approval is subject to continuing compliance with regulatory standards, and product approval is subject to withdrawal if a licensee fails to comply with standards, or if an unforeseen event should occur concerning a product. Significant delays in obtaining product approval could have a significantly detrimental impact on our business.

Human tissues intended for transplantation have been regulated by the FDA since 1993. In May 2005, three new comprehensive regulations went into effect that address manufacturing activities associated with human cells, tissues and cellular and tissue-based products, or HCT/Ps. The first requires that companies that produce and distribute HCT/Ps register with the FDA. The second provides criteria that must be met for donors to be eligible to donate tissues and is referred to as the “Donor Eligibility” rule. The third rule governs the processing and distribution of the tissues and is often referred to as the “Current Good Tissue Practices” rule. The “Current Good Tissue Practices” rule covers all stages of allograft processing, from procurement of tissue to distribution of final allografts. Together they are designed to ensure that sound, high quality practices are followed to reduce the risk of tissue contamination and of communicable disease transmission to recipients. These regulations increased regulatory scrutiny within the industry in which we operate and have led to increased enforcement action which affects the conduct of our business. In addition, these regulations can increase the cost of tissue recovery activities.

Other regulatory entities include state agencies with statutes covering tissue banking. Regulations issued by Florida, New York, California and Maryland will be particularly relevant to our business. Most states do not currently have tissue banking regulations. However, recent incidents of allograft related infections in the industry may stimulate the development of regulation in other states. It is possible that others may make allegations against us or against donor recovery groups or tissue banks about non-compliance with applicable FDA regulations or other relevant statutes or regulations. Allegations like these could cause regulators or other authorities to take investigative or other action, or could cause negative publicity for our business and the industry in which we operate.

Our products may be subject to regulation in the EU as well should we enter that market. In the European Union, or EU, regulations, if applicable, differ from one EU member state to the next. Because of the absence of a harmonized regulatory framework and the proposed regulation for advanced therapy medicinal products in the EU, as well as for other countries, the approval process for human derived cell or tissue based medical products may be extensive, lengthy, expensive and unpredictable. Some of our products may be subject to European Union member states' regulations that govern the donation, procurement, testing, coding, traceability, processing, preservation, storage, and distribution of human tissues and cells and cellular or tissue-based products. Some EU member states have their own tissue banking regulations.

Clinical trials can be long, expensive and ultimately uncertain which could jeopardize our ability to obtain regulatory approval and market our products.

Clinical trials are required to develop products, gain market acceptance and obtain 510(k) certifications from the FDA. We have several clinical trials planned and will likely undertake future trials. These trials often take two years to execute and are subject to factors within and outside of our control. The outcome of these trials is uncertain and may have a significant impact on the success of our current and future products and future profits.

The commencement or completion of any of our clinical trials may be delayed or halted for numerous reasons, including, but not limited to, a regulatory body placing clinical trials on hold, patients not enrolling in clinical trials at the rate we expect, patients experiencing adverse side effects, third party contractors failing to perform in accordance with our anticipated schedule or consistent with good clinical practices, inclusive or negative interim trial results or our inability to obtain sufficient quantities of raw materials to produce our products. Our development costs will increase if we have material delays in our clinical trials or if we need to perform more or larger clinical trials than planned. If this occurs, our financial results and the commercial prospects for our products will be harmed and our prospects for profitability will be harmed.

Product pricing (and, therefore, profitability) is subject to regulatory control which could impact our revenue and financial performance.

The pricing and profitability of our products may become subject to control by the government and other third-party payors. The continuing efforts of governmental and other third-party payors to contain or reduce the cost of healthcare through various means may adversely affect our ability to successfully commercialize our products. In most foreign markets, the pricing and/or profitability of certain diagnostics and prescription pharmaceuticals are subject to governmental control. In the United States, we expect that there will continue to be federal and state proposals to implement similar governmental control though it is unclear which proposals will ultimately become law, if any. Changes in prices, including any mandated pricing, could impact our revenue and financial performance.

Risks Related to Our Intellectual Property

Failure to protect our intellectual property rights could result in costly and time consuming litigation and our loss of any potential competitive advantage.

Our success will depend, to a large extent, on our ability to successfully obtain and maintain patents, prevent misappropriation or infringement of intellectual property, maintain trade secret protection, and conduct operations without violating or infringing on the intellectual property rights of third parties. There can be no assurance that our patented and patent-pending technologies will provide us with a competitive advantage, that we will be able to develop or acquire additional technology that is patentable, or that third parties will not develop and offer technologies which are similar to ours. Moreover, we can provide no assurance that confidentiality agreements, trade secrecy agreements or similar agreements intended to protect unpatented technology will provide the intended protection. Intellectual property litigation is extremely expensive and time-consuming, and it is often difficult, if not impossible, to predict the outcome of such litigation. A failure by us to protect our intellectual property could have a materially adverse effect on our business and operating results and our ability to successfully compete in this industry.

We may not be able to obtain or protect our proprietary rights relating to our products without resorting to costly and time consuming litigation.

We may not be able to obtain, maintain and protect certain proprietary rights necessary for the development and commercialization of our products or product candidates. Our commercial success will depend in part on obtaining and maintaining patent protection on our products and successfully defending these patents against third-party challenges. Our ability to commercialize our products will also depend in part on the patent positions of third parties, including those of our competitors. The patent positions of pharmaceutical and biotechnology companies can be highly uncertain and involve complex legal and factual questions. Accordingly, we cannot predict with certainty the scope and breadth of patent claims that may be afforded to other companies' patents. We could incur substantial costs in litigation if we are required to defend against patent suits brought by third parties, or if we initiate suits to protect our patent rights.

