HARVARD BIOSCIENCE INC
Form 10-K
March 18, 2013
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# UNITED STATES

# SECURITIES AND EXCHANGE COMMISSION

**Washington, D.C. 20549**

# FORM 10-K

x **Annual report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**
**For the fiscal year ended December 31, 2012**

**or**

¨ **Transition report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**
**For the transition period from to**

**Commission File Number 001-33957**

# HARVARD BIOSCIENCE, INC.

(Exact Name of Registrant as Specified in Its Charter)

| **Delaware** | **04-3306140** |
|---|---|
| (State or other jurisdiction of Incorporation or organization) | (I.R.S. Employer Identification No.) |

**84 October Hill Road, Holliston, Massachusetts 01746**

(Address of Principal Executive Offices, including zip code)

**(508) 893-8999**

(Registrant s telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

| Title of each class | Name of each exchange on which registered |
|---|---|
| **Common Stock, $0.01 par value** | **The NASDAQ Global Market** |
| **Preferred Stock Purchase Rights** | |

Securities registered pursuant to Section 12(g) of the Act:

**None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES ¨ NO x

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. YES ¨ NO x

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES x NO ¨

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). x YES ¨ NO

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ¨

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act. YES ¨ NO x

The aggregate market value of 24,801,502 shares of voting stock held by non-affiliates of the registrant as of June 29, 2012 was approximately $93,501,663 based on the closing sales price of the Registrant s common stock, par value $0.01 per share on that date. Shares of the registrant s common stock held by each officer and director and each person known to the registrant to own 10% or more of the outstanding voting power of the registrant have been excluded in that such persons may be deemed affiliates. This determination of affiliate status is not a determination for other purposes.

At March 8, 2013, there were 30,009,333 shares of the registrant s Common Stock issued and outstanding.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the Company s definitive Proxy Statement in connection with the 2013 Annual Meeting of Stockholders (the Proxy Statement ), to be filed within 120 days after the end of the Registrant s fiscal year, are incorporated by reference into Part III of this Form 10-K. Except with respect to information specifically incorporated by reference in this Form 10-K, the Proxy Statement is not deemed to be filed as part hereof.

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**HARVARD BIOSCIENCE, INC.**

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**ANNUAL REPORT ON FORM 10-K**

**For the Year Ended December 31, 2012**

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*This Annual Report on Form 10-K contains statements that are not statements of historical fact and are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 (the Exchange Act ), each as amended. The forward-looking statements are principally, but not exclusively, contained in Item 1: Business and Item 7: Management s Discussion and Analysis of Financial Condition and Results of Operations. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Forward-looking statements include, but are not limited to, statements about management s confidence or expectations, our business strategy, our ability to raise capital or borrow funds to consummate acquisitions and the availability of attractive acquisition candidates, our expectations regarding future costs of product revenues, our anticipated compliance with the covenants contained in our credit facility, the adequacy of our financial resources and our plans, objectives, expectations and intentions that are not historical facts. In some cases, you can identify forward-looking statements by terms such as may, will, should, could, would, seek, expects, plans, aim, anticipates, believes, estimates, projects, predicts, intends, strategy, potential, new, goal and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss many of these risks in detail under the heading Item 1A. Risk Factors beginning on page 14 of this Annual Report on Form 10-K. You should carefully review all of these factors, as well as other risks described in our public filings, and you should be aware that there may be other factors, including factors of which we are not currently aware, that could cause these differences. Also, these forward-looking statements represent our estimates and assumptions only as of the date of this report. We may not update these forward-looking statements, even though our situation may change in the future, unless we have obligations under the federal securities laws to update and disclose material developments related to previously disclosed information. Harvard Bioscience, Inc. is referred to herein as we, our, us, and the Company.*

## PART I

### Item 1. *Business.*

### Overview

Harvard Bioscience, Inc., a Delaware corporation, is a global developer, manufacturer and marketer of a broad range of specialized products, primarily apparatus and scientific instruments which are used to advance life science research and regenerative medicine. Our products are sold to thousands of researchers in over 100 countries primarily through our 850 page catalog (and various other specialty catalogs), our website, through distributors, including GE Healthcare, Thermo Fisher Scientific Inc. and VWR, and via our field sales organization. We have sales and manufacturing operations in the United States, the United Kingdom, Germany, Sweden and Spain with additional facilities in France and Canada.

### Our History

Our business began in 1901 under the name Harvard Apparatus and has grown over the years with the development and evolution of modern life science tools. Our early inventions included the mechanical syringe pump in the 1950s for drug infusion and the microprocessor controlled syringe pump in the 1980s.

In March 1996, a group of investors led by our CEO and President acquired a majority of the then existing business of our predecessor, Harvard Apparatus. Following this acquisition, we redirected the focus of our Company to participate in the higher growth areas, or bottlenecks, within life science research by acquiring and licensing innovative technologies while continuing to grow the existing business through internal product development and marketing, and acquisitions. Since March 1996, we have completed 25 business or product line acquisitions related to our continuing operations and internally developed many new product lines including: new generation Harvard Apparatus syringe pumps, PHD Ultra series of syringe pumps, advanced Inspira ventilators,

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GeneQuant DNA/RNA/protein calculators, Ultrospec spectrophotometers, our microliter spectrophotometer, 2D electrophoresis products, UVM plate readers, BTX-MOS 96 well electroporation system, the BioDrop micro volume cuvette and microvolume spectrophotometer. Recently we have developed novel devices to advance the emerging field of regenerative medicine. We currently have three marketed products, the InBreath hollow organ bioreactor, the LB2 and ORCA Solid Organ Bioreactors and the PHD Ultra Nanomite stem cell therapy injection system in this field. These products are currently available for research use only unless use on humans is approved in accordance with hospital ethics committee protocols and local regulatory rules.

In July 2005, we announced plans to divest our Capital Equipment Business segment. The decision to divest this business was based on the fact that market conditions for the Capital Equipment Business segment had been such that this business did not meet our expectations and on our decision to focus our resources on the Apparatus and Instrumentation Business segment. As a result, we began reporting our Capital Equipment Business segment as a discontinued operation in the third quarter of 2005. In November 2007, we completed the sale of the assets of our Genomic Solutions Division and the stock of our Belgian subsidiary, Maia Scientific; both part of our Capital Equipment Business Segment. In September 2008, we completed the sale of the assets of our Union Biometrica Division including our German subsidiary, Union Biometrica GmbH, representing at that time the remaining portion of our Capital Equipment Business Segment.

