BIOTIME INC
Form POS AM
June 18, 2009

As filed with the Securities and Exchange Commission on June 18, 2009

Registration No. 333-128083

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

POST-EFFECTIVE AMENDMENT NO. 3
ON FORM S-1
TO
FORM S-2
REGISTRATION STATEMENT UNDER
THE SECURITIES ACT OF 1933
BIOTIME, INC.
(Exact name of Registrant as specified in charter)

California	2836	94-3127919
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

1301 Harbor Bay Parkway, Suite 100 Alameda, California 94502 (510) 521-3390 (Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)	Judith Segall, Vice President and Secretary BioTime, Inc. 1301 Harbor Bay Parkway, Suite 100 Alameda, California 94502 (510) 521-3390 (Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies of all communications, including all communications sent to the agent for service, should be sent to:
RICHARD S. SOROKO, ESQ.
Lippenberger, Thompson, Welch, Soroko & Gilbert LLP
201 Tamal Vista Blvd.
Corte Madera, California 94925
Tel. (415) 927-5200

Approximate date of commencement of proposed sale to the public: As soon as practicable after this Registration Statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box. o

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. o

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. o

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

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 Securities Exchange Act of 1934. (Check one):

Large accelerated filer o		Accelerated filer o
Non-accelerated filer o	(Do not check if a smaller reporting company)	Smaller reporting company x

This Registration Statement relates to the registration statement under Commission file number 333-109442

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission 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 June 18, 2009

PROSPECTUS

BIOTIME, INC.

2,694,282 Common Shares
7,847,867 Warrants
7,847,867 Common Shares Issuable Upon Exercise of Warrants

This prospectus relates to 4,509,506 warrants, and common shares that may be issued upon the exercise of the warrants that we issued to persons who exercised subscription rights in our subscription rights offers that were completed during January 2004 and December 2005. This prospectus also relates to 2,694,282 common shares and 3,097,348 warrants held by certain persons or affiliates of persons who acted as "Guarantors" or "Participating Debenture Holders" in the subscription rights offers. The exercise price of the warrants is $2.00 per share. The warrants will expire at 5:00 New York time on October 31, 2010 and may not be exercised after that date.

The common shares are quoted on the Over-the-Counter Bulletin Board ("OTCBB") under the symbol BTIM, and the warrants are quoted on the OTCBB under the symbol BTIMW. The closing price of the common shares on the OTCBB on June 4, 2009 was $2.85, and the closing price of the warrants on the OTCBB on June 4, 2009 was $0.70.

The Guarantors and Participating Debenture Holders and their designees may sell their common shares and warrants from time to time on the OTCBB at prevailing market prices, or in privately negotiated transactions, and they will bear all broker-dealer fees, commissions, and discounts payable in connection with the sale of their shares and warrants.

We will receive the exercise price of the warrants when the warrants are exercised. However, all of the net proceeds from the sale of outstanding common shares and warrants will belong to the selling security holders and not to us.

Brokers or dealers effecting transactions in the shares or warrants should confirm that the shares or warrants are registered under applicable state law or that an exemption from registration is available.

These securities involve a high degree of risk and should be purchased only by persons who can afford the loss of their entire investment. See ''Risk Factors'' on page 8.

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

The date of this prospectus is June __, 2009

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PROSPECTUS SUMMARY

The following summary explains only some of the information in this prospectus. More detailed information and financial statements appear elsewhere in this prospectus. Statements contained in this prospectus that are not historical facts may constitute forward-looking statements that are subject to risks and uncertainties that could cause actual results to differ materially from those discussed. Words such as “expects,” “may,” “will,” “anticipates,” “intends,” “pla “believes,” “seeks,” “estimates,” and similar expressions identify forward-looking statements. See “Risk Factors.”

BioTime, Inc.

Overview

We are a biotechnology company engaged in two areas of biomedical research and product development. The first product segment was blood plasma volume expanders, and related technology for use in surgery, emergency trauma treatment and other applications. Our lead blood plasma expander product, Hextend®, is a physiologically balanced intravenous solution used in the treatment of hypovolemia. Hypovolemia is a condition caused by low blood volume, often from blood loss during surgery or from injury. Hextend maintains circulatory system fluid volume and blood pressure and keeps vital organs perfused during surgery and trauma care.

Our second product segment is regenerative medicine. Regenerative medicine refers to therapies based on human embryonic stem (“hES”) cell technology that are designed to rebuild cell and tissue function lost due to degenerative disease or injury. These novel stem cells provide a means of manufacturing every cell type in the human body and therefore show considerable promise for the development of a number of new therapeutic products. We are focusing our current efforts in the regenerative medicine field on the development and sale of advanced human stem cell products and technology that can be used by researchers at universities and other institutions, at companies in the bioscience and biopharmaceutical industries, and at other companies that provide research products to companies in those industries. These research-only products generally can be marketed without regulatory (FDA) approval, and are therefore relatively near-term business opportunities when compared to therapeutic products. These products are currently being marketed through our wholly owned subsidiary, Embryome Sciences, Inc. We may also initiate development programs for human therapeutic applications should it be determined that it is practical to raise the required capital or partner with a third party on terms acceptable to the company. We recently were awarded a $4,721,706 grant from the California Institute of Regenerative Medicine for a stem cell research project related to our ACTCellerate™ embryonic stem cell technology that will address the need for industrial scale production of purified therapeutic cells.

Our operating revenues have been derived almost exclusively from royalties and licensing fees related to the sale of our plasma volume expander products, primarily Hextend. We began to make our first stem cell research products available during 2008 but we have not yet generated significant revenues in that business segment. Our ability to generate substantial operating revenue depends upon our success in developing and marketing or licensing our plasma volume expanders and stem cell products and technology for medical and research use.

Plasma Volume Expander Products

We develop blood plasma volume expanders, blood replacement solutions for hypothermic (low temperature) surgery, organ preservation solutions, and technology for use in surgery, emergency trauma treatment and other applications. Our first product, Hextend®, is a physiologically balanced blood plasma volume expander for the treatment of hypovolemia. Hypovolemia is a condition caused by low blood volume, often from blood loss during surgery or from injury. Hextend maintains circulatory system fluid volume and blood pressure and keeps vital organs perfused during surgery. Hextend, approved for use in major surgery, is the only blood plasma volume expander that contains lactate, multiple electrolytes, glucose, and a medically approved form of starch called hetastarch. Hextend is designed to compete with and to replace products that have been used to maintain fluid volume and blood pressure during surgery.

Hextend has become the standard plasma volume expander at a number of prominent teaching hospitals and leading medical centers, and is part of the United States Armed Forces Tactical Combat Casualty Care protocol. We believe that as Hextend use proliferates within the leading U.S. hospitals, other smaller hospitals will follow their lead, contributing to sales growth.

Hextend is manufactured and distributed in the United States by Hospira, Inc. (“Hospira”) and in South Korea by CJ CheilJedang Corp. (“CJ”) under license from us. Summit Pharmaceuticals International Corporation has a license to develop Hextend and PentaLyte in Japan, the People’s Republic of China, and Taiwan.

We have completed a Phase II clinical trial of PentaLyte in which PentaLyte was used to treat hypovolemia in cardiac surgery. Our ability to commence and complete additional clinical studies of PentaLyte depends on our cash resources, the costs involved, and licensing arrangements with a pharmaceutical company capable of manufacturing and marketing PentaLyte. We are currently seeking a licensee or co-developer to advance the commercialization of PentaLyte.

Stem Cells and Products for Regenerative Medicine Research

Regenerative medicine refers to therapies based on human embryonic stem (“hES”) cell technology that are designed to rebuild cell and tissue function lost due to degenerative disease or injury. hES cells are pluripotent, meaning that they have the potential to become any kind of cell found in the human body. Since embryonic stem cells can now be derived in a noncontroversial manner, they are increasingly likely to be utilized in a wide array of future therapies to restore the function of organs damaged by degenerative diseases such as heart failure, stroke, and diabetes.

We are focusing our initial efforts in the regenerative medicine field on the development and sale of advanced human stem cell products and technology that can be used by researchers at universities and other institutions, at companies in the bioscience and biopharmaceutical industries, and at other companies that provide research products to companies in those industries. These products are currently being marketed through our wholly owned subsidiary, Embryome Sciences, Inc. By focusing our resources on products and technology that will be used by researchers and drug developers at larger institutions and corporations, we believe that we will able to commercialize products more quickly, using less capital, than developing therapeutic products our selves. We may also attempt to develop our own human stem cell products for diagnostic and therapeutic uses in the future, if we believe that we have sufficient resources to do so or if we can do so in collaboration with other companies or institutions inside and outside the United States.

Embryome Sciences has already introduced its first stem cell research products, and is implementing plans to develop additional research products over the next two years. One of our first products is a relational database that will permit researchers to chart the cell lineages of human development, the genes expressed in those cell types, and antigens present on the cell surface of those cells that can be used in purification. This database will provide the first detailed map of the embryome and will aid researchers in navigating the complexities of human development and in identifying the many hundreds of cell types coming from embryonic stem cells. Our embryome map data base is now available at our website Embryome.com.

When Embryome Sciences acquired a license to use ACTCellerate™ technology, it also acquired the rights to market approximately 100 progenitor cell types made using ACTCellerateTM technology. ACTCellerate™ technology allows the rapid isolation of novel, highly-purified embryonic progenitor cells (hEPCs). hEPCs are intermediate in the developmental process between embryonic stem cells and fully differentiated cells. hEPCs may possess the ability to become a wide array of cell types with potential applications in research, drug discovery, and human regenerative stem cell therapy.

Embryome Sciences is presently offering two lines of progenitor cells showing indicators for neural crest. An array of hES cell lines carrying inherited genetic diseases such as cystic fibrosis and muscular dystrophy will also be available for sale online.

Embryome Sciences is also now marketing cell growth media called ESpanTM. These growth media are designed for the growth of human embryonic progenitor cells.

Additional new products that Embryome Sciences has targeted for development are ESpyTM cell lines, which will be derivatives of hES cells that send beacons of light in response to the activation of particular genes.

Embryome Sciences also plans to bring to market other new growth and differentiation factors that will permit researchers to manufacture specific cell types from embryonic stem cells, and purification tools useful to researchers in quality control of products for regenerative medicine. As new products are developed, they will become available for purchase on Embryome.com.

On April 29, 2009, the California Institute of Regenerative Medicine (CIRM) awarded us a $4,721,706 grant for a stem cell research project related to our ACTCellerate™ embryonic stem cell technology. Our grant project is titled “Addressing the Cell Purity and Identity Bottleneck through Generation and Expansion of Clonal Human Embryonic Progenitor Cell Lines.” In our CIRM-funded research project we will work with hEPCs generated using our ACTCellerate™ technology. The hEPCs are relatively easy to manufacture on a large scale and in a purified state, which may make it advantageous to work with these cells compared to the direct use of hES cells. We will work on identifying antibodies and other cell purification reagents that may be useful in the production of hEPCs that can be used to develop pure therapeutic cells such as nerve, blood vessel, heart muscle, cartilage, as well as other cell types.

Until such time as we are able to successfully commercialize any of the various regenerative medicine products and enter into commercial license agreements for those products and additional foreign commercial license agreements for Hextend, we will depend upon royalties from the sale of Hextend by Hospira and CJ as our principal source of revenues.

The amount and pace of research and development work that we can do or sponsor, and our ability to commence and complete clinical trials required to obtain FDA and foreign regulatory approval of products, depends upon the amount of money we have. Future research and clinical study costs are not presently determinable due to many factors, including the inherent uncertainty of these costs and the uncertainty as to timing, source, and amount of capital that will become available for these projects. We have already curtailed the pace and scope of our plasma volume expander development efforts due to the limited amount of funds available, and we may have to postpone further laboratory and clinical studies, unless our cash resources increase through growth in revenues, the completion of licensing agreements, additional equity investment, borrowing or third party sponsorship.

Hextend® and PentaLyte® are registered trademarks of BioTime, Inc., and ESpanTM, ReCyteTM, and EspyTM are trademarks of Embryome Sciences, Inc.

Offering Summary

Warrants Offered	7,847,867 warrants are being offered by the selling shareholders
Common Shares Offered	7,847,867 common shares are being offered by us upon the exercise of the warrants.
	2,694,282 common shares are being offered by the selling shareholders.
Common Shares Outstanding	28,386,716

Warrants Each warrant entitles the holder to purchase one common share at a price of $2.00 per share. The number of common shares and the exercise price will be proportionally adjusted in the event of a stock split, stock dividend, combination or similar recapitalization of the common shares. The warrants will expire on October 31, 2010 and may not be exercised after that date.

We may redeem the warrants by paying $.05 per warrant if the closing price of the common shares on a national securities exchange or the Nasdaq Stock Market exceeds 200% of the exercise price of the warrants for any 20 consecutive trading days. We will give the warrant holders 20 days written notice of the redemption, setting the redemption date, and the warrant holders may exercise the warrants prior to the redemption date. The warrants may not be exercised after the last business day prior to the redemption date.

RISK FACTORS

An investment in our shares and warrants involves a high degree of risk. You should purchase our shares and warrants only if you can afford to lose your entire investment. Before deciding to purchase any of the shares or warrants offered by this prospectus, you should consider the following factors which could materially adversely affect our proposed operations, our business prospects, and the value of an investment in our shares or warrants. There may be other factors that are not mentioned here or of which we are not presently aware that could also affect our operations.

Risks Related to Our Business Operations

Sales of Hextend to date have not been sufficient to generate an amount of royalties or licensing fees sufficient to cover our operating expenses

- Hextend is presently the only plasma expander product that we have on the market, and it is being sold only in the United States and South Korea. The royalty revenues that we have received from sales of Hextend have not been sufficient to pay our operating expenses. This means that we need to successfully develop and market or license additional products and earn additional revenues in sufficient amounts to meet our operating expenses.

- We will receive additional license fees and royalties if our licensees are successful in marketing Hextend and PentaLyte in Japan, Taiwan and China, but they have not yet obtained the regulatory approvals required to begin selling those products.

- We are also beginning to bring our first stem cell research products to the market but there is no assurance that we will succeed in generating significant revenues from the sale of those products.

We may not succeed in marketing our plasma volume expander products due to the availability of competing products

Factors that affect the marketing of our products include the following:

- Hextend and our other plasma expander products will compete with other products that are commonly used in surgery and trauma care and sell at lower prices.

- In order to compete with other products, particularly those that sell at lower prices, our products will have to provide medically significant advantages.

- Physicians and hospitals may be reluctant to try a new product due to the high degree of risk associated with the application of new technologies and products in the field of human medicine.

- Competing products are being manufactured and marketed by established pharmaceutical companies. For example, B. Braun/McGaw presently markets Hespan, an artificial plasma volume expander, and Hospira and Baxter International, Inc. manufacture and sell a generic equivalent of Hespan.

- There also is a risk that our competitors may succeed in developing safer or more effective products that could render our products and technologies obsolete or noncompetitive.