In addition to the risks involved with patent protection, we also face the risk that our competitors will infringe on our trademarks. Any infringement could lead to a likelihood of confusion and could result in lost sales.

There can be no assurance that we will prevail in any claims we make to protect our intellectual property.

Future protection for our proprietary rights is uncertain which may impact our ability to successfully compete in our industry.

The degree of future protection for our proprietary rights is uncertain. We cannot ensure that:

- we were the first to make the inventions covered by each of our patent applications;
- we were the first to file patent applications for these inventions;
- others will not independently develop similar or alternative technologies or duplicate any of our technologies;
- any of our pending patent applications will result in issued patents;
- any of our issued patents or those of our licensors will be valid and enforceable;
- any patents issued to us or our collaborators will provide a basis for commercially viable products or will provide us with any competitive advantages or will not be challenged by third parties;
- we will develop additional proprietary technologies that are patentable;
- the patents of others will not have a material adverse effect on our business rights; or
- the measures we rely on to protect the intellectual property underlying our products may not be adequate to prevent third parties from using our technology, all of which could harm our ability to compete in the market.

Our success depends on our ability to avoid infringing on the intellectual property rights of third parties which could expose us to litigation or commercially unfavorable licensing arrangements.

Our commercial success depends in part on our ability and the ability of our collaborators to avoid infringing patents and proprietary rights of third parties. Third parties may accuse us or our collaborators of employing their proprietary technology in our products, or in the materials or processes used to research or develop our products, without authorization. Any legal action against our collaborators or us claiming damages and/or seeking to stop our commercial activities relating to the affected products, materials and processes could, in addition to subjecting us to potential liability for damages, require our collaborators or us to obtain a license to continue to utilize the affected materials or processes or to manufacture or market the affected products. We cannot predict whether we or our collaborators would prevail in any of these actions or whether any license required under any of these patents would be made available on commercially reasonable terms, if at all. If we are unable to obtain such a license, we or our collaborators may be unable to continue to utilize the affected materials or processes or manufacture or market the affected products or we may be obligated by a court to pay substantial royalties and/or other damages to the patent holder. Even if we are able to obtain such a license, the terms of such a license could substantially reduce the commercial value of the affected product or products and impair our prospects for profitability. Accordingly, we cannot predict whether or to what extent the commercial value of the affected product or products or our prospects for profitability may be harmed as a result of any of the liabilities discussed above. Furthermore, infringement and other intellectual property claims, with or without merit, can be expensive and time-consuming to litigate and can divert management's attention from our core business. We may be unable to obtain and enforce intellectual property rights to adequately protect our products and related intellectual property.

Others may claim an ownership interest in our intellectual property which could expose us to litigation and have a significant adverse effect on our prospects.

A third-party may claim an ownership interest in one or more of our patents or intellectual property. While we believe we own 100% of the right, title and interest in the patents for which we have applied and our other intellectual property, including that which we license from third parties, we cannot guarantee that a third-party will not, at some time, assert a claim or an interest in any of such patents or intellectual property. We are presently unaware of any claims or assertions by third-parties with respect to its patents or intellectual property, except that, we, along with many companies in our industry, have been served a complaint filed by minSURG International, Inc. alleging patent infringement. A successful challenge or claim by a third party to our patents or intellectual property could have a significant adverse effect on our prospects.

The result of litigation may result in financial loss and/or impact our ability to sell our products going forward.

We will vigorously defend any future intellectual property litigation that may arise but there can be no assurance that we will prevail in these matters. An unfavorable judgment may result in a financial burden on us. An unfavorable judgment may also result in restrictions on our ability to sell certain products and therefore may impact future operating results.

Risks Related to Our Common Stock

We have found material weaknesses in our system of internal controls over financial reporting that have not been fully remediated as of December 31, 2010, which could adversely affect our ability to record, process, summarize and report certain financial data.

In connection with the evaluation of the effectiveness of our internal controls over financial reporting as of December 31, 2010, management discovered the following deficiencies: (i) insufficient number of personnel with the appropriate level of experience and technical expertise to appropriately resolve non-routine and complex accounting matters while completing the financial statement close process; (ii) our inventory records are kept separately from our accounting system, requiring duplicate input and reconciliation, thereby increasing the risk of errors in recording inventory transactions, and (iii) the documentation surrounding equity transactions for employees and consultants needs to be strengthened to comply with procedures outlined by the Company to ensure that all equity transactions are recorded in the appropriate periods. In light of these material weaknesses, management has concluded that we did not maintain effective internal control over our disclosure controls and procedures as of December 31, 2010, which constituted a material weakness in our internal controls over financial reporting because they resulted in a reasonable possibility that a material misstatement could occur in our annual or interim financial statements which could not be prevented or detected. Although we are working to remediate these deficiencies, there can be no assurance that our remediation efforts will resolve all of our internal control deficiencies or that we will not discover additional material weaknesses or significant deficiencies as we evaluate and test such controls in the future. Such material weaknesses or deficiencies could adversely affect our ability to record, process, summarize and report our financial information, which could cause current and potential stockholders to lose confidence in our financial reporting which could have a negative effect on the trading price of our common stock.

Because we became public through a reverse merger, we may not be able to attract the attention of major brokerage firms.

There are coverage risks associated with our becoming public through a reverse merger, including, among other things, security analysts of major brokerage firms may not provide coverage of us since there is no incentive to brokerage firms to recommend the purchase of our common stock. We cannot assure you that brokerage firms will want to conduct any public offerings on our behalf in the future.