In addition to driving growth in our core research markets, we have been investing to create new products to address what we believe is a long term growth opportunity in the emerging field of regenerative medicine. Regenerative medicine is using stem cells to repair damaged organs and to grow organs outside the body for transplant. The U.S. Department of Health and Human Services has projected that the U.S. market for regenerative medicine may be $100 billion by the end of 2020. The government s estimate appears to include the value of all regenerative medicine protocols and therapies, including potential cost savings versus current methodologies.

Our strategy in regenerative medicine is not to become a therapeutics company but instead to provide tools to researchers and clinicians in the field of regenerative medicine. These new tools currently fall into two main categories: bioreactors and synthetic scaffolds for growing tissue and organs outside the body; and injectors for stem cell therapy. These new tools we are creating are being built on our existing technologies such as our market leading Harvard Apparatus precision syringe pumps and market leading Hugo-Sachs isolated organ systems.

Our strategy in regenerative medicine is to create devices in collaboration with leading surgeons, not to discover pharmaceuticals, as creating devices like the InBreath bioreactor reduces risk compared to trying to discover new drugs; build these devices using our existing technologies and brands as this reduces the investment needed to get to market; and develop devices with significant medical value to allow us to participate on a per-procedure basis.

Our first regenerative medicine tool, the InBreath hollow organ bioreactor, was used to perform the world s first human transplant of a regenerated bronchus. Dr. Paolo Macchiarini et al reported this success in The Lancet, a leading general medicine journal, in November 2008. We have licensed this product from Dr. Macchiarini s team, and worked to make it a commercial device. During the second and the third quarters of 2010, we took orders for this product, making it what we believe is the world s first commercially available bioreactor that has been used to perform a human transplant of a regenerated organ. We believe it marks an important milestone in the development of the regenerative medicine field as the tools evolve from concepts to commercial quality products.

During the first half of 2010, one of our collaborators, Dr. Harald Ott at Massachusetts General Hospital ( MGH ) succeeded in regenerating a lung and subsequently transplanting it into a rat. In collaboration with Dr. Ott and MGH, we designed and developed a novel bioreactor, the LB-2 Solid organ bioreactor, that was used to grow the lung. The work was published online in Nature Medicine in July 2010. The bioreactor used by Dr. Ott was a modified version of one of our market leading Hugo-Sachs isolated organ systems.

In June 2011, the InBreath bioreactor was used for the world s first successful transplantation of a synthetic tissue engineered windpipe. For the first time in history, a patient was given a new trachea made from a

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synthetic scaffold seeded with his own stem cells in a bioreactor. The cells were grown on the scaffold inside the bioreactor for two days before transplantation into the patient. Because the cells used to regenerate the trachea were the patient s own, there has been no rejection of the transplant, and the patient is not taking immunosuppressive drugs. The patient had been suffering from late stage trachea cancer, which before this surgery would have been inoperable, and is now alive and well twenty months after the surgery. The operation was performed at the Karolinska University Hospital in Huddinge, Stockholm, by Dr. Paolo Macchiarini of the Karolinska University Hospital and Karolinska Institutet, and colleagues. Dr. Macchiarini led an international team which included people who designed and built the nanocomposite trachea scaffold, and we produced a specifically designed bioreactor used to seed the scaffold with the patient s own stem cells. The success of this transplant surgery was published in The Lancet on November 24, 2011.

In November 2011, a second patient was given a new trachea made from a synthetic scaffold seeded with his own stem cells in a bioreactor. The patient had been suffering from late stage trachea cancer. The patient was discharged from the hospital in January 2012. On March 5, 2012, this patient died. The official cause of death recorded on the death certificate was pneumonia secondary to trachea cancer. We know of no evidence that either the scaffold or the bioreactor played any part in the patient s death.

In June 2012, the InBreath bioreactors were used for the world s first and second successful laryngotracheal implants, using synthetic laryngotracheal scaffolds seeded with cells taken from the patients bone marrow. The surgeries took place at Krasnodar Regional Hospital in Krasnodar, Russia on June 19th and June 21st. Each bioreactor was loaded with a synthetic scaffold in the shape of the patient s original organ. The scaffolds were then seeded with the patient s own stem cells. Over the course of about two days, the bioreactor promoted proper cell seeding and development. Because the patients own stem cells were used, their bodies have accepted the transplants without the use of immunosuppressive drugs. The recipients of the implants are alive nine months after the surgeries. These surgeries are a part of a clinical trial funded under a $4.8 million grant provided by the Russian government to the Krasnodar Regional Hospital. The first transplant was filmed and that documentary is being broadcast on European television under the title of The Miracle of Krasnodar .

In addition to the Russian clinical trial, a European clinical trial in trachea cancer patients is expected to start in 2014. The European clinical trial is expected to enroll approximately 25 patients. This project is a consortium of European companies, hospitals and universities led by Dr. Macchiarini.

In February 2012, the US FDA approved the first trachea transplant surgery in the US. The surgery is expected to occur by mid 2013.

In addition to the bioreactors described above, we also have started the development of a clinical version of one of our market leading Harvard Apparatus research syringe pumps. The research version of this pump is called the PHD Ultra Nanomite stem cell therapy injection system. We anticipate that this pump will be used to inject cells into damaged tissue in cell therapy. We expect to submit this pump to the regulatory agencies this year for approval. In 2012 we established our own synthetic scaffold production initiative in our Holliston, Massachusetts facility.

In December 2012, our wholly owned subsidiary Harvard Apparatus Regenerative Technology, Inc. ( HART ) filed a registration statement on Form S-1 with the SEC for an initial public offering, or IPO. Following the IPO, HART will own our Regenerative Medicine Device ( RMD ) business, which develops life-saving medical devices in the field of regenerative medicine, including devices to be used by physicians for growing organs outside the body for transplant. Following the IPO, we will own more than 80% of HART s common stock. We intend to distribute our remaining interest in HART to our shareholders in a pro-rata, tax-free dividend approximately 120 days following the closing of the IPO. We have petitioned the IRS for a private letter ruling on the tax free nature of the proposed distribution. Receipt of such a private letter ruling may be considered necessary for us to proceed with the HART IPO.