We will spend a substantial amount of our capital on research and development but we might not succeed in developing products and technologies that are useful in medicine

- We are attempting to develop new medical products and technologies.

- Many of our experimental products and technologies have not been applied in human medicine and have only been used in laboratory studies on animals. These new products and technologies might not prove to be safe and efficacious in the human medical applications for which they were developed.

- The experimentation we are doing is costly, time consuming and uncertain as to its results. We incurred research and development expenses amounting to $1,706,214 during 2008 and $967,864 during 2007.

- If we are successful in developing a new technology or product, refinement of the new technology or product and definition of the practical applications and limitations of the technology or product may take years and require the expenditure of large sums of money.

- Future clinical trials of new products such as PentaLyte may take longer and may be more costly than our Hextend clinical trials. The FDA permitted us to proceed directly into a Phase III clinical trial of Hextend involving only 120 patients because the active ingredients in Hextend had already been approved for use by the FDA in other products. Because PentaLyte contains a starch that has not been approved by the FDA for use in a plasma volume expander, we have had to complete Phase I and Phase II clinical trials of PentaLyte, and we will have to complete a Phase III trial that will involve more patients than our Hextend trials. We do not yet know the scope or cost of the Phase III clinical trials that the FDA will require for PentaLyte or the other products we are developing.

Our success depends in part on the growth of the stem cell industry, which is still in its infancy and its growth is uncertain

- We are developing and marketing products for use in stem cell research, including products that we plan to sell to companies and institutions that are seeking to develop human therapeutic stem cell products.

- The success of our business depends on the growth of stem cell research, without which there may be no market or only a very small market for our products and technology. The likelihood that stem cell research will grow depends upon the successful development of stem cell products that can be used to treat disease or injuries in people or that can be used to facilitate the development of other pharmaceutical products. However, stem cells have not been used in human medicine and have only been used in laboratory studies on animals.

- There can be no assurance that any safe and efficacious human medical applications will be developed using stem cells or related technology.

- Government-imposed restrictions and religious, moral and ethical concerns with respect to use of embryos or human embryonic stem cells in research and development could have a material adverse effect on the growth of the stem cell industry even if research proves that useful medical products can be developed using human embryonic stem cells.

We have incurred operating losses since inception and we do not known if we will attain profitability

Our net losses for the fiscal years ended December 31, 2008, 2007 and 2006 were $3,780,895, $1,438,226, and $1,864,621, respectively. Our ability to generate sufficient operating revenue to earn a profit depends upon our success in developing and marketing or licensing our products and technology.

We might not be able to raise additional capital needed to pay our operating expenses

- We plan to continue to incur substantial research and product development expenses, and we will need to raise additional capital to pay operating expenses until we are able to generate sufficient revenues from product sales, royalties, and license fees.

- It is likely that additional sales of equity or debt securities will be required to meet our short-term capital needs, unless we receive substantial revenues from the sale of our new products or we are successful in licensing or sublicensing the technology that we develop or acquire from others and we receive substantial licensing fees and royalties.

    - Sales of additional equity securities could result in the dilution of the interests of present shareholders.

The amount and pace of research and development work that we can do or sponsor, and our ability to commence and complete clinical trials required to obtain FDA and foreign regulatory approval of our pharmaceutical products, depends upon the amount of money we have

- We have already curtailed the pace and scope of our plasma volume expander development efforts due to the limited amount of funds available, and we may have to postpone other laboratory research and development work unless our cash resources increase through a growth in revenues or additional equity investment or borrowing.

- Although we were recently awarded a $4,721,706 grant for a stem cell research project, and we recently received approximately $4,000,000 through the sale of stock and warrants, there can be no assurance that we will be able to raise additional funds on favorable terms or at all, or that any funds raised will be sufficient to permit us to develop and market our products and technology. Unless we are able to generate sufficient revenue or raise additional funds when needed, it is likely that we will be unable to continue our planned activities, even if we make progress in our research and development projects.

- Although we will continue to seek licensing fees from pharmaceutical companies for licenses to manufacture and market our products abroad, it is likely that additional sales of equity or debt securities will be required to meet our short-term capital needs.

Our business could be adversely affected if we lose the services of the key personnel upon whom we depend

Our stem cell research program is directed primarily by our Chief Executive Officer Dr. Michael West. The loss of Dr. West's services could have a material adverse effect on us.

Risks Related to Our Industry

We will face certain risks arising from regulatory, legal, and economic factors that affect our business and the business of other pharmaceutical development companies. Because we are a small company with limited revenues and limited capital resources, we may be less able to bear the financial impact of these risks than larger companies that have substantial income and available capital.

If we do not receive FDA and other regulatory approvals we will not be permitted to sell our pharmaceutical products

The pharmaceutical products that we develop cannot be sold until the FDA and corresponding foreign regulatory authorities approve the products for medical use. Hextend has been approved for use in the United States, Canada and Korea only. One of our licensees has been conducting a Phase III equivalent clinical trial of Hextend in Japan. We have conducted a Phase II clinical trial of PentaLyte as a plasma volume expander in surgery but we do not have sufficient financing to commence a Phase III trial.

The need to obtain regulatory approval to market a new product means that:

- We will have to conduct expensive and time consuming clinical trials of new products. The full cost of completing a Phase III clinical trial of PentaLyte necessary to obtain FDA approval cannot be presently determined but exceeds our current financial resources.

- We will incur the expense and delay inherent in seeking FDA and foreign regulatory approval of new products. For example, 12 months elapsed between the date we filed our application to market Hextend in the United States and the date on which our application was approved. Approximately 36 months elapsed between the date we filed our application for approval to market Hextend in Canada, and the date on which our application was approved, even though we did not have to conduct any additional clinical trials.

- A product that is approved may be subject to restrictions on use.

- The FDA can recall or withdraw approval of a product if problems arise.

- We will face similar regulatory issues in foreign countries.

Government imposed restrictions and religious, moral and ethical concerns on the use of hES cells could prevent us from developing and successfully marketing stem cell products

- Government-imposed restrictions with respect to the use of embryos or human embryonic stem cells in research and development could limit our ability to conduct research and develop new products.

- Government imposed restrictions on the use of embryos or hES cells in the United States and abroad could generally constrain stem cell research thereby limiting the market and demand for our products. During March 2009, President Obama lifted certain restrictions on federal funding of research involving the use of hES cells. In accordance with President Obama's executive order, the National Institutes of Health has proposed for public comment new guidelines for determining the eligibility of hES cell lines for use in federally funded research.

- California law requires that stem cell research be conducted under the oversight of a stem cell research oversight (SCRO) committee. Many kinds of stem cell research, including the derivation of new hES cell lines, may only be conducted in California with the prior written approval the SCRO. A SCRO could prohibit or impose restrictions on the research we plan to do.

- The use of hES cells gives rise to religious, moral and ethical issues regarding the appropriate means of obtaining the cells and the appropriate use and disposal of the cells. These considerations could lead to more restrictive government regulations or could generally constrain stem cell research thereby limiting the market and demand for our products.

If we are unable to obtain and enforce patents and to protect our trade secrets, others could use our technology to compete with us, which could limit opportunities for us to generate revenues by licensing our technology and selling products

- Our success will depend in part on our ability to obtain and enforce patents and maintain trade secrets in the United States and in other countries. If we are unsuccessful in obtaining and enforcing patents, our competitors could use our technology and create products that compete with our products, without paying license fees or royalties to us.

- The preparation, filing, and prosecution of patent applications can be costly and time consuming. Our limited financial resources may not permit us to pursue patent protection of all of our technology and products throughout the world.

- Even if we are able to obtain issued patents covering our technology or products, we may have to incur substantial legal fees and other expenses to enforce our patent rights in order to protect our technology and products from infringing uses. We may not have the financial resources to finance the litigation required to preserve our patent and trade secret rights.

There is no certainty that our pending or future patent applications will result in the issuance of patents

- We have obtained licenses for a number of patent applications covering technology that we believe will be useful in producing new products, and which we believe may be of commercial interest to other companies that may be willing to sublicense the technology for fees or royalty payments. We may also file new patent applications in the future seeking patent protection for new technology or products that we develop ourselves or jointly with others. However, there is no assurance that any of our licensed patent applications or any future patent applications that we may file in the United States or abroad will result in the issuance of patents.

- In Europe, the European Patent Convention prohibits the granting of European patents for inventions that concern "uses of human embryos for industrial or commercial purposes." The European Patent Office is presently interpreting this prohibition broadly, and is applying it to reject patent claims that pertain to human embryonic stem cells. However, this broad interpretation is being challenged through the European Patent Office appeals system. As a result, we do not yet know whether or to what extent we will be able to obtain patent protection for our human embryonic stem cell technologies in Europe.

The process of applying for and obtaining patents can be expensive and slow

- The preparation and filing of patent applications, and the maintenance of patents that are issued, may require substantial time and money.

- A patent interference proceeding may be instituted with the U.S. Patent and Trademark Office (the PTO) when more than one person files a patent application covering the same technology, or if someone wishes to challenge the validity of an issued patent. At the completion of the interference proceeding, the PTO will determine which competing applicant is entitled to the patent, or whether an issued patent is valid. Patent interference proceedings are complex, highly contested legal proceedings, and the PTO’s decision is subject to appeal. This means that if an interference proceeding arises with respect to any of our patent applications, we may experience significant expenses and delay in obtaining a patent, if the outcome of the proceeding is unfavorable to us, the patent could be issued to a competitor rather than to us.

- Oppositions to the issuance of patents may be filed under European patent law and the patent laws of certain other countries. Like US PTO interference proceedings, these foreign proceedings can be very expensive to contest and can result in significant delays in obtaining a patent or can result in a denial of a patent application.

Our patents may not protect our products from competition

We have patents in the United States, Canada, the European Union countries, Australia, Israel, Russia, South Africa, South Korea, Japan, Hong Kong, and Singapore, and have filed patent applications in other foreign countries for our plasma volume expander products.

- We might not be able to obtain any additional patents, and any patents that we do obtain might not be comprehensive enough to provide us with meaningful patent protection.

- There will always be a risk that our competitors might be able to successfully challenge the validity or enforceability of any patent issued to us.

- In addition to interference proceedings, the U.S. PTO can reexamine issued patents at the request of a third party seeking to have the patent invalidated. This means that patents owned or licensed by us may be subject to reexamination and may be lost if the outcome of the reexamination is unfavorable to us.

If we fail to meet our obligations under license agreements, we may lose our rights to key technologies on which our business depends

Our business depends on several critical technologies that are based in part on technology licensed from third parties. Those third-party license agreements impose obligations on us, including payment obligations and obligations to pursue development of commercial products under the licensed patents or technology. If a licensor believes that we have failed to meet our obligations under a license agreement, the licensor could seek to limit or terminate our license rights, which could lead to costly and time-consuming litigation and, potentially, a loss of the licensed rights. During the period of any such litigation our ability to carry out the development and commercialization of potential products could be significantly and negatively affected. If our license rights were restricted or ultimately lost, we would not be able to continue to use the licensed technology in our business.

The price and sale of our products may be limited by health insurance coverage and government regulation

Success in selling our pharmaceutical products may depend in part on the extent to which health insurance companies, HMOs, and government health administration authorities such as Medicare and Medicaid will pay for the cost of the products and related treatment. Presently, most health insurance plans and HMOs will pay for Hextend when it is used in a surgical procedure that is covered by the plan. However, until we actually introduce a new product into the medical market place we will not know with certainty whether adequate health insurance, HMO, and government coverage will be available to permit the product to be sold at a price high enough for us to generate a profit. In some foreign countries, pricing or profitability of health care products is subject to government control which may result in low prices for our products. In the United States, there have been a number of federal and state proposals to implement similar government controls, and new proposals are likely to be made in the future.

Risks Pertaining to Our Common Shares and Warrants

Before purchasing our common shares or warrants, investors should consider the price volatility of our shares and warrants and the fact that we do not pay dividends.

Because we are engaged in the development of pharmaceutical and stem cell research products, the price of our stock may rise and fall rapidly

- The market price of our shares and warrants, like that of the shares of many biotechnology companies, has been highly volatile.

- The price of our shares and warrants may rise rapidly in response to certain events, such as the commencement of clinical trials of an experimental new drug, even though the outcome of those trials and the likelihood of ultimate FDA approval remain uncertain.

- Similarly, prices of our shares and warrants may fall rapidly in response to certain events such as unfavorable results of clinical trials or a delay or failure to obtain FDA approval.

- The failure of our earnings to meet analysts' expectations could result in a significant rapid decline in the market price of our common shares and warrants.

Current economic and stock market conditions may adversely affect the price of our common shares and warrants

The stock market has been experiencing extreme price and volume fluctuations which have affected the market price of the equity securities without regard to the operating performance of the issuing companies. Broad market fluctuations, as well as general economic and political conditions, may adversely affect the market price of the common shares and warrants.

Our common shares and warrants are subject to the so-called penny stock rules that impose restrictive sales practice requirements

The common shares and warrants are subject to the so-called penny stock rules that impose restrictive sales practice requirements on broker-dealers who sell penny stocks to persons other than established customers and accredited investors. An accredited investor generally is a person who has a net worth in excess of $1,000,000 or individual annual income exceeding $200,000, or joint annual income with a spouse exceeding $300,000. For transactions covered by this rule, the broker-dealer must make a special suitability determination for the purchaser and must have received the purchaser's written consent to the transaction prior to sale. This means that delisting could affect the ability of shareholders to sell their common shares and warrants in the secondary market.

The Securities and Exchange Commission (the "Commission") has adopted regulations that define a "penny stock" to be any equity security that has a market price of less than $5.00 per share or an exercise price of less than $5.00 per share, subject to certain exceptions. If a transaction involving a penny stock is subject to the Commission's rule, a broker-dealer must deliver a disclosure schedule relating to the penny stock market to the investor prior to a transaction. The broker-dealer also must disclose the commissions payable to both the broker-dealer and the registered representative, current quotations for the penny stock, and, if the broker-dealer is the sole market-maker, the broker-dealer must disclose this fact and the broker-dealer's presumed control over the market. Finally, monthly statements must be sent disclosing recent price information for the penny stock held in the customer's account and information on the limited market in penny stocks.

Because we do not pay dividends, our stock may not be a suitable investment for anyone who needs to earn dividend income

We do not pay cash dividends on our common shares. For the foreseeable future we anticipate that any earnings generated in our business will be used to finance the growth of our business and will not be paid out as dividends to our shareholders. We are also prohibited from paying cash dividends on our common shares under the terms of our Revolving Line of Credit Agreement. This means that our stock may not be a suitable investment for anyone who needs to earn income from their investments.

The warrants cannot be exercised unless a registration statement is in effect under federal and state securities laws

A registration statement under the Securities Act of 1933, as amended, must be in effect in order for warrant holders to exercise their warrants. This means that we will have to periodically update our registration statement and prospectus by filing post-effective amendments. We intend to use our best efforts to keep our registration statement effective. However, if we are unable to do so for any reason, warrant holders would not be able to exercise their warrants, even if the market price of our common shares was then greater than the exercise price.