The market price of our common stock may be volatile and may decline in value.

The market price of our common stock has been and will likely continue to be highly volatile, as is the stock market in general. Some of the factors that may materially affect the market price of our common stock are beyond our control, such as changes in financial estimates by industry and securities analysts, conditions or trends in the industry in which we operate or sales of our common stock. These factors may materially adversely affect the market price of our common stock, regardless of our performance. In addition, the public stock markets have experienced extreme price and trading volume volatility. This volatility has significantly affected the market prices of securities of many companies for reasons frequently unrelated to the operating performance of the specific companies. These broad market fluctuations may adversely affect the market price of our common stock.

Our stockholders may experience significant dilution if future equity offerings are used to fund operations or acquire complementary businesses.

If our future operations or acquisitions are financed through the issuance of equity securities, our stockholders could experience significant dilution. In addition, securities issued in connection with future financing activities or potential acquisitions may have rights and preferences senior to the rights and preferences of our common stock. We also have established an equity incentive plan for our management and employees. We expect to grant options to purchase shares of our common stock to our directors, employees and consultants and we will grant additional options in the future. The issuance of shares of our common stock upon the exercise of these options may result in dilution to our stockholders.

Our current management can exert significant influence over us and make decisions that are not in the best interests of all stockholders.

Our executive officers and directors beneficially own as a group approximately 41% of our outstanding shares of common stock. As a result, these stockholders will be able to assert significant influence over all matters requiring stockholder approval, including the election and removal of directors and any change in control. In particular, this concentration of ownership of our outstanding shares of common stock could have the effect of delaying or preventing a change in control, or otherwise discouraging or preventing a potential acquirer from attempting to obtain control. This, in turn, could have a negative effect on the market price of our common stock. It could also prevent our stockholders from realizing a premium over the market prices for their shares of common stock. Moreover, the interests of the owners of this concentration of ownership may not always coincide with our interests or the interests of other stockholders and, accordingly, could cause us to enter into transactions or agreements that we would not otherwise consider.

We do not anticipate paying dividends in the foreseeable future; you should not buy our stock if you expect dividends.

We currently intend to retain our future earnings to support operations and to finance expansion and, therefore, we do not anticipate paying any cash dividends on our common stock in the foreseeable future.

We could issue “blank check” preferred stock without stockholder approval with the effect of diluting then current stockholder interests and impairing their voting rights, and provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable.

Our certificate of incorporation provides for the authorization to issue up to 5,000,000 shares of “blank check” preferred stock with designations, rights and preferences as may be determined from time to time by our board of directors. Our board of directors is empowered, without stockholder approval, to issue one or more series of preferred stock with dividend, liquidation, conversion, voting or other rights which could dilute the interest of, or impair the voting power of, our common stockholders. The issuance of a series of preferred stock could be used as a method of discouraging, delaying or preventing a change in control. For example, it would be possible for our 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 our company. In addition, advanced notice is required prior to stockholder proposals.

Risks Related to this Offering

The Sale of our common stock to LPC may cause dilution and the sale of the shares of common stock acquired by LPC could cause the price of our common stock to decline.

The number of Shares ultimately offered for sale by LPC under this prospectus is dependent on the number of shares purchased by LPC under the Purchase Agreement, and the purchase price for our common stock to be sold to LPC pursuant to the Purchase Agreement will fluctuate based on the price of our common stock. All Shares registered in this offering are expected to become freely tradeable, and it is anticipated that sales by LPC will occur over a period of up to 36 months from the date of this prospectus. Therefore, sales to LPC by us may result in substantial dilution to the interests of holders of our common stock. The sale of a substantial number of shares of our common stock under this offering, or the anticipation of such sales, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at prices that we might otherwise wish to effect sales. Depending on market liquidity at the time, a sale of shares under this offering at any given time could cause the trading price of our common stock to decline. We can elect to direct purchases under the Purchase Agreement in our sole discretion, but no sales may occur if the price of our common stock is below \$2.00 per share. If our stock price declines to below \$2.00 per share for an extended period of time, we may not be able to obtain sufficient funding from LPC and we may be unable to secure working capital from other sources. Should the financing we require to sustain our working capital needs be unavailable or prohibitively expensive when we require it, the consequences could have a material adverse effect on our business, operating results, financial condition and prospects. However, we do have the right to control the timing and amount of sales of our shares to LPC and we may also terminate the Purchase Agreement at any time without any cost to us.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

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

- the future performance and market acceptance of our products;
- our ability to maintain our competitive position;
- negative media publicity;
- our ability to obtain donor cadavers for our products;
- our efforts to innovate and develop new products;
- our ability to engage and retain qualified technical personnel and members of our management team;
- our reliance on our current facilities;
- our ability to generate funds or raise capital to finance our growth;
- our efforts to expand our sales force;
- government regulations;
- fluctuations in our operating results;
- government and third-party coverage and reimbursement for our products;
- our ability to manage our growth;
- our ability to successfully integrate future business combinations or acquisitions;
- product liability claims and other litigation to which we may be subjected;
- product recalls and defects;
- timing and results of clinical trials;
- our ability to obtain and protect our intellectual property and proprietary rights;
- infringement and ownership of intellectual property;
- our ability to attract broker coverage;
- the trading market, market prices, dilution, and dividends of our common stock;
- influence by our management; and
- our ability to issue preferred stock.