While we expect the initiatives discussed above to positively impact our business, the success of these initiatives is subject to a number of factors, including fluctuations in foreign exchange rates, the current economic and financial condition and their impact on our customers and our ability to obtain credit on terms

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favorable to us, the competitiveness of our new products, the strength of our intellectual property underlying these products, the success of our marketing efforts and those of our distributors and the other factors described under the heading Item 1A. Risk Factors beginning on page 14 in this Annual Report on Form 10-K.

**Our Strategy**

Our goal is to become a leading provider of tools for life science research and regenerative medicine. We refer to these two segments as our core Life Science Research Tools division ( LSRT ) and our RMD division.

Our LSRT strategy is to have a broad range of highly specialized but relatively inexpensive products that have strong positions in niche markets in life science research. We believe that:

- having a broad product offering reduces the risk of being dependent on a single technology;
- having relatively inexpensive products reduces the volatility associated with expensive capital equipment; and
- focusing on niche markets reduces head-to-head competition with the major instrument companies.

We seek to grow this range of products through a combination of organic growth driven by internal development of new products, direct marketing, distribution channel expansion and the acquisition of closely related products. We use acquisitions to expand our product offerings because we believe we can use our well-established brands and distribution channels to accelerate the growth of these acquired products. We also believe that our expertise in operational management frequently allows us to improve profitability at acquired companies.

Our strategy in our RMD business is to (i) create devices in collaboration with leading surgeons, researchers and clinicians, (ii) build these devices using our existing technologies and brands in an effort to reduce the investment needed to get the devices to market, and (iii) develop devices with significant medical value to allow us to participate on a per-procedure basis.

**Our Products**

Today, our broad LSRT product range is generally targeted towards two major application areas: ADMET testing and molecular biology.

Our RMD business is targeted towards two major application areas: Bioreactors and synthetic scaffolds to grow organs outside the human body and stem cell therapy injectors to repair damaged organs.

***ADMET Testing***

The goal of ADMET testing is to identify compounds that have toxic side effects or undesirable physiological or pharmacological properties. These pharmacological properties consist of absorption, distribution, metabolism and elimination, which together with toxicology, form the acronym ADMET. We have a wide range of products that our customers use to help their researchers conduct better experiments on cells, tissues, organs and animals.

We primarily sell these products under the Harvard Apparatus, BTX, KD Scientific, Hugo Sachs Elektronik, Panlab, Coulbourn Instruments, CMA Microdialysis and Warner Instruments brand names. The individual sales prices of these products are mostly under $5,000 but when combined into systems such as the Hugo Sachs isolated organ system the total sales price can be over $25,000. We typically sell our ADMET products through our catalogs and website with support from technical specialists, although BTX and KD Scientific branded products are primarily sold through distributors. Some of these products are described below:

*Absorption Diffusion Chambers*

A diffusion chamber is a small plastic chamber with a membrane separating the two halves of the chamber used to measure the absorption of a drug into the bloodstream. The membrane can either be tissue such as

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intestinal tissue or a cultured layer of cells such as human colon cells. This creates a miniaturized model of intestinal absorption. We manufacture and sell a wide range of tissue handling products under the Warner Instruments brand name.

*Distribution 96 Well Equilibrium Dialysis Plate for Serum Protein Binding Assays*

Our 96 well equilibrium dialysis plate contains 96 pairs of chambers with each pair separated by a membrane. The protein target is placed on one side of the membrane and the drug on the other. The small molecule drug diffuses through the membrane. If it binds to the target, it cannot diffuse back again. If it does not bind, it will diffuse back and forth until equilibrium is established. Once equilibrium is established, the concentration of the drug can be measured thereby indicating the strength of the binding. This product is principally used for ADMET testing to determine if a drug binds to blood proteins. A certain level of reversible binding is advantageous in order to promote good distribution of a drug through the human body. However, if the binding is too strong, it may impair normal protein function and cause toxic effects. These products are part of our sample preparation product line.

*Metabolism and Elimination Organ Testing Systems*

Organ testing systems use glass or plastic chambers together with stimulators and recording electrodes to study organ function. Organ testing systems enable either whole organs or strips of tissue from organs such as hearts, livers and lungs to be kept functioning outside the body while researchers perform experiments with them. This typically allows for multiple studies on a single donor animal. Studies on isolated livers are useful in determining metabolism and studies on kidneys are useful in determining elimination. We market these systems under our Hugo Sachs Elektronik, Panlab, and Coulbourn Instruments brands.

*Toxicology Precision Infusion Pumps and Behavioral Products*

Infusion pumps, typically syringe pumps, are used to accurately infuse very small quantities of liquid, commonly drugs. Infusion pumps are generally used for long-term toxicology testing of drugs by infusion into animals, usually laboratory rats. We sell a wide range of different types of syringe pumps and many other products for infusing samples into and collecting samples from tissues, organs and animals. We sell our syringe pumps primarily under our Harvard Apparatus and KD Scientific brands.

We also design and manufacture behavioral products used in neuroscience, cardiology, psychological and respiratory studies to evaluate the effects of situational stimuli, drugs and nutritional infusions on motor and sensory, activity and learning and test behavior. Our behavioral product offerings are marketed under our Panlab, Coulbourn and CMA Microdialysis brands.

*Cell Injection Systems*

Cell injection systems use extremely fine bore glass capillaries to penetrate and inject drugs into or around individual cells. Cell injection systems are used to study the effects of drugs on single cells. Injection is accomplished either with air pressure or, if the drug molecule is electrically charged, by applying an electric current. We service the cell injection systems market primarily through our Warner Instruments brand.

*Ventilators*

Ventilators use a piston driven air pump to inflate the lungs of an anesthetized animal. Ventilators are typically used in surgical procedures common in life science research and are part of our Harvard Apparatus product line. Our Inspira ventilators have significant safety and ease of use features, such as default safety settings. We expanded our ventilator product line with the MiniVent when we acquired Hugo Sachs Elektronik and expanded our presence in anesthesia with our acquisition of International Market Supply, Ltd.