If our common shares are not exempt from state registration or qualification, most states will require us to obtain a permit, issued through an application for registration or qualification, and to maintain that permit in effect in order for warrant holders in the state to exercise their warrants.

Securities analysts may not initiate coverage or continue to cover our common stock, and this may have a negative impact on our market price.

The trading market for our common shares will depend, in part, on the research and reports that securities analysts publish about our business and our common shares. We do not have any control over these analysts. There is no guarantee that securities analysts will cover our common shares. If securities analysts do not cover our common shares, the lack of research coverage may adversely affect the market price of those shares. If securities analysts do cover our shares, they could issue reports or recommendations that are unfavorable to the price of our shares, and they could downgrade a previously favorable report or recommendation, and in either case our share price could decline as a result of the report. If one or more of these analysts ceases to cover our shares or fails to publish regular reports on our business, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

You may experience dilution of your ownership interests because of the future issuance of additional shares of our common shares and our preferred stock.

In the future, we may issue our authorized but previously unissued equity securities, resulting in the dilution of the ownership interests of our present shareholders. We are currently authorized to issue an aggregate of 51,000,000 shares of capital stock consisting of 50,000,000 common shares and 1,000,000 “blank check” preferred shares. As of June 4, 2009, there were: 28,386,716 common shares outstanding and 3,106,332 common shares reserved for issuance upon the exercise of outstanding options under our employee stock plans, 7,847,867 common shares reserved for issuance upon the exercise of the warrants described in this prospectus, 2,874,167 common shares reserved for issuance upon the exercise of other warrants, and 2,121,300 common shares that may be acquired by lenders under our Revolving Line of Credit. No preferred shares are presently outstanding

We may issue additional common shares or other securities that are convertible into or exercisable for common shares in order to raise additional capital, or in connection with hiring or retaining employees or consultants, or in connection with future acquisitions of licenses to technology or rights to acquire products, in connection with future business acquisitions, or for other business purposes. The future issuance of any such additional common shares or other securities may create downward pressure on the trading price of our common shares.

We may also issue preferred shares having rights, preferences, and privileges senior to the rights of our common shares with respect to dividends, rights to share in distributions of our assets if we liquidate our company, or voting rights. Any preferred shares may also be convertible into common shares on terms that would be dilutive to holders of common shares.

MARKET FOR OUR COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

BioTime common shares were traded on the American Stock Exchange from August 31, 1999 until July 14, 2005, and have been quoted on the OTCBB under the symbol BTIM since July 15, 2005.

The following table sets forth the range of high and low sale or bid prices for the common shares for the fiscal years ended December 31, 2007 and 2008 and for the three months ended March 31, 2009 based on transaction data as reported by the OTCBB:

Quarter Ended	High	Low
March 31, 2007	0.75	0.25
June 30, 2007	0.75	0.37
September 30, 2007	0.50	0.27
December 31, 2007	0.69	0.26
March 31, 2008	0.44	0.25
June 30, 2008	0.62	0.29
September 30, 2008	1.87	0.48
December 31, 2008	2.43	0.70
March 31, 2009	2.55	1.35

Over-the-counter market quotations may reflect inter-dealer prices, without retail mark-up, mark-down or commission and may not necessarily represent actual transactions.

As of March 10, 2009, there were 6,676 holders of the common shares.

BioTime has paid no dividends on its common shares since its inception and does not plan to pay dividends on its common shares in the foreseeable future. We are also prohibited from paying dividends under the terms of a Revolving Line of Credit Agreement.

The following table shows certain information concerning the options and warrants outstanding and available for issuance under all of our compensation plans and agreements as of December 31, 2008.

Plan Category	Number of Shares to be Issued Upon Exercise of Outstanding Options, Warrants, and Rights	Weighted Average Exercise Price of the Outstanding Options, Warrants, and Rights	Number of Shares Remaining Available for Future Issuance Under Equity Compensation Plans
Equity Compensation Plans Approved by Shareholders	1,986,302	$ 1.30	73,198
Equity Compensation Plans Not Approved By Shareholders*	2,048,697	$ 0.92	697,970

*We have granted 1,302,030 stock options to certain officers subject to shareholder approval of an amendment of our 2002 Employee Stock Option Plan which made an additional 2,000,000 common shares available under the Plan. We intend to submit that amendment to our shareholders for approval at our next annual meeting. As of December 31, 2008, we had granted 246,667 warrants and 250,000 stock options to certain consultants for providing services to us, and we had granted 250,000 warrants to an investment banker for arranging a portion of the loans under our Revolving Line of Credit Agreement.

USE OF PROCEEDS

The cash proceeds receivable from the exercise of 7,847,867 warrants will be $15,695,734. We intend to use the proceeds from the exercise of the warrants as shown in the following table.

Application		Estimated Amount	Percent of Total	
Research and Development	$	10,000,000	64	%
Working Capital	$	5,695,734	36	%
Total	$	15,695,734	100	%

Research and Development. Proceeds allocated to research and development may be used to develop new stem cell products and technology and to acquire new stem cell products or and technology through licenses or similar agreements from other companies. We may also use proceeds for additional clinical trials of PentaLyte and to fund the cost of seeking regulatory approval of PentaLyte.

Working Capital. We intend to apply the balance of the proceeds from the exercise of the warrants to working capital and general corporate purposes. We will have broad discretion with respect to the use of proceeds retained as working capital. The proceeds may be used to defray overhead expenses and for future opportunities and contingencies that may arise. We expect that our general and administrative expenses will increase as we achieve progress in developing products and bringing them to market. For example, a portion of the proceeds allocated to working capital may be used to pay the salaries, benefits and fees to employees and consultants who assist in the development of new products or the preparation of applications to the FDA and foreign regulatory agencies and patent applications. Proceeds allocated to working capital also may be reallocated to research and development and may be used to pay the costs of developing new products, obtaining new technology, or conducting clinical trials of our products.

The preceding table represents only an estimate of the allocation of the net proceeds of the exercise of the warrants based upon the current state of our product development program. The development of new medical products and technologies often involves complications, delays and costs that cannot be predicted, and may cause us to make a reallocation of proceeds among the categories shown above or to other uses. We may need to raise additional capital to pay operating expenses until such time as we are able to generate sufficient revenues from product sales, royalties, and license fees.

Until used, the net proceeds from the exercise of the warrants will be invested in certificates of deposit, United States government securities or other high quality, short-term interest-bearing investments.

OUR BUSINESS

We are developing products and technology for use in the emerging field of regenerative medicine. Regenerative medicine refers to therapies based on hES cell and induced pluripotent stem (iPS) cell technology. Since these cells have the ability to transform into all of the cells of the human body (a property called pluripotency), they enable the manufacture of a host of new products of interest to medical researchers such as cells designed to rebuild cell and tissue function lost due to degenerative disease or injury and cell lines for basic research and discovery of new drugs. Since embryonic stem cells can now be derived in a noncontroversial manner, including through the use of iPS technology, they are increasingly likely to be utilized in a wide array of future research programs in the attempt to restore the function of organs and tissues damaged by degenerative diseases such as heart failure, stroke, Parkinson's disease, macular degeneration, diabetes, as well as many others.

In our subsidiary Embryome Sciences, Inc., we are working to merge new technologies in the study of DNA (genomics) with the biology of embryonic stem cells to provide scientists with a detailed "roadmap" of the human developmental tree, the factors to push the cells into desired lineages, and tools to purify the desired cell types. This detailed map of the embryome is expected to allow scientists to better characterize the cells they produce, facilitate the purification of products, and thereby reduce the chances of administering contaminated cell types causing complications in patients. Embryome Sciences launched a first draft of this map in its online database Embryome.com in 2008 and intends to continuously improve the content of this site to aid researchers and to familiarize scientists with a growing catalog of our research products.

We plan to initially focus our efforts in the regenerative medicine field on the development and sale of advanced human stem cell products and technologies that can be used by researchers at universities and other institutions, at companies in the bioscience and biopharmaceutical industries, and at other companies that provide research products to companies in those industries. By initially focusing our resources on products and technologies that will be used by researchers and drug developers at larger institutions and corporations, we believe that we will be able to commercialize products more quickly, and using less capital, than developing therapeutic products ourselves. We may also attempt to develop our own human stem cell products for diagnostic and therapeutic uses in the future, if we believe that we have sufficient resources to do so or if we can do so in collaboration with other companies or institutions.

We have already introduced our first stem cell research products, and we are implementing plans to develop additional research products over the next two years.

Embryome Database

The future challenge for regenerative medicine is to navigate the complexity of human development, to identify the many hundreds of cell types coming from embryonic stem cells, and to manufacture purified populations of desired cell types. To assist researchers in attaining these goals, we are creating a detailed “map” of the human and mouse embryome that will take the form of a relational database intended to permit researchers to chart the cell lineages of human development, the genes expressed in those cell types, and antigens present on the cell surface of those cells that can be used in purification. Our embryome map database is now available at our website www.embryome.com.

Progenitor and hES Cell Lines

When Embryome Sciences acquired a license to use ACTCellerate™ technology, it also acquired the rights to market more than 140 novel human cell types made using ACTCellerateTM technology and is presently marketing many of these lines on its web site. ACTCellerate™ technology allows the rapid isolation of novel, highly-purified hEPCs. hEPCs are cells that are intermediate in the developmental process between embryonic stem cells and fully differentiated cells. hEPCs may possess the ability to become a wide array of cell types with potential applications in research, drug discovery, and human regenerative stem cell therapy. The hEPCs are relatively easy to manufacture on a large scale and in a purified state, which may make it advantageous to work with these cells compared to the direct use of hES or iPS cells.

On April 29, 2009, the California Institute of Regenerative Medicine (CIRM) awarded us a $4,721,706 grant for a stem cell research project related to our ACTCellerate™ technology. Our grant project is titled “Addressing the Cell Purity and Identity Bottleneck through Generation and Expansion of Clonal Human Embryonic Progenitor Cell Lines.” The overall objective of the research project is to generate tools useful in applying ACTCellerate™ technology to the manufacture of patient-specific therapeutic products. We already have isolated and expanded a number of hEPCs that may be used in the funded research program.

Our CIRM-funded research project will address the need for industrial scale production of purified therapeutic cells. hES and iPS cells are difficult and costly to manufacture in large quantities, especially with the purity required for therapeutic use. Purity and precise identification of the desired therapeutic cells are essential for cell therapy because unlike a drug which may persist in the body for a matter of hours or days, a cell can persist in the body for a lifetime. The pluripotency that allows hES cells to differentiate into all types of cells also poses the problem of assuring that all hES cells in a cultured batch differentiate into the desired type of body cell. Contamination of hES- or iPS-derived cells with the wrong cells could lead to toxicities resulting from normal but inappropriate tissue growth or tumor formation. For this reason, our funded research will use ACTCellerate™ technology to manufacture hEPCs rather than hES or iPS cells.

Because our hEPCs are clonal, meaning that they are derived from a single cell, they have the potential to grow as a highly purified cell line. However, the production of hEPCs for human therapeutic use will require a means of ascertaining that the cells being used are in fact the correct cells. Our research program proposes to map the surface markers on hEPC lines so that we can identify a molecular signature specific to a given hEPC line. The molecular signature will be the key to verifying the correct identity of cells intended to be used in therapy, and will facilitate purification of hEPCs from any hES or iPS cell line. We will seek to identify antibodies and other cell purification reagents that will reveal the molecular signature of the desired hEPCs. The successful completion of our proposed project will provide well-characterized hEPCs that are precursors of therapeutic cells such as nerve, blood vessel, heart muscle, cartilage, and skin, as well as other cell types.

The CIRM grant will provide up to $4.7 million of funding for this research project over a period of three years, with $1.6 million expected to be available during the first 12 months. We expect that the first funds will be available some time during the summer of 2009 and that work on the project will be ready to begin upon the receipt of funding.

hES Cells Carrying Genetic Diseases

Embryome Sciences has acquired an array of hES cell lines carrying inherited genetic diseases such as cystic fibrosis and muscular dystrophy. These hES cell lines will also be available for sale online.

ESpan™ Cell Growth Media

We are marketing a line of cell growth media products called ESpanTM. These growth media are optimized for the growth of hEPC types. Cells need to be propagated in liquid media, in both the laboratory setting where basic research on stem cells is performed, and in the commercial sector where stem cells are scaled up for the manufacture of cell-based therapies or for the identification of new drugs. We expect that rather than propagating hES cells in large quantities, many end users will instead propagate cells using media optimized for the propagation of hEPCs created from hES cells.

ESpy™ Cell Lines

Additional new products that we have targeted for development are ESpyTM cell lines, which will be derivatives of hES cells that send beacons of light useful in tracking the cells for research purposes.

Other New Products Planned

We also plan to bring to market other new growth and differentiation factors and kits that will permit researchers to manufacture specific cell types from embryonic stem cells, and purification tools useful to researchers in the quality control of products for regenerative medicine. As new products are developed, they will become available for purchase on embryome.com.

Human embryonic stem cell technology is approximately 10 years old and evolving rapidly. As a result, we cannot accurately forecast the amount of revenue that the new products we offer might generate.

Licensed Stem Cell Technology and Stem Cell Product Development Agreements

We have obtained the right to use stem cell technology that we believe has great potential in our product development efforts, and that may be useful to other companies that are engaged in the research and development of stem cell products for human therapeutic and diagnostic use.

Licensed Patents

We have entered into a Commercial License and Option Agreement with Wisconsin Alumni Research Foundation ("WARF"). The WARF license permits us to use certain patented and patent pending technology belonging to WARF, as well as certain stem cell materials, for research and development purposes, and for the production and marketing of "research products" and "related products." "Research products" are products used as research tools, including in drug discovery and development. "Related products" are products other than research products, diagnostic products, or therapeutic products. "Diagnostic products" are products or services used in the diagnosis, prognosis, screening or detection of disease in humans. "Therapeutic products" are products or services used in the treatment of disease in humans.

Under the WARF license agreement, we will pay WARF a license fee of $225,000 in cash and $70,000 worth of our common shares. The first installment of cash in the amount of $10,000 was paid during February 2008, the common shares were issued during March 2009, and the remaining $215,000 is due on the earlier of (i) thirty (30) days after we raise $5,000,000 or more of new equity financing, or (ii) March 2, 2010. A maintenance fee of $25,000 will be due annually on March 2 of each year during the term of the WARF License beginning March 2, 2010.

We will pay WARF royalties on the sale of products and services under the WARF license. The royalty will be 4% on the sale of research products and 2% on the sale of related products. The royalty is payable on sales by us or by any sublicensee. The royalty rate is subject to certain reductions if we also become obligated to pay royalties to a third party in order to sell a product.

We will also pay WARF $25,000 toward reimbursement of the costs associated with preparing, filing, and maintaining the licensed WARF patents. That fee is payable in two installments. The first installment of $5,000 was paid during February 2008, and the remaining $20,000 is due on the earlier of (i) thirty (30) days after we raise $5,000,000 or more of new equity financing, or (ii) March 2, 2010.