The forward-looking statements contained in this prospectus are based on our current expectations and beliefs concerning future developments and their potential effects on us. There can be no assurance that future developments affecting us will be those that we have anticipated. These forward-looking statements involve a number of risks, uncertainties, or assumptions, many of which are beyond our control, which may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to, those factors described under the heading “Risk Factors” in this prospectus. Should one or more of these risks or uncertainties materialize, or should any of our assumptions prove incorrect, actual results may vary in material respects from those projected in these forward-looking statements. We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise, except as may be required under applicable securities laws.

USE OF PROCEEDS

We will not receive any of the proceeds from sales of shares of our common stock by the selling stockholder, however, we will receive the purchase price paid for shares purchased pursuant to the Purchase Agreement. We expect to use such proceeds for working capital and other general corporate purposes.

THE LPC TRANSACTION

General

On May 27, 2011, we executed a Purchase Agreement and a Registration Rights Agreement with Lincoln Park Capital Fund, LLC, pursuant to which LPC has purchased 326,798 shares of our common stock together with warrants, not included in this Offering, to purchase 130,719 shares of our common stock at an exercise price of \$3.06 per share, for total consideration of \$1,000,000. The warrants have a term of five years and are not included in this Offering. Under the Purchase Agreement, we also have the right to sell to LPC up to an additional \$30,000,000 of our common stock at our discretion as described below.

Pursuant to the Registration Rights Agreement, we are filing this registration statement and prospectus with the Securities and Exchange Commission (the "SEC") covering shares that have been issued or may be issued to LPC under the Purchase Agreement. We do not have the right to commence any additional sales of our shares to LPC until the SEC has declared effective the registration statement of which this Prospectus is a part. After the registration statement is declared effective, over approximately 36 months, generally we have the right to direct LPC to purchase up to an additional \$30,000,000 of our common stock in amounts up to \$100,000 as often as every business day under certain conditions. We can also accelerate the amount of our stock to be purchased under certain circumstances. No sales of shares may occur below \$2.00 per share. There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to LPC. The purchase price of the shares will be based on the market prices of our shares immediately preceding the time of sale as computed under the Purchase Agreement without any fixed discount. We may at any time in our sole discretion terminate the Purchase Agreement without fee, penalty or cost upon one business day notice. We issued 128,506 shares of our stock to LPC as a commitment fee for entering into the agreement, and we may issue up to 164,675 shares pro rata as LPC purchases up to an additional \$30,000,000 of our stock as directed by us. LPC may not assign or transfer its rights and obligations under the Purchase Agreement.

As of May 23, 2011, we had 38,076,859 shares outstanding (with 22,318,617 shares held by non-affiliates). The 5,293,181 shares offered hereby consist of 128,506 shares that we issued as a commitment fee, 164,675 shares that we may issue pro rata as up to \$30,000,000 of our stock is purchased by LPC, and the remainder representing shares we may sell to LPC under the Purchase Agreement including 326,798 that we have already issued related to the \$1,000,000 purchase. If all of the 5,293,181 shares offered by LPC hereby were issued and outstanding as of the date hereof, such shares would represent 12.2% of the total common stock outstanding or 19.17% of the non-affiliates shares outstanding, as adjusted, based on the number of shares outstanding as of May 23, 2011, in addition to the 5,293,181 shares covered by this registration statement, most of which have not yet been issued. The number of shares ultimately offered for sale by LPC is dependent upon the number of shares purchased by LPC under the Purchase Agreement.

Purchase Of Shares Under The Purchase Agreement

Under the Purchase Agreement, on any business day selected by us and as often as every business day, we may direct LPC to purchase up to \$100,000 of our common stock. The purchase price per share is equal to the lesser of:

- the lowest sale price of our common stock on the purchase date; or
- the average of the three (3) lowest closing sale prices of our common stock during the ten (10) consecutive business days prior to the date of a purchase by LPC.

The purchase price will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, stock split, or other similar transaction occurring during the business days used to compute the purchase price.

In addition to purchases of up to \$100,000, we may direct LPC as often as every business day to purchase up to \$250,000 of our common stock provided on the purchase date our share price is not below \$4.00 per share. We may increase this amount: up to \$500,000 of our common stock provided on the purchase date our share price is not below \$5.50 per share; up to \$1,000,000 of our common stock provided on the purchase date our share price is not below \$9.00 per share.

Minimum Purchase Price

Under the Purchase Agreement, we have set a minimum purchase price ("floor price") of \$2.00, and LPC shall not have the right nor the obligation to purchase any shares of our common stock in the event that the purchase price would be less than the floor price. Specifically, LPC shall not have the right or the obligation to purchase shares of our common stock on any business day that the market price of our common stock is below \$2.00.

Events of Default

The following events constitute events of default under the Purchase Agreement:

- the effectiveness of the registration statement of which this prospectus is a part lapses for any reason (including, without limitation, the issuance of a stop order) or is unavailable to LPC for sale of our common stock offered hereby and such lapse or unavailability continues for a period of ten (10) consecutive business days or for more than an aggregate of thirty (30) business days in any 365-day period;
- suspension by our principal market of our common stock from trading for a period of three (3) consecutive business days;
- the de-listing of our common stock from our principal market provided our common stock is not immediately thereafter trading on the, the Nasdaq Capital Market, the OTC Bulletin Board including comparable markets, the Nasdaq Global Select Market, the Nasdaq Global Market, or the New York Stock Exchange;
- the transfer agent's failure for five (5) business days to issue to LPC shares of our common stock which LPC is entitled to under the Purchase Agreement;
- any material breach of the representations or warranties or covenants contained in the Purchase Agreement or any related agreements which has or which could have a material adverse effect on us subject to a cure period of five (5) business days; or
- any participation or threatened participation in insolvency or bankruptcy proceedings by or against us.