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*Electroporation Products*

Our BTX brand includes our electroporation products of systems and generators, electrodes and accessories for research applications including in vivo, in ovo and in vitro gene delivery, electrocell fusion and nuclear transfer cloning. Through the application of precise pulsed electrical signals, electroporation systems open small pores in cell membranes allowing genes and/or drugs to pass through the cell membranes. The principal advantages of electroporation over other transfection techniques are speed, and that electroporation does not require chemicals that can interfere with or change cell function. In 2004, we launched our BTX MOS 96 well electroporation system, which greatly increased the throughput of this otherwise essentially manual technique. In December 2010, we signed a license agreement with Cellectis that grants us the worldwide exclusive right to manufacture and sell, for research use, the full line of Cyto Pulse electroporation-based instruments.

*Distributed Products*

In addition to our proprietary manufactured products, we sell through our catalogs many products that are made by other manufacturers. Distributed products accounted for approximately 33.5% of our revenues for the year ended December 31, 2012. These distributed products enable us to provide our customers with a single source for their experimental needs. These complementary products consist of a large variety of devices, instruments and consumable items used in experiments involving cells, tissues, organs and animals in the fields of proteomics, physiology, pharmacology, neuroscience, cell biology, molecular biology and toxicology. We believe that many of our proprietary manufactured products are leaders in their fields; however, researchers often need complementary products in order to conduct particular experiments.

***Molecular Biology***

We primarily sell these products through our distributors, including GE Healthcare, under their brand names. These products are mainly scientific instruments such as spectrophotometers and plate readers that analyze light to detect and quantify a wide range of molecular and cellular processes or apparatus such as gel electrophoresis units. The instrumentation products are typically sold for prices ranging from $5,000 to $10,000. The apparatus products typically sell for less than $5,000.

We expanded our molecular biology product offerings with our September 2009 acquisition of Denville Scientific, Inc. ( Denville ), a distributor of molecular biology laboratory consumables, with a strong focus on liquid handling consumables utilized in research laboratories. Denville s field sales force sells these primarily Denville branded products to end users in universities and other research laboratories. This acquisition expanded our field sales capabilities and provided access to the U.S. laboratory consumables market, which is currently estimated to be an approximately $1 billion market.

*Molecular Biology Spectrophotometers*

A spectrophotometer is an instrument widely used in molecular biology and cell biology to quantify the amount of a compound in a sample by shining a beam of white light through a prism or grating to divide it into component wavelengths. Each wavelength in turn is shone through a liquid sample and the spectrophotometer measures the amount of light absorbed at each wavelength. Microliter spectrophotometry is a technique used to measure extremely small sample sizes. We sell a wide range of spectrophotometers under the names UltroSpec, NovaSpec, Libra, Biowave and Lightwave. Our Biochrom subsidiary manufactures these products, and we sell them primarily through our distribution arrangements with GE Healthcare and other distributors.

*DNA/RNA/Protein Calculators*

A DNA/RNA/protein calculator is a bench top instrument dedicated to quantifying the amount of DNA, RNA or protein in a sample. It uses a process similar to that of a molecular biology spectrophotometer. These are sold under the GeneQuant name. Our Biochrom subsidiary manufactures these products, and we primarily sell them through our distribution agreement with GE Healthcare.

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*Multi-Well Plate Readers*

Multi-well plate readers are widely used for high throughput screening assays in the drug discovery process. The most common format is 96 wells per plate. Plate readers use light to detect chemical interactions. Our product line includes absorbance readers and luminescence readers. Our Biochrom subsidiary manufactures these products, and we sell them primarily through distributors under our Asys Hitech and Anthos Labtec brand names.

*Amino Acid Analysis Systems*

An amino acid analysis system uses chromatography to separate the amino acids in a sample and then uses a chemical reaction to detect each one in turn as they flow out of the chromatography column. Amino acids are the building blocks of proteins. We sell these systems, which are more expensive than most of our products, through Biochrom s U.S. direct sales force and through distributors internationally.

*Low Volume, High-Throughput Liquid Dispensers*

A liquid dispenser dispenses low volumes, typically microliters, of liquids into high density microtitre plates used in high throughput screening processes in life science research. Our unique technology enables dispensing to take place without the need for contact between the droplet and the liquid already present in the plate, thereby removing any risk of cross-contamination from the process. We primarily market these products, and we sell them under distributor brand names as well as our own Asys Hitech name.

*Gel Electrophoresis Systems*

Gel electrophoresis is a method for separating and purifying DNA, RNA and proteins. In gel electrophoresis, an electric current is run through a thin slab of gel and the DNA, RNA or protein molecules separate out based on their charge and size. The gel is contained in a plastic tank with an associated power supply. We market these products under our Scie-Plas and Hoefer brands. Approximately 28% of Hoefer revenues come from a distribution agreement with GE Healthcare. Hoefer also markets its products through other distributors and through a catalog/web distribution channel under the Hoefer name. We expanded our presence in this market with the acquisition of Denville in September 2009.

*Consumables*

Our offering of molecular biology laboratory consumables with a liquid handling focus consists primarily of such products as pipettes, pipette tips, autoradiography film, gloves, thermal cycler accessories and reagents, which we sell through our U.S. field sales force. Our Denville Scientific business services this market. In February 2012 we purchased AHN Biotechnologie GmbH ( AHN ). AHN is a manufacturer of laboratory consumables.

**Our Customers**

Our end-user customers are primarily research scientists at universities and government laboratories, including the U.S. National Institute of Health, or NIH and pharmaceutical and biotechnology companies. Our academic customers have included major colleges and universities such as Baylor University, Cambridge University, Harvard University, Johns Hopkins University, Massachusetts Institute of Technology, Yale University and the University of Texas MD Anderson Center. Our pharmaceutical and biotechnological customers have included pharmaceutical companies and research laboratories such as Amgen, Inc., AstraZeneca plc, Genentech, Inc. and Johnson & Johnson.

We conduct direct sales in the United States, the United Kingdom, Germany, France, Spain, Sweden and Canada. We sell primarily through distributors in other countries. Aggregate sales to our largest customer, GE Healthcare, a distributor with end-users similar to ours, accounted for approximately 6% of our revenues for the years ended December 31, 2012 and 2011. We have several thousand customers worldwide and no other customer accounted for more than 5% of our revenues for such periods. Our September 2009 acquisition of Denville expanded our U.S. field sales capabilities and provided direct access to the laboratory consumables market.

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**Sales and Marketing**

For the year ended December 31, 2012, revenues from direct sales to end-users represented approximately 57% of our revenues; and revenues from sales of our products through distributors represented approximately 43% of our revenues.