We have an option to negotiate with WARF to obtain a license to manufacture and market therapeutic products, excluding products in certain fields of use. The issuance of a license for therapeutic products would depend upon our submission and WARF's acceptance of a product development plan, and our reaching agreement with WARF on the commercial terms of the license such as a license fee, royalties, patent reimbursement fees, and other contractual matters.

The WARF license shall remain in effect until the expiration of the latest expiration date of the licensed patents. However, we may terminate the WARF license prior to the expiration date by giving WARF at least ninety days written notice, and WARF may terminate the WARF license if we (a) fail to make any payment to WARF, (b) fail to submit any required report to WARF, (c) commit any breach of any other covenant in the WARF license that is not remedied within ninety days after written notice from WARF, or (d) commit any act of bankruptcy, become insolvent, are unable to pay our debts as they become due, file a petition under any bankruptcy or insolvency act, or have any such petition filed against us which is not dismissed within sixty days, or offers its creditors any component of the patents or materials covered by the WARF license.

Lifeline

We have entered into a Product Production and Distribution Agreement with Lifeline for the production and marketing of hEPCs or hEPC lines, and products derived from those hEPCs. The products developed under the agreement with Lifeline will be produced and sold for research purposes, such as drug discovery and drug development uses.

The proceeds from the sale of products to certain distributors with which Lifeline has a pre-existing relationship will be shared equally by us and Lifeline, after deducting royalties payable to licensors of the technology used, and certain production and marketing costs. The proceeds from products produced for distribution by both us and Lifeline, and products produced by one party at the request of the other party, will be shared in the same manner. Proceeds from the sale of other products, which are produced for distribution by one party, generally will be shared 90% by the party that produced the product for distribution, and 10% by the other party after deducting royalties payable to licensors of technology used. In the case of the sale of these products, the party that produces the product and receives 90% of the sales proceeds will bear all of the production and marketing costs of the product.

The products will be produced using technology and stem cell lines licensed from WARF, technology developed by us, technology developed by Lifeline, and technology licensed from ACT. WARF and ACT will receive royalties from the sale of the products developed using their licensed technology and stem cells.

We paid Lifeline $250,000 to facilitate their product production and marketing efforts. We will be entitled to recover that amount from the share of product sale proceeds that otherwise would have been allocated to Lifeline.

ACTCellerate™ Technology

We have entered into a license agreement with ACT under which we acquired exclusive world-wide rights to use ACT's "ACTCellerate" technology for methods to accelerate the isolation of novel cell strains from pluripotent stem cells. The licensed rights include pending patent applications, know-how, and existing cells and cell lines developed using the technology.

The licensed technology is designed to provide a large-scale and reproducible method of isolating clonally purified hEPC lines, many of which may be capable of extended propagation in vitro. Initial testing suggests that the technology may be used to isolate at least 140 distinct clones that contain many previously uncharacterized cell types derived from all germ layers that display diverse embryo- and site-specific homeobox gene expression. Despite the expression of many oncofetal genes, none of the human embryonic progenitor cell lines tested led to tumor formation when transplanted into immunocompromised mice. The cell lines studied appear to have a finite replicative lifespan but have longer telomeres than most fetal- or adult-derived cells, which may facilitate their use in the manufacture of purified lineages for research and human therapy. Information concerning the technology was published in the May 2008 edition of the journal Regenerative Medicine.

We may use the licensed technology and cell lines for research purpose and for the development of therapeutic and diagnostic products for human and veterinary use. We also have the right to grant sublicenses.

We paid ACT a $250,000 license fee and will pay an 8% royalty on sales of products, services, and processes that utilize the licensed technology. Once a total of $1,000,000 of royalties has been paid, no further royalties will be due.

ACT may reacquire royalty free, world-wide licenses to use the technology for retinal pigment epithelial cells, hemangioblasts, and myocardial cells, on an exclusive basis, and for hepatocytes, on a non-exclusive basis, for human therapeutic use. ACT will pay us $5,000 for each license that it elects to reacquire.

iPS Technology

We have entered into a license agreement and a sublicense agreement with ACT under which we acquired world-wide rights to use an array of ACT technology and technology licensed by ACT from affiliates of Kirin Pharma Company, Limited. The ACT license and Kirin sublicense permit the commercialization of products in human therapeutic and diagnostic product markets.

The licensed technology covers methods to transform cells of the human body, such as skin cells, into an embryonic state in which the cells will be pluripotent. This new technology is sometimes referred to as induced pluripotent stem cell (iPS) technology. Because iPS technology does not involve human embryos or egg cells, and classical cloning techniques are not employed, the use of iPS technology may eliminate some ethical concerns that have been raised in connection with the procurement and use of human embryonic stem cells in scientific research and product development.

The portfolio of licensed patents and patent applications covers methods to produce iPS cells that do not carry viral vectors or added genes. Other iPS technology currently being practiced by other researchers utilizes viruses and genes that are likely incompatible with human therapeutic uses. We believe that technologies that facilitate the reprogramming of human cells to iPS cells without using viruses could be advantageous in the development of human stem cell products for use in medicine.

The Kirin sublicense covers patent application for methods for cloning mammals using reprogrammed donor chromatin or donor cells and methods for altering cell fate. These patent applications relate to technology to alter the state of a cell, such as a human skin cell, by exposing the cell’s DNA to the cytoplasm of another reprogramming cell with differing properties. We have the right to use this licensed technology for all human therapeutic and diagnostic applications.

A second series of patent applications licensed nonexclusively from ACT includes technologies for:

- the use of reprogramming cells that over-express RNAs for the genes OCT4, SOX2, Nanog, cMYC, and other factors known to be useful in iPS technology
- methods of resetting cell lifespan by extending the length of telomeres
- the use of the cytoplasm of undifferentiated cells to reprogram human cells
- the use of a cell bank of hemizygous O- cells
- methods of screening for differentiation agents
- stem cell-derived endothelial cells modified to disrupt tumor angiogenesis.

We may use this technology in commercializing the patents licensed under the Kirin Sublicense.

The ACT license also includes patent applications for other uses. One licensed patent application covers a method of differentiation of morula or inner cell mass cells and a method of making lineage-defective embryonic stem cells. That technology can be used in producing hEPCs without the utilization of hES cell lines. Another licensed patent application covers novel culture systems for ex vivo development that contains technology for utilizing avian cells in the production of stem cell products free of viruses and bacteria.

ACT iPS License Provisions

Under the ACT iPS license, we paid ACT a $200,000 license fee and will pay a 5% royalty on sales of products, services, and processes that utilize the licensed ACT technology. Once a total of $600,000 of royalties has been paid, no further royalties will be due. We will also pay 20% of any fees or other payments, other than equity investments, research and development costs, loans and royalties, received by us from sublicensing the ACT technology to third parties.

We may use the licensed technology and cell lines for research purpose and for the development of therapeutic and diagnostic products for human and veterinary use, excluding (a) human and non-human animal cells for commercial research use, including small molecule and other drug testing and basic research and (b) human cells for therapeutic and diagnostic use in the treatment of human diabetes, liver diseases, retinal diseases and retinal degenerative diseases, other than applications involving the use of cells in the treatment of tumors where the primary use of the cells is the destruction or reduction of tumors and does not involve regeneration of tissue or organ function. The exclusions from the scope of permitted uses under the ACT license will lapse if ACT's license with a third party terminates or if the third party no longer has an exclusive license from ACT for those uses.

Our license to use some of the ACT iPS technology is non-exclusive, and is limited to use in conjunction with the technology sublicensed from ACT under the Kirin sublicense, and may not be sublicensed to third parties other than subsidiaries and other affiliated entities. We do have the right to grant sublicenses to the other licensed ACT technology.

We will have the right to prosecute the patent applications and to enforce all patents, at our own expense, except that ACT is responsible for prosecuting patent applications for the non-exclusively licensed technology at its own expense. We will have the right to patent any new inventions arising from the use of the licensed patents and technology.

We will indemnify ACT for any products liability claims arising from products made by us and our sublicensees.

The licenses will expire in twenty years or upon the expiration of the last to expire of the licensed patents, whichever is later.

Kirin Sublicense Provisions

Under the Kirin sublicense, we paid ACT a $50,000 license fee and will pay a 3.5% royalty on sales of products, services, and processes that utilize the licensed ACT technology, and 20% of any fees or other payments, other than equity investments, research and development costs, loans and royalties we may receive from sublicensing the Kirin technology to third parties. We will also pay to ACT or to an affiliate of Kirin, annually, the amount, if any, by which royalties payable by ACT under its license agreement with Kirin are less than the $50,000 annual minimum royalty due. Those payments will be credited against other royalties payable to ACT under the Kirin sublicense.

We may use the sublicensed technology for the development of therapeutic and diagnostic human cell products, including both products made, in whole or in part, of human cells, and products made from human cells. We have the right to grant further sublicenses.

We will indemnify ACT for any products liability claims arising from products made by us and our sublicensees.

The licenses will expire in upon the expiration of the last to expire of the licensed patents, or May 9, 2016 is no patents are issued.

Stem Cell Agreement with Reproductive Genetics Institute

We have entered into a Stem Cell Agreement with Reproductive Genetics Institute (“RGI”) pursuant to which we obtained the non-exclusive right to acquire RGI’s proprietary stem cell lines. The Stem Cell Agreement grants us rights to market new human embryonic stem cell (hES) lines selected by us from 294 hES lines derived by RGI. We will initially select 10 RGI hES cell lines, and may add additional cell lines at our option. We will receive starting cultures of the cell lines we select, and will scale up those cell lines for resale as research products. Because our rights are non-exclusive, RGI will retain the right to market and use its stem cell lines for its own account. RGI is a leading fertility center that screens embryos for genetic disorders, such as cystic fibrosis and muscular dystrophy prior to implantation. The RGI hES lines include both normal cells and 88 cell lines identified as carrying a host of inherited genetic disease genes, some of which we plan to sell as research products to universities and companies in the bio-science and pharmaceutical industries.

We will pay RGI a royalty in the amount of 7% of net sales on RGI derived cells sold for research purposes, such as the use of cells to test potential new drugs or diagnostic products. The Stem Cell Agreement requires us to sell the RGI cells for a minimum price of $7,500 per ampule of cells. We also agreed to sell to RGI any cells that we derive from RGI stem cells at a price equal to 50% of the lowest price at which we sell those cells to third parties.

We will be marketing the acquired cells for research purposes only. However, the Stem Cell Agreement allows us and RGI to develop therapeutic or diagnostic uses of the cells, subject to approval by a joint steering committee composed of Embryome Sciences and RGI officers. In the absence of an agreement by the steering committee for a different revenue sharing arrangement, and provided that we are successful in developing and commercializing one or more of those products for therapeutic or diagnostic uses, we would pay RGI a royalty based on net sales of each product. The royalty rate would be 50% of net sales of the product, minus one-half of any other royalties required to be paid to third parties. None of the RGI cells have been approved by the FDA or any equivalent foreign regulatory agency for use in the treatment of disease, and we do not have any specific plans for the development of RGI stem cells for use in the treatment or diagnosis of disease in humans.

We have issued to RGI 32,259 of our common shares, no par value, as a license fee for the use of RGI's proprietary technology related to the first 10 cell types acquired by us under the Stem Cell Agreement. If we elect to acquire more than 10 cell types, we will issue RGI an additional number of BioTime common shares having a market value of $5,000 for each additional cell type that we choose to acquire. The market value of our common shares will be based on the closing price of the shares on the OTCBB market on the date we elect to acquire the additional cell types.

Plasma Volume Expanders and Related Products

Hextend

Our first product, Hextend, is a physiologically balanced blood plasma volume expander, for the treatment of hypovolemia. Hypovolemia is a condition caused by low blood volume, often from blood loss during surgery or from injury. Hextend maintains circulatory system fluid volume and blood pressure and helps sustain vital organs during surgery. Hextend, approved for use in major surgery, is the only blood plasma volume expander that contains lactate, multiple electrolytes, glucose, and a medically approved form of starch called hetastarch. Hextend is sterile to avoid risk of infection. Health insurance reimbursements and HMO coverage now include the cost of Hextend used in surgical procedures.

Hextend is part of the U.S. Armed Forces Tactical Combat Casualty Care protocol and is used to treat battlefield casualties. Hextend is also currently being used to treat hypovolemia subsequent to trauma or low blood pressure due to shock by emergency room physicians. After appropriate clinical testing and regulatory approval, it may be used by paramedics to treat acute blood loss in trauma victims being transported to the hospital.

Hextend is also being used in surgery with cardio-pulmonary bypass circuits. In order to perform heart surgery, the patient's heart must be stopped and a mechanical apparatus is used to oxygenate and circulate the blood. The cardio-pulmonary bypass apparatus requires a blood compatible fluid such as Hextend to commence and maintain the process of diverting the patient's blood from the heart and lungs to the mechanical oxygenator and pump. In a clinical trial, cardiac surgery patients treated with Hextend, maintained more normal kidney function, experienced less pain and nausea, showed less deep venous thrombosis, avoided dialysis, and had shorter delay times to first meal compared to those treated with other fluids.

An important goal of the Hextend development program was to produce a product that can be used in multi-liter volumes. The safety related secondary endpoints targeted in the U.S. Phase III clinical study included those involving coagulation. We believe that the low incidence of adverse events related to blood clotting in the Hextend patients demonstrates that Hextend may be safely used in amounts exceeding 1.5 liters. An average of 1.6 liters of Hextend was used in the Phase III clinical trials, with an average of two liters for patients who received transfused blood products.

Hextend is being distributed in the United States by Hospira, Inc. ("Hospira") and in South Korea by CJ CheilJedang Corp. ("CJ") under exclusive licenses from us.

We are also developing another blood volume replacement product, PentaLyte®. It, like Hextend, has been formulated to maintain the patient's tissue and organ function by sustaining the patient's fluid volume and physiological balance.

PentaLyte

PentaLyte is our proprietary pentastarch-based synthetic plasma expander, designed especially for use when a faster elimination of the starch component is desired and acceptable. Although Hextend can be used in these cases, some physicians appear to prefer a solution which can be metabolized faster and excreted earlier when the longer term protection provided by Hextend is not required. PentaLyte combines the physiologically balanced Hextend formulation with pentastarch that has a lower molecular weight and degree of substitution than the hetastarch used in Hextend. Plasma expanders containing pentastarch are currently widely used around the world. Our present plan is to seek approval of PentaLyte for use in the treatment of hypovolemia. We have conducted a Phase II clinical study using PentaLyte in cardiac surgery for that purpose. Our ability to complete clinical studies of PentaLyte will depend on our cash resources and the costs involved, which are not presently determinable.

Products for Hypothermic Surgery and Tissue Preservation

We have devoted a portion of our research and development efforts and funds on the development of a plasma volume replacement solution for use in hypothermic surgery, and a solution intended to permit the long term storage of tissues and potentially entire organs at very cold temperatures.