Our Termination Rights

We have the unconditional right at any time for any reason to give notice to LPC terminating the Purchase Agreement without any cost to us.

No Short-Selling or Hedging by LPC

LPC has agreed that neither it nor any of its affiliates shall engage in any direct or indirect short-selling or hedging of our common stock during any time prior to the termination of the common stock Purchase Agreement.

Effect of Performance of the Purchase Agreement on Our Stockholders

All 5,293,181 shares registered in this offering are expected to be freely tradable. It is anticipated that shares registered in this offering will be sold over a period of up to 36 months from the date of this prospectus. The sale by LPC of a significant amount of shares registered in this offering at any given time could cause the market price of our common stock to decline and to be highly volatile. LPC may ultimately purchase all, some or none of the 4,837,877 shares of common stock not yet issued but registered in this offering. After it has acquired such shares, it may sell all, some or none of such shares. Therefore, sales to LPC by us under the agreement may result in substantial dilution to the interests of other holders of our common stock. However, we have the right to control the timing and amount of any sales of our shares to LPC and the agreement may be terminated by us at any time at our discretion without any cost to us.

In connection with entering into the Purchase Agreement, we authorized the sale to LPC of up to 5,000,000 shares of our common stock exclusive of the 128,506 commitment shares issued, the 164,675 commitment shares that may be issued and the 130,719 shares underlying the warrant not included in this Offering. We have the right to terminate the Purchase Agreement without any payment or liability to LPC at any time, including in the event that all \$31,000,000 is sold to LPC under the Purchase Agreement. The number of shares ultimately offered for sale by LPC under this prospectus is dependent upon the number of shares purchased by LPC under the agreement. The following table sets forth the amount of proceeds we would receive from LPC from the sale of the shares that are registered in this offering at varying purchase prices, excluding the 326,798 shares previously purchased:

Assumed Average Purchase Price	Number of Registered Shares to be Issued if Full Purchase (1) (2)	Percentage of Outstanding Shares After Giving Effect to the Issuance to LPC (3)	Proceeds from the Sale of Shares to LPC Under the LPC Purchase Agreement
\$ 2.00(4)	4,724,506	10.92%	\$ 9,346,404
\$ 2.60(5)	4,739,897	10.95%	\$ 12,150,325
\$ 4.00	4,775,810	11.03%	\$ 18,692,808
\$ 6.00	4,827,114	11.13%	\$ 28,039,212
\$ 8.00	3,914,675	9.22%	\$ 30,000,000

- (1) Although the LPC Purchase Agreement provides that we may sell up to an additional \$30,000,000 of our common stock to LPC, we are only registering 5,000,000 shares which may be purchased thereunder, of which 326,798 shares have already been purchased and are not included in column. The shares registered hereby may or may not cover all such shares purchased by LPC under the LPC Purchase Agreement, depending on the purchase price per share. As a result, we have included in this column only those additional purchase shares which are registered in this offering.
- (2) The number of registered shares to be issued includes a number of shares to be purchased at the applicable price, plus the applicable additional commitment shares which will be issued to LPC in connection with each purchase (but does not include the initial commitment shares or shares previously issued to LPC in our private placement). No proceeds will be attributable to such commitment shares.
- (3) The denominator is based on 38,076,859 shares outstanding as of May 23, 2011, in addition to the additional purchase share and additional commitment shares listed in this table, as well as the 128,506 initial commitment shares and 326,798 initial purchase shares already issued to LPC, which are part of this offering. The number of shares set forth in the adjacent column includes shares issuable pursuant to the Purchase Agreement, including the additional commitment shares issued pro rata as up to \$30,000,000 of our stock is purchased by LPC. The numerator is based on the number of shares remaining to be purchased under the Purchase Agreement at the corresponding assumed purchase price set forth in the adjacent column. The number of shares in such column does not include shares previously issued to LPC.
- (4) Under the LPC Purchase Agreement, we may not sell and LPC may not purchase any shares in the event the purchase price of such shares is below \$2.00.
- (5) The closing sale price of our shares on July 8, 2011.

SELLING STOCKHOLDER

The following table sets forth:

- (a) the name of the selling stockholder,
- (b) the number of shares of common stock beneficially owned by the selling stockholder that may be offered for the account of the selling stockholder under this prospectus, and
- (c) the number of shares of common stock beneficially owned by the selling stockholder upon completion of this offering.

Such information was obtained from the selling stockholder but has not been independently verified by us. The term “selling stockholder” includes the entity listed below and its transferees, pledgees, donees, or other successors.

Name of Selling Stockholder (1)	Shares Beneficially Owned Prior to Offering (2)		Shares Being Registered for Sale	Shares Beneficially Owned After Offering (3)	
	Number	Percent		Number	Percent
Lincoln Park Capital Fund, LLC	455,304	1.2%	5,293,181	-	-

- (1) The address of the selling stockholder is 440 North Wells, Suite 620, Chicago, IL 60654. Josh Scheinfeld and Jonathan Cope, the principals of LPC, are deemed to be the beneficial owners of all of the shares of common stock owned by LPC. Messrs. Scheinfeld and Cope have shared voting and disposition power over the shares being offered under this Prospectus. Neither the selling stockholder nor any of its affiliates has held a position or office, or had any other material relationship, with us.
- (2) The numbers and percentages shown include (a) the number of shares of common stock actually owned as of July 8, 2011, and (b) the shares of common stock that the identified person had the right to acquire within 60 days of July 8, 2011. The percentage ownership calculation is based on 38,076,859 shares issued and outstanding as of May 23, 2011, plus the shares of common stock owned by LPC as of July 8, 2011.
- (3) We have no assurance that the selling stockholder will sell any of the common stock being registered for sale. For purposes of this table, we have assumed that the selling stockholder will have sold all of the shares covered by this prospectus upon completion of the offering, including such shares issuable upon the delivery of purchase notices pursuant to the terms of the Purchase Agreement and shares issuable upon the exercise of warrants.