***Direct Sales***

We periodically produce and mail a Harvard Apparatus full-line catalog, which contains approximately 11,000 products on 850 pages and is printed in varying quantities ranging from 50,000 to 100,000 copies. The latest catalog, which is accessible on our website, serves as the primary sales tool for the Harvard Apparatus product line, which includes both proprietary manufactured products and complementary products from various suppliers. Our reputation as a leading producer in many of our manufactured products creates traffic to the catalog and website, enables cross-selling and facilitates the introduction of new products. In addition to the comprehensive catalog, we create and mail abridged catalogs that focus on specific product areas along with direct mailers and targeted e-mailers, which introduce or promote new products. We distribute the majority of our catalog products through our worldwide subsidiaries.

We have field sales forces in several of our LSRT markets, where our sales people visit our customers laboratories each day. We have field sales teams in the United States, Canada, the United Kingdom, Germany, France and Spain.

In those regions where we do not have a subsidiary, or for products which we have acquired that had distributors in place at the time of our acquisition, we use distributors.

***Distributors***

GE Healthcare is our largest distributor, accounting for 6%, 6% and 10% of our revenues for the years ended December 31, 2012, 2011 and 2010, respectively.

Historically, GE Healthcare has been our primary distributor, marketer and seller of a significant portion of our spectrophotometer and DNA/RNA calculator product lines of our Biochrom subsidiary. In April 2008, our Biochrom subsidiary entered into a new distribution agreement with GE Healthcare. Under the terms of the agreement, GE Healthcare serves as the exclusive, worldwide (except Canada) distributor, marketer and seller of a significant portion of the spectrophotometer and DNA/RNA calculator product lines sold by Biochrom, including a microliter spectrophotometer to which GE Healthcare has exclusive access on a worldwide basis including Canada. The term of the agreement expires December 31, 2013. It may be terminated by either party upon one year advance written notice and may be extended by GE Healthcare for additional one-year periods. Additionally, upon breach of certain terms of the agreement by either party, the agreement may be terminated with a 60-day notice period.

In November 2003, in connection with the acquisition of Hoefer from GE Healthcare, we entered into a separate distribution agreement with GE Healthcare for the distribution of the Hoefer products. This contract had a five year term with an automatic five-year renewal period, provides for minimum purchases for the first three years, allows us to use the Hoefer name (which we acquired in the transaction) on direct sales by us to end users or through other distributors, and may be terminated after five years with a one year advance notice upon certain circumstances. Additionally, upon breach of certain terms of the agreement, such as pricing, exclusivity and delivery, by either party, the agreement may be terminated with a 30-day notice period. The current contract ends on September 30, 2013. We are currently in discussions with GE Healthcare regarding the extension of the contact.

In addition to engaging GE Healthcare as the primary distributor for our Biochrom and Hoefer products, we also engage distributors for the sales of Harvard Apparatus, Warner, BTX, KD Scientific, Asys Hitech, Anthos, Panlab, Coulbourn, CMA and SciePlas branded products in certain areas of the world and for certain product lines.

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**Backlog**

Our order backlog was approximately $4.5 million and $5.0 million as of December 31, 2012 and 2011, respectively. We include in backlog only those orders for which we have received valid purchase orders. Purchase orders may be cancelled at any time prior to shipment. Our backlog as of any particular date may not be representative of actual sales for any succeeding period. We typically ship our backlog at any given time within 90 days.

**Research and Development**

Our principal research and development mission in our LSRT business is to develop products that address growth opportunities within the life science research process, particularly for application in the areas of ADMET testing and molecular biology and liquid handling. Through our RMD division, we are also working to develop new products aimed at long term opportunities in the emerging field of regenerative medicine.

Our research and development expenses were approximately $7.3 million, $5.4 million and $4.7 million in 2012, 2011 and 2010, respectively. The increase in research and development expenses during 2012 was primarily due to increased spending in our RMD division. We anticipate that we will continue to make investments in research and development activities as we deem appropriate given the circumstances at such time. We plan to continue to pursue a balanced development portfolio strategy of originating new products from internal research and acquiring products through business and technology acquisitions.

We maintain development staff in most of our manufacturing facilities to design and develop new products and to re-engineer existing products to bring them to the next generation level. Our in-house development is focused on our current technologies.

**Manufacturing**

We manufacture and test the majority of our products in our principal manufacturing facilities located in the United States, the United Kingdom, Sweden, Spain and Germany. We have considerable manufacturing flexibility at our various facilities, and each facility can manufacture multiple products at the same time. We maintain in-house manufacturing expertise, technologies and resources. We seek to maintain multiple suppliers for key components that are not manufactured in-house, and while some of our products are dependent on sole-source suppliers, we do not believe our dependence upon these suppliers creates any significant risks.

Our manufacturing operations primarily involve assembly and testing activities along with some machine based processes. We manufacture syringe pumps, ventilators, cell injectors, molecular sample preparation products and electroporation products in Holliston, Massachusetts. The manufacture of our cell biology and electrophysiology products takes place in both our Holliston, Massachusetts facility and our Hamden, Connecticut facility. We manufacture spectrophotometers, amino acid analysis systems, low-volume, high-throughput liquid dispensers and our plate readers in our Cambridge, England facility. We manufacture our surgery and anesthesia related products and physiology-teaching products in our Edenbridge, England facility. We manufacture our complete organ testing systems and bioreactors in March-Hugstetten, Germany and Holliston, Massachusetts. Our electrophoresis products are manufactured at our Richmond, California facility. Behavioral science products are manufactured in our Barcelona, Spain and Whitehall, Pennsylvania facilities. Our microdialysis products are manufactured at our Holliston, Massachusetts and Solna, Sweden facilities. We manufacture our pipette products in our Nordhausen, Germany facility. Our synthetic scaffold manufacturing takes place in Holliston, Massachusetts.

**Competition**

The markets into which we sell our products are highly competitive, and we expect the intensity of competition to continue or increase. We compete with many companies engaged in developing and selling tools for life science research and regenerative medicine. Many of our competitors have greater financial, operational, sales and marketing resources, and more experience in research and development and commercialization than we

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have. Moreover, our competitors may have greater name recognition than we do, and many offer discounts as a competitive tactic. These competitors and other companies may have developed or could in the future develop new technologies that compete with our products, which could render our products obsolete. We cannot assure you that we will be able to make the enhancements to our technologies necessary to compete successfully with newly emerging technologies. We are not aware of any significant products sold by us as being currently obsolete.