During open-heart surgery and surgical procedures for the treatment of certain cardiovascular conditions such as large aneurysms, cardiovascular abnormalities and damaged blood vessels in the brain, surgeons must temporarily interrupt the flow of blood through the body. Interruption of blood flow can be maintained only for short periods of time at normal body temperatures because many critical organs, particularly the brain, are quickly damaged by the resultant loss of oxygen. Surgeons are already using Hextend and a variety of other solutions to carry out certain limited procedures involving shorter term (up to nearly one hour) arrest of brain and heart function at temperatures between 15o and 25o C. We had been developing HetaCool®, a plasma volume expander based on Hextend, to facilitate the cooling of a patient's body and maintaining body temperatures closer to the ice point for extended periods of time to facilitate complex, time consuming surgical procedures. We were also developing HetaFreeze® and other freeze-protective solutions to allow the extension of time during which organs and tissues can be stored for future transplant or surgical grafting.

Due to the considerable costs of subsequent product development for HetaCool® and HetaFreeze® and the relatively near-term opportunities we expect for our new products in the field of regenerative medicine, we plan to expend additional resources on research and development for HetaCool® and HetaFreeze® only if we are able to obtain funding targeted for those research programs or if we are able to enter into arrangements with co-developers able to finance additional product development.

The Market for Plasma Volume Expanders

Approximately 10,000,000 surgeries take place in the United States each year, and blood transfusions are required in approximately 3,000,000 of those cases. Transfusions are also required to treat patients suffering severe blood loss due to traumatic injury. Many more surgical and trauma cases do not require blood transfusions but do involve significant bleeding that can place the patient at risk of suffering from shock caused by the loss of fluid volume (hypovolemia) and physiological balance. Whole blood and packed red cells generally cannot be administered to a patient until the patient's blood has been typed and sufficient units of compatible blood or red cells can be located. Periodic shortages of supply of donated human blood are not uncommon, and rare blood types are often difficult to locate. The use of human blood products also poses the risk of exposing the patient to blood-borne diseases such as AIDS and hepatitis.

Due to the risks and cost of using human blood products, even when a sufficient supply of compatible blood is available, physicians treating patients suffering blood loss are generally not permitted to transfuse red blood cells until the patient's level of red blood cells has fallen to a level known as the "transfusion trigger." During the course of surgery, while blood volume is being lost, the patient is infused with plasma volume expanders to maintain adequate blood circulation. During the surgical procedure, red blood cells are not generally replaced until the patient has lost approximately 45% to 50% of his or her red blood cells, thus reaching the transfusion trigger at which point the transfusion of red blood cells may be required. After the transfusion of red blood cells, the patient may continue to experience blood volume loss, which will be replaced with plasma volume expanders. Even in those patients who do not require a transfusion, physicians routinely administer plasma volume expanders to maintain sufficient fluid volume to permit the available red blood cells to circulate throughout the body and to maintain the patient's physiological balance.

Several units of fluid replacement products are often administered during surgery. The number of units will vary depending upon the amount of blood loss and the kind of plasma volume expander administered. Crystalloid products must be used in larger volumes than colloid products such as Hextend.

Uses and Benefits of Hextend and PentaLyte

Hextend and PentaLyte have been formulated to maintain the patient's tissue and organ function by sustaining the patient's fluid volume and physiological balance. Both products are composed of a hydroxyethyl starch, electrolytes, sugar and lactate in an aqueous base. Hextend uses a high molecular weight hydroxyethyl starch (hetastarch) whereas PentaLyte uses a lower, molecular weight hydroxyethyl starch (pentastarch). The hetastarch is retained in the blood longer than the pentastarch, which may make Hextend the product of choice when a larger volume of plasma expander or blood replacement solution for low temperature surgery is needed, or where the patient's ability to restore his own blood proteins after surgery is compromised. PentaLyte, with pentastarch, would be eliminated from the blood faster than Hextend and might be used when less plasma expander is needed or where the patient is more capable of quickly restoring lost blood proteins. We believe that by testing and bringing these products to the market, we can increase our market share by providing the medical community with solutions to match patients' needs.

Certain clinical test results indicate that Hextend is effective at maintaining blood calcium levels when used to replace lost blood volume. Calcium can be a significant factor in regulating blood clotting and cardiac function. Clinical studies have also shown that Hextend maintains acid-base better than saline-based surgical fluids. We expect that PentaLyte will also be able to maintain blood calcium levels and acid-base balance based upon the fact that the electrolyte formulation of PentaLyte is identical to that of Hextend.

Albumin produced from human plasma is also used as plasma volume expander, but it is expensive and subject to supply shortages. Additionally, an FDA warning has cautioned physicians about the risk of administering albumin to seriously ill patients.

We have not attempted to synthesize potentially toxic and costly oxygen-carrying molecules such as hemoglobin because the loss of fluid volume and physiological balance may contribute as much to shock as the loss of the oxygen-carrying component of the blood. Surgical and trauma patients are routinely given supplemental oxygen and retain a substantial portion of their own red blood cells. Whole blood or packed red blood cells are generally not transfused during surgery or in trauma care until several units of plasma volume expanders have been administered and the patient's blood cell count has fallen to the transfusion trigger. Therefore, the lack of oxygen-carrying molecules in BioTime solutions should not pose a significant contraindication to use.

However, our scientists have conducted laboratory animal experiments in which they have shown that Hextend can be successfully used in conjunction with a hemoglobin-based oxygen carrier solution approved for veterinary purposes to completely replace the animal's circulating blood volume without any subsequent transfusion and without the use of supplemental oxygen. By diluting these oxygen carrier solutions, Hextend may reduce the potential toxicity and costs associated with the use of those products. Once such solutions have received regulatory approval and become commercially available, this sort of protocol may prove valuable in markets in parts of the developing world where the blood supply is extremely unsafe. These applications may also be useful in combat where logistics make blood use impracticable.

Research and Development Strategy

A significant part of our business activities are devoted to research and development in both the plasma volume expander and stem cell segments of our business. During 2007 and 2008, we spent $967,864 and $1,706,214, respectively, on research and development. While we utilize our own proprietary technology in both our plasma volume expander and stem cell research and development programs, we presently rely to a significant extent upon technology licensed from others in our stem cell research and development efforts. See “Licensed Stem Cell Technology and Stem Cell Product Development Agreements.”

Human embryonic stem cells are capable of becoming all of the thousands of different cell types in the body. Since embryonic stem cells can now be derived in a noncontroversial manner, including through the use of iPS technology, they are increasingly likely to be utilized in a wide array of future therapies to restore the function of organs damaged by degenerative diseases such as heart failure, stroke, and diabetes.

We are focusing our current efforts in the regenerative medicine field on the development and sale of advanced human stem cell products and technology that can be used by researchers at universities and other institutions, at companies in the bioscience and biopharmaceutical industries, and at other companies that provide research products to companies in those industries. By focusing our resources on products and technology that will be used by researchers and drug developers at larger institutions and corporations, we believe that we will able to commercialize products more quickly, using less capital, than developing therapeutic products ourselves.

In our CIRM-funded research project, we will work with hEPCs generated using our ACTCellerate™ embryonic stem cell technology. The hEPCs are relatively easy to manufacture on a large scale and in a purified state, which may make it advantageous to work with these cells compared to the direct use of hES or iPS cells. We will work on identifying antibodies and other cell purification reagents that may be useful in the production of hEPCs that can be used to develop pure therapeutic cells such as nerve, blood vessel, heart muscle, and skin.

We may also attempt to develop our own human stem cell products for diagnostic and therapeutic uses in the future, if we believe that we have sufficient resources to do so or if we can do so in collaboration with other companies or institutions.

We have obtained the rights to use and market stem cell lines developed by other companies. We believe that obtaining rights to these cell lines has given us a “jump start” in assembling an array of products for stem cell research. Our plan is to produce these cells in commercial quantities and offer them for sale to researchers. We may also derive new stem cell lines and we are working on the development of new products derived from human stem cells, such as ESpyTM cell lines, which will be derivatives of hES cells and will send beacons of light useful in tracking the cells for research purposes.

We are also working to develop new growth and differentiation factors that will permit researchers to manufacture specific cell types from embryonic stem cells, and purification tools useful to researchers in quality control of products for regenerative medicine.

Licensing

Hospira

Hospira has the exclusive right to manufacture and sell Hextend in the United States and Canada under a license agreement with us. Hospira is presently marketing Hextend in the United States. Hospira's license applies to all therapeutic uses other than those involving hypothermic surgery where the patient's body temperature is lower than 12°C ("Hypothermic Use"), or replacement of substantially all of a patient's circulating blood volume ("Total Body Washout").

Hospira pays us a royalty on total annual net sales of Hextend. The royalty rate is 5% plus an additional .22% for each $1,000,000 of annual net sales, up to a maximum royalty rate of 36%. The royalty rate for each year is applied on a total net sales basis. Hospira's obligation to pay royalties on sales of Hextend will expire on a country by country basis when all patents protecting Hextend in the applicable country expire and any third party obtains certain regulatory approvals to market a generic equivalent product in that country. The relevant composition patents begin to expire in 2014 and the relevant methods of use patents expire in 2019.

We have the right to convert Hospira's exclusive license to a non-exclusive license or to terminate the license outright if certain minimum sales and royalty payments are not met. In order to terminate the license outright, we would pay a termination fee in an amount ranging from the milestone payments we received to an amount equal to three times prior year net sales, depending upon when termination occurs. Hospira has agreed to manufacture Hextend for sale by us in the event that the exclusive license is terminated.

Hospira has certain rights to acquire additional licenses to manufacture and sell our other plasma expander products in their market territory. If Hospira exercises these rights to acquire a license to sell such products for uses other than Hypothermic Surgery or Total Body Washout, in addition to paying royalties, Hospira will be obligated to pay a license fee based upon our direct and indirect research, development and other costs allocable to the new product. If Hospira desires to acquire a license to sell any of our products for use in Hypothermic Surgery or Total Body Washout, the license fees and other terms of the license will be subject to negotiation between the parties. For the purpose of determining the applicable royalty rates, net sales of any such new products licensed by Hospira will be aggregated with sales of Hextend. If Hospira does not exercise its right to acquire a new product license, we may manufacture and sell the product ourselves or we may license others to do so.

The foregoing description of the Hospira license is a summary only and is qualified in all respects by reference to the full text of the Hospira license agreement.

CJ

CJ markets Hextend in South Korea under an exclusive license from us. CJ paid us a license fee to acquire their right to market Hextend. CJ also pays us a royalty on sales of Hextend. The royalty will range from $1.30 to $2.60 per 500 ml unit of product sold, depending upon the price approved by Korea's National Health Insurance. CJ is also responsible for obtaining the regulatory approvals required to manufacture and market PentaLyte, including conducting any clinical trials that may be required, and will bear all related costs and expenses.

The foregoing description of the CJ license is a summary only and is qualified in all respects by reference to the full text of the CJ license agreement.

Summit

We have entered into agreements with Summit to develop Hextend and PentaLyte in Japan, the People's Republic of China, and Taiwan. Summit has sublicensed to Maruishi the right to manufacture and market Hextend in Japan, and the right to manufacture and market Hextend and PentaLyte in China and Taiwan. However, Maruishi has informed Summit that Maruishi wishes to pursue discussions that might lead to a termination of their sublicense. Summit has informed us that if the Maruishi sublicense is terminated, Summit will seek a replacement sublicensee.

The Maruishi sublicense requires Maruishi to complete required clinical trials and to obtain regulatory approval to market the licensed products. Summit will also participate in the clinical trial and regulatory approval process. A Phase III clinical trial using Hextend in surgery is being conducted in Japan and Summit plans to seek regulatory approval to market Hextend upon completion of that study.

The revenues from licensing fees, royalties, and net sales, and any other payments made for co-development, manufacturing, or marking rights to Hextend and PentaLyte in Japan will be shared between BioTime and Summit as follows: 40% to us and 60% to Summit. Net sales means the gross revenues from the sale of a product, less rebates, discounts, returns, transportation costs, sales taxes and import/export duties.

Summit paid us fees for the right to co-develop Hextend and PentaLyte in Japan, and Summit has also paid us a share of a sublicense fee payment from Maruishi. If the Maruishi sublicense remains in effect, additional milestone payments of 100,000,000 yen each, of which BioTime will receive 40%, will be payable by Maruishi to Summit when a new drug application for Hextend is filed in Japan and when the new drug application is approved. We will also be entitled to receive 40% of the royalties paid by Maruishi to Summit on sales in Japan. Royalties will range from 12% to 20% of net sales, depending upon the amount of Hextend sold. The royalty rates are subject to reduction if Summit does not complete its participation in the new drug application, or if Summit elects to co-market Hextend in Japan. However, if Summit sells Hextend, we will also be entitled to receive 40% of Summit's net sales revenues. Under its sublicense with Summit, Maruishi agreed to begin to seek regulatory approval of Hextend or Pentalyte in China and Taiwan by March 2009. Maruishi has not prepared or filed regulatory applications in those countries, and it is not certain that they will do so.

We will pay to Summit 8% of all net royalties that we receive from the sale of PentaLyte in the United States, plus 8% of any license fees that we receive in consideration of granting a license to develop, manufacture and market PentaLyte in the United States. Net royalties means royalty payments received during a calendar year, minus the following costs and expenses incurred during such calendar year: (a) all taxes assessed (other than taxes determined with reference to our net income) and credits given or owed by us in connection with the receipt of royalties on the sale of PentaLyte in the United States, and (b) all fees and expenses payable by us to the United States Food and Drug Administration (directly or as a reimbursement of any licensee) with respect to PentaLyte.

Summit paid us a fee to acquire the China and Taiwan license. We also will be entitled to receive 50% of the royalties and milestone payments payable to Summit by any third-party sublicensee. If the Maruishi sublicense remains in effect, milestone payments of 20,000,000 yen will be payable by Maruishi when the first new drug application for Hextend is filed and when the first clinical study of PentaLyte begins under the sublicense. An additional milestone payment of 30,000,000 yen would be payable by Maruishi when the first new drug application for PentaLyte is filed under the sublicense.

The foregoing description of the Summit agreement is a summary only and is qualified in all respects by reference to the full text of the Summit agreements.

Manufacturing Arrangements

Hospira manufactures Hextend for use in the North American market, and CJ manufactures Hextend for use in South Korea. NPBI International, BV, a Netherlands company ("NPBI"), has manufactured batches of Hextend for our use in seeking regulatory approval in Europe. Hospira, CJ, and NPBI have the facilities to manufacture Hextend and other BioTime products in commercial quantities. If Hospira and CJ choose not to manufacture and market other BioTime products, and if NPBI declines to manufacture BioTime products on a commercial basis, other manufacturers will have to be found that would be willing to manufacture products for us or any licensee of our products.

Facilities Required – Plasma Volume Expanders

Any products that are used in clinical trials for regulatory approval in the United States or abroad, or that are approved by the FDA or foreign regulatory authorities for marketing, have to be manufactured according to "good manufacturing practices" ("GMP") at a facility that has passed regulatory inspection. In addition, products that are approved for sale will have to be manufactured in commercial quantities, and with sufficient stability to withstand the distribution process, and in compliance with such domestic and foreign regulatory requirements as may be applicable. The active ingredients and component parts of the products must be medical grade or themselves manufactured according to FDA-acceptable "good manufacturing practices."