DETERMINATION OF OFFERING PRICE

All shares of our common stock being offered will be sold by the selling stockholder without our involvement; consequently the actual price of the stock will be determined by prevailing market prices at the time of sale or by private transactions negotiated by the selling stockholder. The offering price will thus be determined by market factors and the independent decisions of the selling stockholder.

PLAN OF DISTRIBUTION

The common stock offered by this prospectus is being offered by Lincoln Park Capital Fund, LLC, the selling stockholder. The common stock may be sold or distributed from time to time by the selling stockholder directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed. The sale of the common stock offered by this Prospectus may be effected in one or more of the following methods:

- ordinary brokers' transactions;
- transactions involving cross or block trades;
- through brokers, dealers, or underwriters who may act solely as agents
- "at the market" into an existing market for the common stock;
- in other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents;
- in privately negotiated transactions; or
- any combination of the foregoing.

In order to comply with the securities laws of certain states, if applicable, the shares may be sold only through registered or licensed brokers or dealers. In addition, in certain states, the shares may not be sold unless they have been registered or qualified for sale in the state or an exemption from the registration or qualification requirement is available and complied with.

Brokers, dealers, underwriters, or agents participating in the distribution of the shares as agents may receive compensation in the form of commissions, discounts, or concessions from the selling stockholder and/or purchasers of the common stock for whom the broker-dealers may act as agent. The compensation paid to a particular broker-dealer may be less than or in excess of customary commissions.

LPC is an "underwriter" within the meaning of the Securities Act.

Neither we nor LPC can presently estimate the amount of compensation that any agent will receive. We know of no existing arrangements between LPC, any other shareholder, broker, dealer, underwriter, or agent relating to the sale or distribution of the shares offered by this Prospectus. At the time a particular offer of shares is made, a prospectus supplement, if required, will be distributed that will set forth the names of any agents, underwriters, or dealers and any compensation from the selling stockholder, and any other required information.

We will pay all of the expenses incident to the registration, offering, and sale of the shares to the public other than commissions or discounts of underwriters, broker-dealers, or agents. We have also agreed to indemnify LPC and related persons against specified liabilities, including liabilities under the Securities Act.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers, and controlling persons, we have been advised that in the opinion of the SEC this indemnification is against public policy as expressed in the Securities Act and is therefore, unenforceable.

LPC and its affiliates have agreed not to engage in any direct or indirect short selling or hedging of our common stock during the term of the Purchase Agreement.

We have advised LPC that while it is engaged in a distribution of the shares included in this Prospectus it is required to comply with Regulation M promulgated under the Securities Exchange Act of 1934, as amended. With certain exceptions, Regulation M precludes the selling stockholder, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the shares offered hereby this Prospectus.

This offering will terminate on the date that all shares offered by this Prospectus have been sold by LPC.

LEGAL MATTERS

The validity of the securities in this offering was passed upon for us by Jill Gilpin, our VP & Legal Counsel.

EXPERTS

The financial statements incorporated by reference into this prospectus and registration statement on Form S-3 have been audited by Child, Van Wagoner & Bradshaw, PLLC, independent certified public accountants, as set forth in their report thereon appearing in our Annual Report on Form 10-K and incorporated by reference into this prospectus and registration statement on Form S-3, and such report is included in reliance upon such report given upon the authority of such firm as experts in accounting and auditing.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” in this Prospectus the information in the documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this Prospectus. Any information that is part of this Prospectus or any prospectus supplement that speaks as of a later date than any other information that is part of this Prospectus or any prospectus supplement updates or supersedes such other information. We incorporate by reference in this Prospectus the documents listed below and any documents or portions thereof that we file with the SEC on or after July 11, 2011 under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act and prior to the termination of the offering covered by this Prospectus:

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (filed April 11, 2011);
- Our Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2011 (filed May 12, 2011);
- Our Current Reports on Form 8-K filed January 3, 2011, January 12, 2011, January 21, 2011, February 1, 2011, February 16, 2011, February 28, 2011, March 4, 2011, March 17, 2011, March 18, 2011, March 29, 2011, April 11, 2011, May 2, 2011, May 3, 2011, May 5, 2011, May 12, 2011, May 31, 2011, June 3, 2011, June 14, 2011, June 21, 2011, and June 27, 2011 (except to the extent any such information is furnished and not filed with the SEC); and
- The description of our common stock contained in our registration statement on Form 8-A, filed on November 5, 2010, as amended March 4, 2011, including any amendment or reports filed for the purpose of updating such description.