We believe that we offer one of the broadest selections of products to organizations engaged in life science research and regenerative medicine. We are not aware of any competitor that offers a product line of comparable breadth across our target markets. We have numerous competitors on a product line basis. We believe that we compete favorably with our competitors on the basis of product performance, including quality, reliability and speed, technical support, price and delivery time.

We compete with several companies that provide instruments for ADMET testing and molecular biology. In the ADMET testing area, we compete with, among others, Amaxa GmbH, Becton, Dickinson and Company, Eppendorf AG, Kent Scientific Corporation, Razel Scientific Instruments, Inc. and Ugo Basile. In the molecular biology products area, we compete with, among others, Danaher Corporation, Bio-Rad Laboratories, Inc., Eppendorf AG, Life Technologies Corporation, MDS Analytical Technologies, PerkinElmer, Inc. and Thermo Fisher Scientific Inc. For RMD, we are not aware of any companies whose products are directly competitive with our bioreactor and scaffold system. However, in our key markets we may in the future compete with multiple pharmaceutical, biotechnology, medical device and scientific research instrument companies, including, among others, Aastrom Biosciences, Aldagen, BioTime, Baxter International, Inc., Bose Corporation, Celgene, Cytori Therapeutics, E. I. du Pont de Nemours and Company, Genzyme (acquired by Sanofiaventis), Harvest Technologies, Mesoblast, Nanofiber Solutions, Organovo, Osiris Therapeutics, Tengion, Tissue Genesis, Inc., Tissue Growth Technologies, Transmedics, United Therapeutics and W.L. Gore and Associates. We are not aware of any companies whose products are directly competitive with our clinical infusion pumps for cell injection. However, with respect to our clinical infusion pump for hospital drug infusion applications, we will compete with Baxter International, Inc., Fresenius Medical Care, Smiths Medical, and B. Braun Melsungen, among others.

Many of our potential competitors have substantially greater financial, technological, research and development, marketing, and personnel resources than we do. We cannot forecast if or when these or other companies may develop competitive products. We expect that other products will compete with products and potential products based on efficacy, safety, cost, and intellectual property positions. While we believe that these will be the primary competitive factors, other factors include, in certain instances, obtaining marketing exclusivity under the Orphan Drug Act, availability of supply, manufacturing, marketing and sales expertise and capability, and reimbursement coverage.

**Seasonality**

Our business is generally not seasonal, however, sales and earnings in our third quarter are usually flat or down from the second quarter primarily because there are a large number of holidays and vacations during such quarter, especially in Europe. Our fourth quarter sales and earnings are often the highest in any fiscal year compared to the other three quarters, primarily because many of our customers tend to spend budgeted money before their own fiscal year ends. However in 2012, concerns over government spending levels caused our fourth quarter revenues to be less than the first and second quarter revenues.

**Intellectual Property**

To establish and protect our proprietary technologies and products, we rely on a combination of patent, copyright, trademark and trade-secret laws, as well as confidentiality provisions in our contracts. Patents or patent applications cover certain of our new technologies. Most of our more mature product lines are protected by trade names and trade secrets only.

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We have implemented a patent strategy designed to provide us with freedom to operate and facilitate commercialization of our current and future products. Our success depends to a significant degree upon our ability to develop proprietary products and technologies. We intend to continue to file patent applications as we develop new products and technologies. Since 2010, we have filed thirteen provisional patents and patents in the field of regenerative medicine, covering over 400 claims for our products and their functions.

Patents provide some degree of protection for our intellectual property. However, the assertion of patent protection involves complex legal and factual determinations and is therefore uncertain. The scope of any of our issued patents may not be sufficiently broad to offer meaningful protection. In addition, our issued patents or patents licensed to us may be successfully challenged, invalidated, circumvented or unenforceable so that our patent rights would not create an effective competitive barrier. Moreover, the laws of some foreign countries may protect our proprietary rights to a greater or lesser extent than the laws of the United States. In addition, the laws governing patentability and the scope of patent coverage continue to evolve, particularly in areas of interest to us. As a result, there can be no assurance that patents will be issued from any of our patent applications or from applications licensed to us. As a result of these factors, our intellectual property positions bear some degree of uncertainty.

We also rely in part on trade-secret protection of our intellectual property. We attempt to protect our trade secrets by entering into confidentiality agreements with third parties, employees and consultants. Our employees and consultants also sign agreements requiring that they assign to us their interests in patents and copyrights arising from their work for us. Although many of our U.S. employees have signed agreements not to compete unfairly with us during their employment and after termination of their employment, through the misuse of confidential information, soliciting employees, soliciting customers and the like, the enforceability of these provisions varies from jurisdiction to jurisdiction and, in some circumstances, they may not be enforceable. In addition, it is possible that these agreements may be breached or invalidated and if so, there may not be an adequate corrective remedy available. Despite the measures we have taken to protect our intellectual property, we cannot assure you that third parties will not independently discover or invent competing technologies, or reverse engineer our trade secrets or other technologies. Therefore, the measures we are taking to protect our proprietary rights may not be adequate.

We do not believe that our products infringe on the intellectual property rights of any third party. We cannot assure you, however, that third parties will not claim such infringement by us or our licensors with respect to current or future products. We expect that product developers in our market will increasingly be subject to such claims as the number of products and competitors in our market segment grows and the product functionality in different market segments overlaps. In addition, patents on production and business methods are becoming more common and we expect that more patents will be issued in our technical field. Any such claims, with or without merit, could be time-consuming, result in costly litigation and diversion of management s attention and resources, cause product shipment delays or require us to enter into royalty or licensing agreements. Moreover, such royalty or licensing agreements, if required, may not be on terms advantageous to us, or acceptable at all, which could seriously harm our business or financial condition.

Harvard is a registered trademark of Harvard University. The marks Harvard Apparatus and Harvard Bioscience are being used pursuant to a license agreement entered into in December 2002 between us and Harvard University.