We do not have facilities to manufacture our plasma volume expander products in commercial quantities, or under GMP. Acquiring a manufacturing facility would involve significant expenditure of time and money for design and construction of the facility, purchasing equipment, hiring and training a production staff, purchasing raw material and attaining an efficient level of production. Although we have not determined the cost of constructing production facilities that meet FDA requirements, we expect that the cost would be substantial, and that we would need to raise additional capital in the future for that purpose. To avoid the incurrence of those expenses and delays, we are relying on Hospira and CJ for the production of Hextend, but there can be no assurance that satisfactory arrangements will be made for any new products that we may develop.

Facilities Required—Stem Cell Products

We recently acquired, under a sublease, an 11,000 square foot tissue culture facility in Alameda, California. The facility is GMP capable and has previously been certified as Class 1000 and Class 10,000 laboratory space, and includes cell culture and manufacturing equipment previously validated for use in GMP manufacture of cell based products. Our subsidiary, Embryome Sciences will use the facility for the production of hEPCs, progenitor cell lines, and products derived from those hEPC lines.

Raw Materials

Although most ingredients in the products we are developing are readily obtainable from multiple sources, we know of only a few manufacturers of the hydroxyethyl starches that serve as the primary drug substance in Hextend and PentaLyte. Hospira and CJ presently have a source of supply of the hydroxyethyl starch used in Hextend and PentaLyte and have agreed to maintain a supply sufficient to meet market demand for Hextend in the countries in which they market the product. We believe that we will be able to obtain a sufficient supply of starch for our needs in the foreseeable future, although we do not have supply agreements in place. If for any reason a sufficient supply of hydroxyethyl starch could not be obtained, we or a licensee would have to acquire a manufacturing facility and the technology to produce the hydroxyethyl starch according to good manufacturing practices. We would have to raise additional capital to participate in the development and acquisition of the necessary production technology and facilities, which may not be feasible. The use of a different hydroxyethyl starch could require us or a licensee to conduct additional clinical trials for FDA or foreign regulatory approval to market Hextend with the new starch.

If arrangements cannot be made for a source of supply of hydroxyethyl starch, we would have to reformulate our solutions to use one or more other starches that are more readily available. In order to reformulate our products, we would have to perform new laboratory and clinical testing to determine whether the alternative starches could be used in a safe and effective synthetic plasma volume expander, low temperature blood substitute or organ preservation solution. We or our licensees would also have to obtain new regulatory approvals from the FDA and foreign regulatory agencies to market the reformulated product. If needed, such testing and regulatory approvals would require the incurrence of substantial cost and delay, and there is no certainty that any such testing would demonstrate that an alternative ingredient, even if chemically similar to the one currently used, would be safe or effective.

Marketing

Stem Cell Research Products

We plan to focus on near-term commercialization opportunities in regenerative medicine. We believe that the development of products for use in stem cell research provides an opportunity to commercialize products more quickly, using less capital, than developing therapeutic products requiring regulatory (FDA) approval. Our plan is to market to companies and academic researchers in the stem cell industry some of the tools they need to attain their goals. We plan to directly market products ourselves, as well as pursuing third party agreements for marketing or co-marketing our stem cell research products.

Our ability to commercialize our stem cell research products is dependent upon the success of our research and development program, and our ability to obtain the capital needed for the financing of that program. We may also enter into collaborative product development and marketing arrangements with other companies in the stem cell industry if such opportunities arise on terms acceptable to us.

The market for our stem cell products may be impacted by the amount of Federal and state funding available for research in the development of stem cell therapies.

Plasma Volume Expanders

Hextend is being distributed in the United States by Hospira and in South Korea by CJ under exclusive licenses from us. Hospira also has the right to obtain licenses to manufacture and sell other BioTime products. We have granted CJ the right to market PentaLyte in South Korea, and we have licensed to Summit the right to market Hextend and PentaLyte in Japan, China and Taiwan, but our licensees will have to first obtain the foreign regulatory approvals required to sell our product in those countries.

Because Hextend is a surgical product, sales efforts must be directed to physicians and hospitals. The Hextend marketing strategy is designed to reach its target customer base through sales calls and an advertising campaign focused on the use of a plasma-like substance to replace lost blood volume and the ability of Hextend to support vital physiological processes.

Hextend competes with other products used to treat or prevent hypovolemia, including albumin, generic 6% hetastarch solutions, and crystalloid solutions. The competing products have been commonly used in surgery and trauma care for many years, and in order to sell Hextend, physicians must be convinced to change their product loyalties. Although albumin is expensive, crystalloid solutions and generic 6% hetastarch solutions sell at low prices. In order to compete with other products, particularly those that sell at lower prices, Hextend will have to be recognized as providing medically significant advantages.

The FDA has required the manufacturers of 6% hetastarch in saline solutions to change their product labeling by adding a warning stating that those products are not recommended for use as a cardiac bypass prime solution, or while the patient is on cardiopulmonary bypass, or in the immediate period after the pump has been disconnected. We have not been required to add that warning to the labeling of Hextend. An article discussing this issue entitled “6% Hetastarch in Saline Linked to Excessive Bleeding in Bypass Surgery” appeared in the December 2002 edition of Anesthesiology News. We understand that a number of hospitals have switched from 6% hetastarch in saline to Hextend due to these concerns.

As part of the marketing program, a number of studies have been conducted that show the advantages of receiving Hextend and other BioTime products during surgery. As these studies are completed, the results are presented at medical conferences and articles written for publication in medical journals. We are also aware of independent studies using Hextend that are being conducted by physicians and hospitals who may publish their findings in medical journals or report their findings at medical conferences. The outcome of future medical studies and timing of the publication or presentation of the results could have an effect on Hextend sales.

Patents and Trade Secrets

We currently hold 26 issued United States patents having composition and methods of use claims covering our proprietary solutions, including Hextend and PentaLyte. The most recent U.S. patents were issued during March 2009. Some of our allowed claims in the United States, which include the composition and methods of use of Hextend and PentaLyte, are expected to remain in force until 2014 in the case of the composition patents and 2019 in the case of the methods of use patents. Patents covering certain of our solutions have also been issued in several countries of the European Union, Australia, Israel, Russia, South Africa, South Korea, Japan, China, Hong Kong, Taiwan and Singapore, and we have filed patent applications in other foreign countries for certain products, including Hextend, HetaCool, and PentaLyte. Certain device patents describing our hyperbaric (high pressure oxygen) chamber, and proprietary microcannula (a surgical tool) have also been issued in the United States and overseas, both of which - although only used in research so far - have possible indications in clinical medicine.

In addition to patenting our own technology, we have licensed patents and patent applications for certain stem cell technology, hEPC lines, and hES cell lines from other companies. See “Our Business--Licensed Stem Cell Technologies and Stem Cell Product Development Agreements.”

There is no assurance that any additional patents will be issued. There is also the risk that any patents that we hold or later obtain could be challenged by third parties and declared invalid or infringing of third party claims. Further, the enforcement of patent rights often requires litigation against third party infringers, and such litigation can be costly to pursue.

In addition to patents, we rely on trade secrets, know-how and continuing technological advancement to maintain our competitive position. We have entered into intellectual property, invention and non-disclosure agreements with our employees and it is our practice to enter into confidentiality agreements with our consultants. There can be no assurance, however, that these measures will prevent the unauthorized disclosure or use of our trade secrets and know-how, or that others may not independently develop similar trade secrets and know-how or obtain access to our trade secrets, know-how or proprietary technology.

Competition

Plasma Volume Expanders

Our plasma volume expander solutions will compete with products currently used to treat or prevent hypovolemia, including albumin, other colloid solutions, and crystalloid solutions presently manufactured by established pharmaceutical companies, and with human blood products. Some of these products, in particular crystalloid solutions, are commonly used in surgery and trauma care and sell at low prices. In order to compete with other products, particularly those that sell at lower prices, our products will have to be recognized as providing medically significant advantages. Like Hextend, the competing products are being manufactured and marketed by established pharmaceutical companies that have large research facilities, technical staffs and financial and marketing resources. B.Braun presently markets Hespan, an artificial plasma volume expander containing 6% hetastarch in saline solution. Hospira and Baxter International manufacture and sell a generic equivalent of Hespan. As a result of the introduction of generic plasma expanders and new proprietary products, competition in the plasma expander market has intensified and wholesale prices have declined. Hospira, which markets Hextend in the United States, is also the leading seller of generic 6% hetastarch in saline solution and recently obtained the right to sell Voluven®, a plasma volume expander containing a 6% low molecular weight hydroxyethyl starch in saline solution. Sanofi-Aventis, Baxter International, and Alpha Therapeutics sell albumin, and Hospira, Baxter International, and B.Braun sell crystalloid solutions.

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To compete with new and existing plasma expanders, we have developed products that contain constituents that may prevent or reduce the physiological imbalances, bleeding, fluid overload, edema, poor oxygenation, and organ failure that can occur when competing products are used. To compete with existing organ preservation solutions, we have developed solutions that can be used to preserve all organs simultaneously and for long periods of time.

A number of other companies are known to be developing hemoglobin and synthetic red blood cell substitutes and technologies. Our products have been developed for use either before red blood cells are needed or in conjunction with the use of red blood cells. In contrast, hemoglobin and other red blood cell substitute products are designed to remedy hypoxia and similar conditions that may result from the loss of oxygen-carrying red blood cells. Those products would not necessarily compete with our products unless the oxygenating molecules were included in solutions that could replace fluid volume and prevent or reduce the physiological imbalances as effectively as our products. Generally, red blood cell substitutes are more expensive to produce and potentially more toxic than Hextend and PentaLyte.

The competition we face is likely to intensify further as new products and technologies reach the market. Superior new products are likely to sell for higher prices and generate higher profit margins once acceptance by the medical community is achieved. Those companies that are successful in introducing new products and technologies to the market first may gain significant economic advantages over their competitors in the establishment of a customer base and track record for the performance of their products and technologies. Such companies will also benefit from revenues from sales that could be used to strengthen their research and development, production, and marketing resources. All companies engaged in the medical products industry face the risk of obsolescence of their products and technologies as more advanced or cost effective products and technologies are developed by their competitors. As the industry matures, companies will compete based upon the performance and cost effectiveness of their products.

Products for Stem Cell Research

The stem cell industry is characterized by rapidly evolving technology and intense competition. Our competitors include major multinational pharmaceutical companies, specialty biotechnology companies, and chemical and medical products companies operating in the fields of regenerative medicine, cell therapy, tissue engineering, and tissue regeneration. Many of these companies are well-established and possess technical, research and development, financial, and sales and marketing resources significantly greater than ours. In addition, certain smaller biotech companies have formed strategic collaborations, partnerships, and other types of joint ventures with larger, well established industry competitors that afford these companies' potential research and development and commercialization advantages. Academic institutions, governmental agencies, and other public and private research organizations are also conducting and financing research activities which may produce products directly competitive to those we are developing.

We believe that some of our competitors are trying to develop hES cell and hEPC-based technologies which may compete with our potential stem cell products based on efficacy, safety, cost, and intellectual property positions.

We may also face competition from companies that have filed patent applications relating to the cloning or differentiation of stem cells. We may be required to seek licenses from these competitors in order to commercialize certain of our proposed products, and such licenses may not be granted.

Government Regulation

FDA and Foreign Regulation

The FDA and foreign regulatory authorities will regulate our proposed products as drugs, biologicals, or medical devices, depending upon such factors as the use to which the product will be put, the chemical composition and the interaction of the product on the human body. In the United States, products that are intended to be introduced into the body, such as plasma volume expanders, will be regulated as drugs and will be reviewed by the FDA staff responsible for evaluating biologicals.

Our domestic human drug products will be subject to rigorous FDA review and approval procedures. After testing in animals, an Investigational New Drug Application (IND) must be filed with the FDA to obtain authorization for human testing. Extensive clinical testing, which is generally done in three phases, must then be undertaken at a hospital or medical center to demonstrate optimal use, safety and efficacy of each product in humans. Each clinical study is conducted under the auspices of an independent Institutional Review Board ("IRB"). The IRB will consider, among other things, ethical factors, the safety of human subjects and the possible liability of the institution. The time and expense required to perform this clinical testing can far exceed the time and expense of the research and development initially required to create the product. No action can be taken to market any therapeutic product in the United States until an appropriate New Drug Application ("NDA") has been approved by the FDA. Even after initial FDA approval has been obtained, further studies may be required to provide additional data on safety or to gain approval for the use of a product as a treatment for clinical indications other than those initially targeted. In addition, use of these products during testing and after marketing could reveal side effects that could delay, impede or prevent FDA marketing approval, resulting in a FDA-ordered product recall, or in FDA-imposed limitations on permissible uses.

The FDA regulates the manufacturing process of pharmaceutical products, requiring that they be produced in compliance with "good manufacturing practices." See "Manufacturing." The FDA also regulates the content of advertisements used to market pharmaceutical products. Generally, claims made in advertisements concerning the safety and efficacy of a product, or any advantages of a product over another product, must be supported by clinical data filed as part of an NDA or an amendment to an NDA, and statements regarding the use of a product must be consistent with the FDA approved labeling and dosage information for that product.

Sales of pharmaceutical products outside the United States are subject to foreign regulatory requirements that vary widely from country to country. Even if FDA approval has been obtained, approval of a product by comparable regulatory authorities of foreign countries must be obtained prior to the commencement of marketing the product in those countries. The time required to obtain such approval may be longer or shorter than that required for FDA approval.

The United States government and its agencies have until recently refused to fund research which involves the use of human embryonic tissue. President Bush issued Executive Orders on August 9, 2001 and June 20, 2007 that permitted federal funding of research on hES cells using only the limited number of hES cell lines that had already been created as of August 9, 2001. On March 9, 2009, President Obama issued an Executive Order rescinding President Bush's August 9, 2001 and June 20, 2007 Executive Orders. President Obama's Executive Order also instructed the National Institutes of Health to review existing guidance on human stem cell research and to issue new guidance on the use of hES cells in federally funded research, consistent with President's new Executive Order and existing law, within 120 days of the March 9, 2009 Executive Order. On April 17, 2008, the NIH published for public comment the proposed new guidelines. The central focus of the proposed guidelines is to assure that hES cells used in federally funded research were derived from human embryos that were created for reproductive purposes, were no longer needed for this purpose, and were voluntarily donated for research purposes with the informed written consent of the donors.

In addition to President Obama's Executive Order, a bipartisan bill has been introduced in the United States Senate that would allow Federal funding of hES research. The Senate bill is identical to one that was previously approved by both Houses of Congress but vetoed by President Bush. The Senate Bill provides that hES cells will be eligible for use in research conducted or supported by federal funding if the cells meet each of the following guidelines: (1) the stem cells were derived from human embryos that have been donated from in vitro fertilization clinics, were created for the purposes of fertility treatment, and were in excess of the clinical need of the individuals seeking such treatment; (2) prior to the consideration of embryo donation and through consultation with the individuals seeking fertility treatment, it was determined that the embryos would never be implanted in a woman and would otherwise be discarded, and (3) the individuals seeking fertility treatment donated the embryos with written informed consent and without receiving any financial or other inducements to make the donation. The Senate Bill authorizes the NIH to adopt further guidelines consistent with the legislation.