You may obtain, free of charge, a copy of any or all of these documents (other than exhibits to these documents unless the exhibits are specifically incorporated by reference into these documents or referred to in this prospectus) by writing to us or calling us at the following address and phone number:

Bacterin International Holdings, Inc.
664 Cruiser Lane
Belgrade, MT 59714
Attn: Corporate Secretary
(406) 388-0480

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement under the Securities Act that registers the distribution of the securities offered under this prospectus. The registration statement, including the attached exhibits and schedules and the information incorporated by reference, contains important information about our company and the securities. The rules and regulations of the SEC allow us to omit from this prospectus certain information included in this registration statement. In addition, we file annual, quarterly and current reports, proxy statements and other information with the SEC. You may inspect and, for a fee, copy the registration statement and any other document that we file with the SEC at the SEC’s Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the Public Reference Room. You may also obtain the documents that we file electronically from the SEC’s website at <http://www.sec.gov>. You may also find documents incorporated by reference in this prospectus on our website at www.bacterin.com. Information contained on our website is not a prospectus and does not constitute part of this prospectus.

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

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

Our certificate of incorporation provides that no director of the company will be personally liable to the company or our stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the company or our stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for the improper declaration of dividends or redemption of shares of capital stock in violation of Delaware law, or (iv) for any transaction from which the director derived an improper personal benefit.

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

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers or persons controlling the registrant pursuant to the foregoing provisions, the registrant has been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Act and is therefore unenforceable.

5,293,181 Shares



Common Stock

PROSPECTUS

, 2011

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the expenses payable by us in connection with the offering. All such expenses are estimates except for the SEC registration fee.

SEC registration fee	\$ 1,619.31
Accounting fees and expenses	\$ 5,000
Printing and engraving expenses	\$ 3,000
Legal fees	0
Miscellaneous expenses	0
Total	<u>\$ 9,619.31</u>

Item 15. Indemnification of Directors and Officers.

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

Our certificate of incorporation provides that no director of the company will be personally liable to the company or our stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the company or our stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for the improper declaration of dividends or redemption of shares of capital stock in violation of Delaware law, or (iv) for any transaction from which the director derived an improper personal benefit.

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

We have been advised that it is the position of the SEC that insofar as the foregoing provisions may be invoked to disclaim liability for damages arising under the Securities Act of 1933, as amended, that such provisions are against public policy as expressed in the Securities Act and are therefore unenforceable.

Item 16. Exhibits.

(a) Exhibits

Exhibit No.	Description
2.1	Agreement and Plan of Merger, dated as of June 30, 2010, by and among K-Kitz, Inc., KB Merger Sub, Inc. and Bacterin International, Inc. (1)
4.1	Form of Warrant to Purchase Common Stock (1)
4.2*	Form of Common Stock Certificate
5.1*	Opinion of Jill Gilpin
23.1*	Consent of Child, Van Wagoner & Bradshaw, PLLC
23.2	Consent of Jill Gilpin (included in Exhibit 5.1)
24.1*	Power of Attorney (included on the Signature Page of the Registration Statement)

* Filed herewith

(1) Incorporated herein by reference to the Registrant's Form 8-K dated June 30, 2010, filed with the SEC on June 30, 2010.

(b) Financial Statement Schedules

No financial statement schedules are required to be filed with this registration statement.

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes:

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

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

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement:

PROVIDED, HOWEVER, that Paragraphs (a)(1)(i) and (a)(1)(ii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) If the registrant is relying on Rule 430B:

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date; or

(ii) If the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Belgrade, State of Montana, on July 11, 2011.

BACTERIN INTERNATIONAL HOLDINGS, INC.

By: /s/ Guy Cook

Name: Guy Cook

Title: Chairman of the Board, Chief Executive Officer, President
and Chief Scientific Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that the persons whose signature appears below constitute and appoint jointly and severally, Guy Cook and John P. Gandolfo and each one of them, as his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign any and all amendments (including pre-effective and post-effective amendments) to this registration statement and to sign any registration statement and amendments thereto for the same offering filed pursuant to Rule 462(b) under the Securities Act of 1933, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all which said attorneys-in-fact and agents, or any of them, or their or his substitute or substitutes, may lawfully do, or cause to be done by virtue hereof.

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

<u>Signature</u>	<u>Capacity</u>	<u>Date</u>
<u>/s/ Guy Cook</u> Guy Cook	Chairman of the Board, Chief Executive Officer, President and Chief Scientific Officer (Principal Executive Officer)	July 11, 2011
<u>/s/ John P. Gandolfo</u> John P. Gandolfo	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	July 11, 2011
<u>/s/ Mitchell T. Godfrey</u> Mitchell T. Godfrey	Director	July 11, 2011
<u>/s/ Kent Swanson</u> Kent Swanson	Director	July 11, 2011
<u>/s/ Michael Lopach</u> Michael Lopach	Director	July 11, 2011
<u>/s/ Jon Wickwire</u> Jon Wickwire	Director	July 11, 2011

Exhibit Index

Exhibit No.	Description
2.1	Agreement and Plan of Merger, dated as of June 30, 2010, by and among K-Kitz, Inc., KB Merger Sub, Inc. and Bacterin International, Inc. (1)
4.1	Form of Warrant to Purchase Common Stock (1)
4.2*	Form of Common Stock Certificate
5.1*	Opinion of Jill Gilpin
23.1*	Consent of Child, Van Wagoner & Bradshaw, PLLC
23.2	Consent of Jill Gilpin (included in Exhibit 5.1)
24.1*	Power of Attorney (included on the Signature Page of the Registration Statement)

* Filed herewith

(1) Incorporated herein by reference to the Registrant's Form 8-K dated June 30, 2010, filed with the SEC on June 30, 2010.