**Government Regulation**

We are not subject to direct governmental regulation other than the laws and regulations generally applicable to businesses in the domestic and foreign jurisdictions in which we operate. In particular, our current LSRT products are not subject to pre-market approval by the FDA for use on human clinical patients. As we continue to develop new products for regenerative medicine applications in our RMD division, we expect that we will seek approvals from the FDA and EU for certain such products for use in clinical applications. We expect the first such application to be for a clinical syringe pump which will be the platform for cell injector products. We plan to file applications with the FDA, EU and other regulatory agencies for the clinical syringe pump in 2013. In addition, we believe we are currently in compliance with all relevant environmental laws.

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**Employees**

As of December 31, 2012, we employed 422 employees, of which 398 are full-time and 24 are part-time. Geographical residence information for these employees is summarized in the table below:

| | As of December 31, 2012 |
|---|---|
| United States | 230 |
| United Kingdom | 91 |
| Spain | 32 |
| Germany | 48 |
| Sweden | 10 |
| Canada | 8 |
| France | 3 |
| Total | 422 |

We believe that our relationship with our employees is good. None of our employees is subject to any collective bargaining agreement.

**Discontinued Operations**

In November 2007, we completed the sale of the assets of our Genomic Solutions Division and the stock of our Belgian subsidiary, MAIA Scientific, both of which were part of our Capital Equipment Business Segment, to Digilab, Inc. The purchase price paid by Digilab under the terms of the Asset Purchase Agreement consisted of $1.0 million in cash plus additional consideration in the form of an earn-out based on 20% of the revenue generated by the acquired business as it was conducted by Digilab over a three-year period post-transaction. Earn-out amounts were evidenced by interest bearing promissory notes which were due on November 30, 2012. The unpaid principal balance of the promissory notes had an interest of LIBOR plus 1100 basis points per annum. Digilab had delivered promissory notes of $4.6 million. To date we have recorded valuation allowances for 100% of the earn-out promissory notes as we have deemed their collectability as being uncertain.

In September 2008, we completed the sale of assets of our Union Biometrica Division including our German subsidiary, Union Biometrica GmbH, representing at that time the remaining portion of our Capital Equipment Business Segment, to UBIO Acquisition Company. The purchase price paid by UBIO Acquisition Company under the terms of the asset purchase agreement consisted of $1 in cash, the assumption of certain liabilities, plus additional consideration in the form of an earn-out based on the revenue generated by the acquired business as it is conducted by UBIO Acquisition Company over a five-year post-transaction period in an amount equal to (i) 5% of the revenue generated up to and including $6.0 million each year and (ii) 8% of the revenue generated above $6.0 million each year. Any earn-out amounts are evidenced by interest-bearing promissory notes due on September 30, 2013 or at an earlier date based on certain triggering events. We regularly monitor the financial performance of the UBIO Acquisition Company to determine their ability to pay the earn out amounts when they become due on September 30, 2013 or at an earlier date based on certain triggering events. As at December 31, 2012, UBIO Acquisition Company had delivered promissory notes of $1.1 million. The unpaid principal balance of the promissory notes bear an interest of 12% per annum. Prior to the fourth quarter of 2012, we recorded valuation allowances for 100% of the earn-out promissory notes as we have deemed their collectability as being uncertain. During the fourth quarter of 2012, we determined that the realization was probable. Therefore we made a decision to reverse the valuation allowance and recognize the earn-out amount and the interest thereon of approximately $0.8 million in our statements of income under Income from discontinued operations, net of tax .

**Geographic Area**

Financial information regarding geographic areas in which we operate is provided in Note 17 of the Notes to Consolidated Financial Statements, which are included elsewhere in this report.

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**Executive Officers of the Registrant**

The following table shows information about our executive officers as of December 31, 2012.

| Name | Age | Position |
|---|---|---|
| Chane Graziano | 74 | Chief Executive Officer and Chairman of the Board of Directors |
| David Green | 48 | President and Director |
| Thomas McNaughton | 52 | Chief Financial Officer and Treasurer |
| Susan Luscinski | 56 | Chief Operating Officer |

*Chane Graziano* has served as the Company s Chief Executive Officer and Chairman of the Board of Directors of the Company since March 1996. Prior to joining the Company, Mr. Graziano served as the President of Analytical Technology Inc., an analytical electrochemistry instruments company, from 1993 to 1996 and as the President and Chief Executive Officer of its predecessor, Analytical Technology Inc.-Orion, an electrochemistry instruments and laboratory products company, from 1990 until 1993. Mr. Graziano served as the President of Waters Corporation, an analytical instrument manufacturer, from 1985 until 1989. Mr. Graziano has over 46 years experience in the laboratory products and analytical instruments industry. Mr. Graziano serves on the Board of Directors of Nova Holdings LLC and certain of its subsidiaries, including Nova Ventures Corporation, and Advion BioSciences, Inc.

*David Green* has served as the Company s President and a member of the Board of Directors of the Company since March 1996. Prior to joining the Company, Mr. Green was a strategy consultant with Monitor Company, a strategy consulting company, in Cambridge, Massachusetts and Johannesburg, South Africa from June 1991 until September 1995 and a brand manager for household products with Unilever PLC, a packaged consumer goods company, in London from September 1985 to February 1989. Mr. Green currently is President and a board member of the Harvard Business School Healthcare Industry Alumni Association, and on the Executive Advisory Board of The University of Massachusetts Lowell Nanomanufacturing Center. Mr. Green graduated from Oxford University with a B.A. Honors degree in physics and holds a M.B.A. degree with distinction from Harvard Business School.

*Thomas McNaughton* has served as our Chief Financial Officer and Treasurer since November 14, 2008. Prior to joining Harvard Bioscience, Mr. McNaughton provided, from January 2008 to September 2008 financial consulting services, primarily to an angel-investing group and a silicon manufacturing start-up. From 2005 to 2007, Mr. McNaughton served as Vice President Finance and Chief Financial Officer for Tivoli Audio, LLC, a venture capital-backed global manufacturer of premium audio systems. Prior to joining Tivoli Audio, LLC, from 1990 to 2005, Mr. McNaughton served in various managerial positions in the areas of financial reporting, treasury, investor relations, and acquisitions within Cabot Corporation, a global manufacturer of fine particulate products, and served from 2002 to 2005 as Finance Director, Chief Financial Officer of Cabot Supermetals, a $350 million Cabot division that provided high purity tantalum and niobium products to the electronics and semiconductor industries. Mr. McNaughton practiced from 1982 to 1990 as a Certified Public Accountant in the audit services group of Deloitte & Touche, LLP. Mr. McNaughton holds a B.S. in accounting and finance from Babson College.