California State Regulations

The state of California has adopted legislation and regulations that requires institutions that conduct stem cell research to notify, and in certain cases obtain approval from, a Stem Cell Research Oversight Committee ("SCRO Committee") before conducting the research. Advanced notice but not approval of the SCRO Committee is required in the case of in vitro research that does not derive new stem cell lines. Research that derives new stem cell lines, or that involves fertilized human oocytes or blastocysts, or that involves clinical trials or the introduction of stem cells into humans, or that involves introducing stem cells into animals, requires advanced approval by the SCRO Committee. Clinical trials may also entail approvals from an institutional review board (IRB) at the medical center at which the study is conducted, and animal studies may require approval by an Institutional Animal Care and Use Committee.

All human pluripotent stem cell lines that will be used in Embryome Sciences research must be acceptably derived. To be acceptably derived, the pluripotent stem cell line must have either:

- Been listed on the National Institutes of Health Human Embryonic Stem Cell Registry, or
- Been deposited in the United Kingdom Stem Cell Bank, or
- Been derived by, or approved for use by, a licensee of the United Kingdom Human Fertilisation and Embryology Authority, or
- Been derived in accordance with the Canadian Institutes of Health Research Guidelines for Human Stem Cell Research under an application approved by the National Stem Cell Oversight Committee, or
- Been derived under the following conditions:

(a) Donors of gametes, embryos, somatic cells or human tissue gave voluntary and informed consent.

(b) Donors of gametes, embryos, somatic cells or human tissue did not receive valuable consideration. This provision does not prohibit reimbursement for permissible expenses as determined by an IRB.

(c) A person may not knowingly, for valuable consideration, purchase or sell gametes, embryos, somatic cells, or human tissue for research purposes. This provision does not prohibit reimbursement for permissible expenditures as determined by an IRB or Committee. “Permissible expenditures” means necessary and reasonable costs directly incurred as a result of persons, not including human subjects or donors, providing gametes, embryos, somatic cells, or human tissue for research purposes. Permissible expenditures may include but are not limited to costs associated with processing, quality control, storage, or transportation of materials.

(d) Donation of gametes, embryos, somatic cells or human tissue was overseen by an IRB (or, in the case of foreign sources, an IRB-equivalent).

(e) Individuals who consented to donate stored gametes, embryos, somatic cells or human tissue were not reimbursed for the cost of storage prior to the decision to donate.

California regulations also require that certain records be maintained with respect to stem cell research and the materials used, including:

- A registry of all human stem cell research conducted, and the source(s) of funding for this research.
- A registry of human pluripotent stem cell lines derived or imported, to include, but not necessarily limited to:

(a) The methods utilized to characterize and screen the materials for safety;

(b) The conditions under which the materials have been maintained and stored;

(c) A record of every gamete donation, somatic cell donation, embryo donation, or product of somatic cell nuclear transfer that has been donated, created, or used.

(d) A record of each review and approval conducted by the SCRO Committee.

California Proposition 71

In November 2004, California State Proposition 71 (“Prop. 71”), the California Stem Cell Research and Cures Initiative, was adopted by state-wide referendum. Prop. 71 provides for a state-sponsored program designed to encourage stem cell research in the State of California, and to finance such research with State funds totaling approximately $295 million annually for 10 years beginning in 2005. This initiative created CIRM, which will provide grants, primarily but not exclusively, to academic institutions to advance both hES cell research and adult stem cell research. During April 2009 we were awarded a $4,721,706 research grant from CIRM. We believe that Prop. 71 funding for research in the use of hES cells for various diseases and conditions will contribute to the demand for stem cell research products.

Employees

As of March 31, 2009, we employed eleven persons on a full-time basis and one person on a part-time basis. Five full-time employees hold Ph.D. Degrees in one or more fields of science.

Facilities

Our offices and laboratory facilities are located at 1301 Harbor Bay Parkway, in Alameda, California where we occupy approximately 11,000 square feet of office and research laboratory spaced. The facility is GMP capable and has previously been certified as Class 1000 and Class 10,000 laboratory space, and includes cell culture and manufacturing equipment previously validated for use in GMP manufacture of cell based products. We will use the facility for the production of hEPCs and hEPC lines, and products derived from those hEPC lines.

This facility is occupied under a sublease. Base monthly rent is $22,600 during 2009 and $23,340 during 2010. In addition to base rent, we pay a pro rata share of real property taxes and certain costs related to the operation and maintenance of the building in which the subleased premises are located.

We also lease approximately 5,244 square feet of office and laboratory space in Heritage Square in Emeryville, California under a lease that will expire on May 31, 2010, with a five year extension option. This property was our principal office and laboratory facility until we moved to our present Alameda facility. We plan to sublease this property if a suitable subtenant can be located. We presently pay monthly rent, including other charges, in the amount of $15,551. Our rent will increase by 3% each year during the initial five year term. In addition to rent, we pay our pro rata share of operating expenses and real estate taxes for the building in which our space is located or for the Heritage Square project as a whole, as applicable, based upon the ratio that the number of square feet we rent bears to the total number of square feet in the building or project.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Plasma Volume Expander Products

Our operating revenues have been derived almost exclusively from royalties and licensing fees related to our plasma volume expander products, primarily Hextend. Hextend has become the standard plasma volume expander at a number of prominent teaching hospitals and leading medical centers and is part of the Tactical Combat Casualty Care protocol. We believe that as Hextend use proliferates within the leading U.S. hospitals, other smaller hospitals will follow their lead, contributing to sales growth.

Under our license agreements, Hospira and CJ will report sales of Hextend and pay us the royalties and license fees due on account of such sales after the end of each calendar quarter. We recognize such revenues in the quarter in which the sales report is received, rather than the quarter in which the sales took place.

During the year ended December 31, 2006, we received $500,000 from Summit for the right to co-develop Hextend and PentaLyte in Japan, China, and Taiwan. A portion of the cash payment will be a partial reimbursement of BioTime’s development costs of Hextend and a portion will be a partial reimbursement of BioTime’s development costs of PentaLyte. This payment is reflected on our balance sheet as deferred revenue. See Note 4 to financial statements for further discussion of the appropriate accounting.

Stem Cells and Products for Regenerative Medicine Research

We are marketing our stem cell products for research use through our wholly-owned subsidiary, Embryome Sciences, Inc. We plan to focus our initial efforts in the regenerative medicine field on the development and sale of advanced human stem cell products and technology for diagnostic, therapeutic and research use that do not require FDA approval. Our initial marketing efforts will be directed to researchers at universities and other institutions, to companies in the bioscience and biopharmaceutical industries, and to other companies that provide research products to companies in those industries.

Embryome Sciences has already introduced its first stem cell research products, and is implementing plans to develop additional research products over the next two years. Our first products include a relational database, available at our website embryome.com, that will permit researchers to chart the cell lineages of human development, the genes expressed in those cell types, and antigens present on the cell surface of those cells that can be used in purification. This database will provide the first detailed map of the embryome, thereby aiding researchers in navigating the complexities of human development and in identifying the many hundreds of cell types coming from embryonic stem cells.

Embryome Sciences is also now marketing cell growth media called ESpanTM in collaboration with Lifeline. These growth media are designed for the growth of hEPCs.

Embryome Sciences acquired the rights to market more than 140 hEPCs made using ACTCellerateTM technology and is presently marketing these products on its web site. Embryome Sciences also acquired an array of hES cell lines carrying inherited genetic diseases such as cystic fibrosis and muscular dystrophy. These hES cell lines will also be available for sale online.

Additional new products that Embryome Sciences has targeted for development are ESpyTM cell lines, which will be derivatives of hES cells that will send beacons of light useful in tracking the cells for research purposes. Embryome Sciences also plans to bring to market other new growth and differentiation factors that will permit researchers to manufacture specific cell types from hES cells, and purification tools useful to researchers in quality control of products for regenerative medicine. As new products are developed, they will become available for purchase on embryome.com.

Since we are in the process of launching our first products for stem cell research, we cannot predict the amount of revenue that the new products we offer might generate. We did not receive significant revenues from stem cell product sales during 2008.

On April 29, 2009, CIRM awarded us a $4,721,706 grant for a stem cell research project related to our ACTCellerate™ embryonic stem cell technology. In our CIRM-funded research project, we will work with hEPCs generated using our ACTCellerate™ embryonic stem cell technology. We will work on identifying antibodies and other cell purification reagents that may be useful in the production of hEPCs that can be used to develop pure therapeutic cells such as nerve, blood vessel, heart muscle, and skin.

Results of Operations

Under our license agreements with Hospira and CJ, our licensees report sales of Hextend and pay us the royalties and license fees due on account of such sales within 90 days after the end of each calendar quarter. We recognize such revenues in the quarter in which the sales report is received, rather than the quarter in which the sales took place, as we do not have sufficient sales history to accurately predict quarterly sales. For example, royalties on sales made during the fourth quarter of 2008 were not recognized until the first quarter of fiscal year 2009.

Three Months Ended March 31, 2009 and Three Months Ended March 31, 2008

Our royalty revenues for the three months ended March 31, 2009 consist of royalties on sales of Hextend made by Hospira and CJ during the period beginning October 1, 2008 and ending December 31, 2008. Royalty revenues recognized for that three-month period were $222,667, a 28% decrease from the $308,900 of royalty revenue during the same period last year. The decrease in royalties reflects a decrease in sales both to hospitals and to the United States Armed Forces. Purchases by the Armed Forces generally take the form of intermittent, large volume orders, and cannot be predicted with certainty.

We recognized $73,226 and $66,183 of license fees from CJ and Summit during the three months ended March 31, 2009 and the three months ended March 31, 2008, respectively. Full recognition of license fees has been deferred, and is being recognized over the life of the contract, which has been estimated to last until approximately 2019 based on the current expected life of the governing patent covering our products in Korea and Japan. See Notes 2 and 4 to the condensed interim financial statements.

We received royalties of $329,809 from Hospira and $19,112 from CJ during May 2009 based on sales of Hextend during the three months ended March 31, 2009. This revenue will be reflected in our financial statements for the second quarter of 2009. For the same period last year, we received royalties of $341,153 from Hospira and $16,085 from CJ. Royalties from CJ were included in license fees during prior accounting periods.

Research and development expenses were $525,824 for the three months ended March 31, 2009, compared to $347,151 for the three months ended March 31, 2008. This increase is primarily attributable to an increase of $94,834 in rent, an increase of $60,361 in salaries allocated to research and development, an increase of $16,905 in payroll fees and taxes allocated to research and development expense, and an increase of $29,655 in expenditures made to cover laboratory expenses and supplies. These increases were offset to some extent by a decrease of $12,975 in insurance costs allocated to research and development, a decrease of $5,958 in utilities allocated to research and development expense, and a decrease of $10,326 in expenditures made for research consultants. Research and development expenses include laboratory study expenses, salaries, rent, insurance, and consultants' fees.

General and administrative expenses increased to $682,174 for the three months ended March 31, 2009, from $435,939 for the three months ended March 31, 2008. This increase is primarily attributable to an increase of $198,741 in stock appreciation rights compensation liability expenses, an increase of $41,953 in accounting fees, an increase of $28,067 in expenses related to outside services, an increase of $21,900 in travel and entertainment expenses, an increase of $13,030 in investor and public relations expenses, an increase of $11,899 in stock-based expense and allocated to general and administrative costs, and an increase of $17,708 in rent allocated to general and administrative costs. These increases were offset in part by a decrease of $53,570 in general and administrative consulting fees, a decrease of $35,369 in legal fees, and a decrease of $11,320 in patent costs.

For the three months ended March 31, 2009, we incurred a total of $608,027 of interest expense, compared to interest expense of $76,521 for the three months ended March 31, 2008.

During the three months ended March 31, 2009 and 2008, there were no Federal and state income taxes, since BioTime has substantial net operating loss carryovers and has provided a 100% valuation allowance for any deferred taxes.

Year Ended December 31, 2008 and Year Ended December 31, 2007

For the year ended December 31, 2008, we recognized $1,203,453 of royalty revenues on the sale of Hextend by Hospira, compared with $776,679 recognized for the year ended December 31, 2007. This 55% increase in royalties is attributable to an increase in Hextend sales. The increase was largely due to an increase in both sales to the military and sales to hospitals, which were augmented by an increase in the average unit sales price to hospitals.

We recognized $277,999 and $255,549 of license fees from CJ and Summit during 2008 and 2007, respectively. Full recognition of license fees other than royalties from CJ has been deferred, and is being recognized over the life of the contract, which has been estimated to last until approximately 2019 based on the current expected life of the governing patent covering our products in Korea and Japan. Royalties of $74,796 and $46,952 from Hextend sales by CJ were included in license fees during 2008 and 2007, respectively.

Research and development expenses increased to $1,706,214 for the year ended December 31, 2008, from $967,864 for the year ended December 31, 2007. The increase is primarily attributable to our entry into the stem cell field, and included increases of approximately $382,000 in salaries and other payroll related expenses charged to research and development, $271,000 in rent charged to research and development, $53,000 in laboratory expense, $128,000 in laboratory supplies, offset by decrease of approximately $102,000 in outside research expenses. Research and development expenses included laboratory study expenses, salaries, rent, manufacturing of solution for trials, and consultants' fees.

General and administrative expenses increased to $2,620,210 for the year ended December 31, 2008 from $1,300,630 for the year ended December 31, 2007. This change reflects an increase of approximately $337,000 in general and administrative consulting expenses, $379,000 in stock based compensation expenses, $470,000 stock appreciation rights compensation expenses, $68,000 in rent allocable to general and administration expenses, $78,000 in travel and entertainment expenses, $70,000 in legal expenses, $50,000 in royalty expenses, $38,000 in outside services expenses, $32,000 in patent and license expenses, $18,000 in salaries and other payroll related expenses, $17,000 in office expenses, $12,000 in depreciation expenses offset by decrease of approximately $16,000 in accounting expenses. General and administrative expenses included salaries allocated to general and administrative accounts, scientific consulting fees, expenditures for patent costs, trademark expenses, insurance costs allocated to general and administrative expenses, stock exchange-related costs, depreciation expense, shipping expenses, marketing costs, and other miscellaneous expenses. Stock based compensation increased during 2008 in large part due to our common shares trading at prices higher than the prices that prevailed during 2007.

Our interest expense increased by approximately $733,000 during 2008 primarily due to interest incurred on our lines of credit (See Note 3) and approximately $330,000 relating to the exchange of the line of credit debt and accrued interest into common shares.

For the year ended December 31, 2008, other income decreased to $7,518 from $16,926 for the year ended December 31, 2007. The difference was chiefly attributable to a decrease by approximately $5,700 in interest income due to lower cash balances and decrease by approximately $5,000 in microcannula sales.