NUMBER



SHARES

INCORPORATED UNDER THE LAWS OF THE STATE OF DELAWARE

AUTHORIZED: 95,000,000 COMMON SHARES,
\$0.000001 PAR VALUE PER SHARE

CUSIP 05644R 10 1

SEE REVERSE FOR
CERTAIN DEFINITIONS

This Certifies That

is the owner of

Fully Paid and Non-Assessable Common Stock, \$0.000001 Par Value of
BACTERIN INTERNATIONAL HOLDINGS, INC.

transferable on the books of this Corporation in person or by attorney upon surrender of this Certificate duly endorsed or assigned. This Certificate and the shares represented hereby are subject to the laws of the State of Delaware, and to the Certificate of Incorporation and the Bylaws of the Corporation, as now or hereafter amended. This Certificate is not valid until countersigned by the Transfer Agent.

IN WITNESS WHEREOF, the Corporation has caused this Certificate to be signed by the facsimile signatures of its duly authorized officers and to be sealed with the facsimile seal of the Corporation.

Dated:

[Signature]
PRESIDENT



[Signature]
SECRETARY

Countersigned:
CORPORATE STOCK TRANSFER, INC.
2500 Cherry Creek South Drive, Suite 430
Denver, CO 80209
By _____
Transfer Agent and Registrar/Authorized Officer

3490

BACTERIN INTERNATIONAL HOLDINGS, INC.

CORPORATE STOCK TRANSFER, INC.

TRANSFER FEE: AS REQUIRED

The following abbreviations, when used in the inscription on the face of this certificate, shall be construed as though they were written out in full according to applicable laws or regulations:

TEN COM - as tenants in common
TEN ENT - as tenants by the entireties
JT TEN - as joint tenants with right
of survivorship and not as
tenants in common

UNIF GIFT MIN ACT - _____ Custodian _____
(Cust) (Minor)
under Uniform Gifts to Minors

Act _____
(State)

Additional abbreviations may also be used though not in the above list.

PLEASE INSERT SOCIAL SECURITY OR OTHER
IDENTIFYING NUMBER OF ASSIGNEE

FOR VALUE RECEIVED, _____ hereby sell, assign and transfer unto

PLEASE PRINT OR TYPEWRITE NAME AND ADDRESS INCLUDING POSTAL ZIP CODE OF ASSIGNEE

_____ Shares
of the Common Stock represented by the within Certificate and do hereby irrevocably constitute and appoint

_____ Attorney to transfer
the said stock on the books of the within-named Corporation, with full power of substitution in the premises.

Dated: _____ 20 _____.

Signature(s) Guaranteed:

Signature: X _____

Signature: X _____

THE SIGNATURE(S) TO THIS ASSIGNMENT MUST CORRESPOND WITH THE NAME(S) AS WRITTEN UPON THE FACE OF THE CERTIFICATE IN EVERY PARTICULAR, WITHOUT ALTERATION OR ENLARGEMENT OR ANY CHANGE WHATSOEVER. THE SIGNATURE(S) SHOULD BE GUARANTEED BY AN ELIGIBLE GUARANTOR INSTITUTION (Banks, Stockbrokers, Savings and Loan Associations and Credit Unions) WITH MEMBERSHIP IN AN APPROVED SIGNATURE GUARANTEE MEDALLION PROGRAM, PURSUANT TO S.E.C. RULE 17Ad-15.

July 11, 2011

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

Ladies and Gentlemen:

In my capacity as VP & Legal Counsel for Bacterin International Holdings, Inc., a Delaware corporation (the "Company"), I have assisted the Company in connection with the preparation of the Company's Registration Statement on Form S-3 filed with the Securities and Exchange Commission on July 11, 2011 (the "Registration Statement") relating to the registration of the sale by the selling stockholder listed in the Registration Statement of the number of shares of common stock, par value \$0.000001 per share, of the Company specified in the Registration Statement (the "Shares"), which includes shares that are already issued and outstanding, as well as shares that may be issued from time to time pursuant to a Purchase Agreement between the Company and the selling stockholder (the "Purchase Agreement").

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

The opinion expressed below is limited to the Delaware General Corporation Law (which includes judicial decisions interpreting the Delaware General Corporation Law).

Based on the foregoing, and subject to the qualifications stated herein, I am of the opinion that the Shares, when issued pursuant to the terms of the Purchase Agreement, will be validly issued, fully paid and non-assessable.

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

I hereby consent to the filing of this letter as an exhibit to the Registration Statement and to the reference to my name in my capacity as VP & Legal Counsel under the caption "Legal Matters" in the prospectus that is a part of the Registration Statement. In giving this consent, however, I do not admit that I am within the category of persons whose consent is required by Section 7 of the Securities Act of 1933 or the rules and regulations thereunder.

Very truly yours,

/s/ Jill Gilpin
VP & Legal Counsel

**Child,
Van Wagoner
& Bradshaw,
PLLC**
CERTIFIED PUBLIC ACCOUNTANTS



CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors
Bacterin International Holdings, Inc.

We hereby consent to the use of our report dated April 7, 2011, with respect to the consolidated balance sheets of Bacterin International Holdings, Inc. as of December 31, 2010 and 2009, and the related consolidated statements of operations and comprehensive income, changes in stockholders' equity and cash flows for the years ended December 31, 2010 and 2009, incorporated by reference in Form S-3 to be filed on or about July 11, 2011. We also consent to the use of our name and the reference to us in the Experts section of the Form S-3.

CHILD, VAN WAGONER & BRADSHAW, PLLC
Salt Lake City, Utah
July 11, 2011

SALT LAKE CITY
5296 South Commerce Dr.
Suite 300
Salt Lake City, Utah 84107
Phone: 801.281.4700
Fax: 801.281.4701

KAYSVILLE
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Suite D
Kaysville, Utah 84037
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