At December 31, 2008 we had a cumulative net operating loss carryforward of approximately $46,580,000 for federal income tax purposes and $15,818,000 for state income tax purposes. Our effective tax rate differs from the statutory rate because we have recorded a 100% valuation allowance against our deferred tax assets, as we do not consider realization to be more likely than not

Year Ended December 31, 2007 and Year Ended December 31, 2006

For the year ended December 31, 2007, we recognized $776,679 of royalty revenues, compared with $933,478 recognized for the year ended December 31, 2006. This 17% decrease in royalties is attributable to a decrease in product sales by Hospira. The largest contributing factor to this overall decrease in royalties was a decrease in sales from the record large volume orders by the U.S. Armed Forces that we saw in the second half of 2006. Hextend is part of the Tactical Combat Casualty Care protocol and has been purchased by the U.S. Armed Forces through intermittent, large volume orders, which makes it difficult to predict sales to them in subsequent periods. The decrease in royalties from 2006 was partially offset by a continued increase in sales to hospitals along with unit price increases to hospitals.

We recognized $255,549 and $172,371 of license fees from CJ and Summit during 2007 and 2006, respectively. Full recognition of license fees has been deferred, and is being recognized over the life of the contract, which has been estimated to last until approximately 2019 based on the current expected life of the governing patent covering our products in Korea and Japan.

We were awarded a $299,990 research grant by the NIH for use in the development of HetaCool. We were granted $149,994 for the project during 2004 and $149,996 during 2005. We have received $254,244 of the grant funds through December 31, 2007. In 2007, the time period for drawing down the remainder of the grant funds was extended for another year, running through March 31, 2008.

Research and development expenses decreased to $967,864 for the year ended December 31, 2007, from $1,422,257 for the year ended December 31, 2006. The decrease was chiefly attributable to the conclusion of our Phase II trials of PentaLyte. Research and development expenses included laboratory study expenses, salaries, preparation of regulatory applications for our products, manufacturing of solution for trials, and consultants' fees.

General and administrative expenses decreased to $1,300,630 for the year ended December 31, 2007 from $1,491,622 for the year ended December 31, 2006. This change reflects a decrease of approximately $21,000 in general and administrative salary expense due to a voluntary salary reduction plan in effect for the latter half of 2007, a decrease of approximately $88,000 in general and administrative consulting expenses, a decrease of approximately $32,000 in insurance costs charged to general and administrative expense, a decrease of approximately $17,000 in investor/public relations expenses, a decrease of approximately $32,000 in accounting expenses, a decrease of approximately $34,000 in printing costs, and a decrease of approximately $23,000 in patent expenses. These decreases were offset to some extent by an increase of approximately $18,000 in office expenses and supplies, an increase of approximately $2,000 in telephone charges allocated to general and administrative expense, an increase of approximately $4,000 in miscellaneous expenses, and an increase of approximately $32,000 in travel expenses. General and administrative expenses include salaries allocated to general and administrative accounts, scientific consulting fees, expenditures for patent costs, trademark expenses, insurance costs allocated to general and administrative expenses, stock exchange-related costs, depreciation expense, shipping expenses, marketing costs, and other miscellaneous expenses.

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Our interest expense increased by approximately $76,000 during 2007 primarily due to interest incurred on our lines of credit (See Note 3).

For the year ended December 31, 2007, other income decreased to $16,926 from $44,357 for the year ended December 31, 2006. The difference was chiefly attributable to decrease in interest income due to lower cash balances.

Liquidity and Capital Resources

We need to obtain additional debt or equity capital in order to finance our operations. Since inception, we have primarily financed our operations through the sale of equity securities, licensing fees, royalties on product sales by our licensees, and borrowings. The amount of license fees and royalties that may be earned through the licensing and sale of our products and technology, the timing of the receipt of license fee payments, and the future availability and terms of equity financing, are uncertain. Although we have recently been awarded a research grant from CIRM for a particular project, we must finance our other research and operations with funding from other sources. The unavailability or inadequacy of financing or revenues to meet future capital needs could force us to modify, curtail, delay or suspend some or all aspects of our planned operations. Sales of additional equity securities could result in the dilution of the interests of present shareholders.

During 2008 we received approximately $1,300,000 of cash in our operations. Our sources of that cash were approximately $1,200,000 of royalty revenues from Hospira and approximately $75,000 from CJ. During the same period our total research and development expenditures were approximately $1,700,000 and our administrative expenditures were approximately $2,600,000.

We have a Revolving Line of Credit Agreement (the “Credit Agreement”) with certain private lenders that permits us to borrow up to $3,500,000. Loans under the Credit Agreement are collateralized by a security interest in our right to receive royalty and other payments under our license agreement with Hospira. The Credit Agreement was first implemented during 2006 and has been amended from time to time since then, including amendments that extended the term of the Credit Agreement and increased the amount of credit available to us. During April 2009, the maturity date of our Revolving Line of Credit was extended to December 1, 2009 with respect to $2,669,282 in principal amount of loans. We repaid $210,718 of principal and accrued interest on loans that matured on April 15, 2009 and were not extended. In addition, certain lenders exercised their right to exchange loans totaling $550,000 of principal, plus accrued interest, for an aggregate of 381,605 of our common shares.

During April and May of 2009, we received new loans totaling $810,000 under our revolving line of credit. As consideration for making these loan amounts available to us, we issued 20,784 common shares of BioTime stock to the lenders as per the terms of the Credit Agreement. Our borrowings under the Credit Agreement are therefore currently at maximum capacity, and unless some or all of the existing loans outstanding are retired or our credit limit is raised, no more Credit Agreement borrowings may be made.

Current loans under the Credit Agreement bear interest at the rate of 12% per annum and will mature on December 1, 2009, at which time the outstanding principal balance of the loans plus accrued interest will be due and payable. Our ability to continue in operation depends on our obtaining a renewal or refinancing of the Credit Agreement when it matures, and increase the amount of credit available to us.

Lenders who agreed to extend the maturity date of their outstanding loans to December 1, 2009 received from us a total of 91,526 common shares having an aggregate market value (based on closing price of the shares on the OTCBB) equal to six percent (6%) of the lender's loan commitment, as consideration for the extension of the term of their loans. We will issue additional common shares on the same basis to any lenders who provide additional loan commitments under our revolving line of credit.

The Credit Agreement lenders were given the right to exchange their line of credit promissory notes for our common shares and/or for common stock of our subsidiary, Embryome Sciences. The applicable price at which a lender's promissory note may be exchanged for our shares or Embryome Sciences shares is determined based upon the date the lender made their loan commitment and date on which the exchange takes place. Currently, lenders may exchange their notes for our common shares at prices ranging from $1.50 to $2.00 per share, or for Embryome Sciences shares at prices ranging from $2.75 to $3.50 per share, until December 1, 2009. The foregoing per share exchange prices are subject to proportional adjustment in the event of a stock split, reverse stock split, or similar event.

In November 2008, Embryome Sciences borrowed $275,000 from certain private lenders. As consideration for arranging the loans, we issued warrants to purchase up to 277,919 common shares. The warrants will be exercisable at a price of $2.00 per share, and will expire on October 31, 2010 if not exercised prior to that date. The Embryome Sciences lenders subsequently joined as lenders under our Credit Agreement and accepted a promissory note from us in satisfaction of Embryome Sciences' loan obligation.

We also obtained a line of credit from American Express in August 2004, which allows for borrowings up to $25,300. As of March 31, 2009, we had drawn $20,751 against this line. See Note 3 to the consolidated financial statements for additional information.

We also secured a line of credit from Advanta in November 2006, which allows for borrowings up to $35,000. As of March 31, 2009, we had drawn $31,253 against this line. See Note 3 to our consolidated financial statements for additional information.

In April 2009, CIRM awarded us a $4,721,706 grant for a stem cell research project related to our ACTCellerate™ technology. CIRM will provide funding for the research project over a period of three years, with approximately $1,600,000 expected to be available during the first 12 months. We expect that the first funds will be available some time during the summer of 2009 and that work on the project will be ready to begin upon the receipt of funding.

During May 2009, we raised $4,000,000 of equity capital through the sale of 2,200,000 common shares and 2,200,000 stock purchase warrants to two private investors. The warrants entitle the investors to purchase additional common shares at an exercise price of $2.00 per share and expire on October 31, 2010. In addition, the investors have the right to purchase an additional 2,200,000 common shares and a like number of warrants for an additional $4,000,000 on or before July 14, 2009.

As of December 31, 2008, the deferred debt discount was approximately $243,000, which will be amortized over the remaining period of underlying outstanding debt.

We had no contractual obligations as of March 31, 2009, with the exception of fixed, non-cancelable operating leases on our office and laboratory facilities in Alameda, California and in Emeryville, California. In April 2008, we entered into a sublease of office and research laboratory space in Alameda, California. We moved our headquarters from the Emeryville location to this new facility. The sublease expires on November 30, 2010. Base monthly rent will be $22,600 during 2009, and $23,339.80 during 2010. In addition to base rent, we pay a pro rata share of real property taxes and certain costs related to the operation and maintenance of the building in which the subleased premises are located. Under the Emeryville lease, we are committed to make payments of $15,885 per month, increasing 3% annually, plus our pro rata share of operating costs for the building and office complex, through May 31, 2010.

We will depend upon royalties from the sale of Hextend by Hospira and CJ and our research grant from CIRM as our principal source of revenues for the near future. Our royalty revenues from Hospira and CJ will be supplemented by any revenues that we may receive from our stem cell research products, and by license fees if we enter into new commercial license agreements for our products.

The amount and pace of research and development work that we can do or sponsor, and our ability to commence and complete the clinical trials that are required in order for us to obtain FDA and foreign regulatory approval of products, depend upon the amount of money we have. Future research and clinical study costs are not presently determinable due to many factors, including the inherent uncertainty of these costs and the uncertainty as to timing, source, and amount of capital that will become available for these projects. We have already curtailed the pace and scope of our plasma volume expander development efforts due to the limited amount of funds available, and we may have to postpone further laboratory and clinical studies, unless our cash resources increase through growth in revenues, the completion of licensing agreements, additional equity investment, borrowing, or third party sponsorship.

Quantitative and Qualitative Disclosures About Market Risk.

We did not hold any market risk sensitive instruments as of March 31, 2009, December 31, 2008, or December 31, 2007.

MANAGEMENT

Directors

The names and ages of our directors are as follows:

Michael D. West, Ph.D., 56, became our Chief Executive Officer during October 2007, and has served on the Board of Directors since 2002. Dr. West has extensive academic and business experience in age-related degenerative diseases, telomerase molecular biology and human embryonic stem cell research and development. Prior to becoming our Chief Executive Officer, Dr. West served as Chief Executive Officer, President, and Chief Scientific Officer of Advanced Cell Technology, Inc., a company engaged in developing human stem cell technology for use in regenerative medicine. Dr. West also founded Geron Corporation of Menlo Park, California, and from 1990 to 1998 he was a Director and Vice President, where he initiated and managed programs in telomerase diagnostics, oligonucleotide-based telomerase inhibition as anti-tumor therapy, and the cloning and use of telomerase in telomerase-mediated therapy wherein telomerase is utilized to immortalize human cells. From 1995 to 1998 he organized and managed the research between Geron and its academic collaborators James Thomson and John Gearhart that led to the first isolation of human embryonic stem and human embryonic germ cells. Dr. West received a B.S. Degree from Rensselaer Polytechnic Institute in 1976, an M.S. Degree in Biology from Andrews University in 1982, and a Ph.D. from Baylor College of Medicine in 1989 concentrating on the biology of cellular aging.

Hal Sternberg, Ph.D., 55, is our Vice President of Research, and has served on the Board of Directors since 1990. Dr. Sternberg was a visiting scientist and research Associate at the University of California at Berkeley from 1985-1988, where he supervised a team of researchers studying Alzheimer's Disease. Dr. Sternberg received his Ph.D. from the University of Maryland in Biochemistry in 1982.

Harold Waitz, Ph.D., 67, is our Vice President of Engineering and Regulatory Affairs, and has served on the Board of Directors since 1990. He received his Ph.D. in Biophysics and Medical Physics from the University of California at Berkeley in 1983.

Judith Segall, 55, is our Vice President-Administration and Secretary, and has served on the Board of Directors from 1990 through 1994, and from 1995 through the present date. Ms. Segall received a B.S. in Nutrition and Clinical Dietetics from the University of California at Berkeley in 1989.

Valeta Gregg, Ph.D., 55, joined the Board of Directors during October 2004. Dr. Gregg is Vice President and Assistant General Counsel, Patents of Regeneron Pharmaceuticals, Inc., a Tarrytown, New York based company engaged in the development of pharmaceutical products for the treatment of a number of serious medical conditions, including cancer, diseases of the eye, rheumatoid arthritis and other inflammatory conditions, allergies, asthma, and obesity. Prior to joining Regeneron in 2002, Dr. Gregg worked as a patent attorney, at Klauber & Jackson in Hackensack, New Jersey from 2001 to 2002, and for Novo Nordisk A/S and its United States subsidiary from 1996 to 2001, and for Fish & Richardson, P.C., Menlo Park, California from 1994 to 1996. Dr. Gregg received her law degree from University of Colorado School of Law in 1992 and received a Ph.D in Biochemistry from the University of Alberta in 1982.

Robert N. Butler, MD, 82, joined the Board of Directors during July 2008. Dr. Butler is the founder, Chief Executive Officer, and President of the International Longevity Center-USA, a non-profit international research, policy, and education organization formed to educate individuals on how to live longer and better, and advise society on how to maximize the benefits of today's age boom. Dr. Butler was the first director of the National Institute on Aging of the National Institutes of Health, where he helped educate the nation about the dangers of Alzheimer's disease. At the Mount Sinai School of Medicine, he founded the nation's first department of geriatrics where he is Professor of Geriatrics and Adult Development. Dr. Butler won the Pulitzer Prize for his book Why Survive? Being Old in America and is co-author with Myrna I. Lewis of Aging and Mental Health as well as The New Love and Sex after 60. His latest book is The Longevity Revolution.

Director Independence

Valeta Gregg, Ph.D. and Robert N. Butler, MD are the only members of the Board of Directors who qualify as "independent" in accordance with Section 121(A) of the American Stock Exchange listing standards and Section 10A-3 under the Securities Exchange Act of 1934, as amended. The other directors, Michael D. West, Judith Segall, Hal Sternberg, and Harold Waitz do not qualify as "independent" because they are our full time employees and executive officers.

Dr. Gregg served on the BioTime Audit Committee, Nominating Committee and Compensation Committee during 2007. The only compensation or remuneration that BioTime has provided to Dr. Gregg and Dr. Butler during their tenure as directors has been compensation as non-employee directors. Dr. Gregg, Dr. Butler, and the members of their families have not participated in any transaction with us that would disqualify them as "independent" directors under the standard described above.

Executive Officers

Michael West, Robert Peabody, Hal Sternberg, Harold Waitz, Judith Segall, and Steven Seinberg are our only executive officers. There are no family relationships among our directors or officers.