*Susan Luscinski* has served as our Chief Operating Officer since August 2004 and served as our Principal Accounting Officer from May 2008 through November 2008. Ms. Luscinski served as our Chief Financial Officer from August 2001 until August 2004 and Vice President of Finance and Administration from May 1999 until August 2001. Ms. Luscinski served as our Corporate Controller from May 1988 until May 1999 and has served in various other positions at our Company and its predecessor since January 1985.

**Available Information and Website**

Our website address is www.harvardbioscience.com. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and exhibits and amendments to those reports filed or furnished with the Securities and Exchange Commission pursuant to Section 13(a) of the Exchange Act are available for review on our website and the Securities and Exchange Commission s website at www.sec.gov. Any such

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materials that we file with, or furnish to, the SEC in the future will be available on our website as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. The information on our website is not incorporated by reference into this Annual Report on Form 10-K.

**Item 1A.** ***Risk Factors.***

As previously discussed, our actual results could differ materially from our forward-looking statements. Our business faces a variety of risks. These risks include those described below and may include additional risks and uncertainties not presently known to us or that we currently deem immaterial. If any of the events or circumstances described in the following risk factors occur our business operations, performance and financial condition could be adversely affected and the trading price of our common stock could decline. These risk factors should be read in conjunction with the other information in this Annual Report on Form 10-K.

***The current soft economic environment and continued uncertainty in the financial markets and other adverse changes in general conditions may exacerbate certain risks affecting our business.***

The global financial crisis that began in 2008 caused disruption in the financial markets, including somewhat diminished liquidity and credit availability. We are unable to predict the strength and duration of an economic recovery. During 2012 and continuing to today research customers in our major markets have been concerned about levels of future government spending. In the U.S., researchers appear concerned about the effects of the sequestration on the federal government s future funding levels for life science research. While these conditions have not impaired our ability to access credit markets to date, there can be no assurance that these conditions will not adversely affect our ability to do so in the future, particularly if there is further deterioration in the world financial markets and major economies.

As our business has grown, we have become increasingly subject to the risks arising from adverse changes in domestic and global economic conditions. Continued concerns about credit markets, consumer confidence, economic conditions, government spending to sponsor life science research, volatile corporate profits and reduced capital spending could continue to negatively impact demand for our products. If economic growth in the U.S. and other countries continues to be slow and does not improve, customers may delay purchases of our products. The tightening of credit in financial markets may adversely affect the ability of our customers and suppliers to obtain financing, which could result in a decrease in, or deferrals or cancellations of, the sale of our products. If global economic and market conditions, or economic conditions in the United States, remain uncertain or persist, spread, or deteriorate further, we may experience a material adverse effect on our business, operating results and financial condition. Unstable economic, political and social conditions make it difficult for our customers, our suppliers and us to accurately forecast and plan future business activities. If such conditions persist, our business, financial condition and results of operations could suffer. We cannot project the extent of the impact of the economic environment on our industry or us.

Many of our customers, including universities, government research laboratories, private foundations and other institutions, obtain funding for the purchase of products from grants by governments or government agencies. A potential decrease in the level of governmental spending allocated to scientific and medical research could substantially reduce or even eliminate these grants. If government funding necessary to purchase our products were to decrease, our business and results of operations could be materially adversely affected.

***Our revenues will likely be affected by various factors, including the timing of purchases by customers and the seasonal nature of purchasing in Europe.***

Our revenues will likely be affected by various factors, including the seasonal nature of purchasing in Europe. Our revenues may vary from quarter to quarter due to a number of factors, including the timing of catalog mailings and new product introductions, the release of grant and budget funding, future acquisitions and our substantial sales to European customers, who in summer months often defer purchases. In particular, delays or reduction in purchase orders from the pharmaceutical and biotechnology industries could have a material adverse effect on us and could adversely affect our stock price.

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***Attractive acquisition opportunities may not be available to us in the future.***

We will consider the acquisition of other businesses. However, we may not have the opportunity to make suitable acquisitions on favorable terms in the future, which could negatively impact the growth of our business. In order to pursue such opportunities, we may require significant additional financing, which may not be available to us on favorable terms, if at all. We expect that our competitors, many of which have significantly greater resources than we do, will compete with us to acquire compatible businesses. This competition could increase prices for acquisitions that we would likely pursue.

***The failure of any banking institution in which we deposit our funds or the failure of such banking institution to provide services in the current economic environment could have a material adverse effect on our results of operations, financial condition or access to borrowings.***

We deposit our cash and cash equivalents with a number of financial institutions around the world. Should some or all of these financial institutions fail or otherwise be unable to timely perform requested services, we would likely have a limited ability to quickly access our cash deposited with such institutions. If we are unable to quickly access such funds, we may need to increase our use of our existing credit lines or access more expensive credit, if available. If we are unable to access some or all of our cash on deposit, either temporarily or permanently, or if we access existing or additional credit or are unable to access additional credit, it could have a negative impact on our operations, including our reported net income, our financial position, or both.

***If we engage in any acquisition, we will incur a variety of costs, and may never realize the anticipated benefits of the acquisition.***

Our business strategy includes the future acquisition of businesses, technologies, services or products that we believe are a strategic fit with our business. If we undertake any acquisition, the process of integrating an acquired business, technology, service or product may result in unforeseen operating difficulties and expenditures and may absorb significant management attention that would otherwise be available for ongoing development of our business. Moreover, we may fail to realize the anticipated benefits of any acquisition as rapidly as expected or at all. Future acquisitions could reduce stockholders ownership, cause us to incur debt, expose us to future liabilities and result in amortization expenses related to intangible assets with definite lives. We may also incur significant expenditures in anticipation of an acquisition that is never realized.

***We may not realize the expected benefits from acquisitions due to difficulties integrating the businesses, operations and product lines.***

Our ability to achieve the benefits of acquisitions depends in part on the integration and leveraging of technology, operations, sales and marketing channels and personnel. The integration process is a complex, time-consuming and expensive process and may disrupt our business if not completed in a timely and efficient manner.

We completed the acquisition of CMA Microdialysis in July 2011 and AHN in February 2012. We may have difficulty successfully integrating these and other acquired businesses, and their domestic and foreign operations or product lines, and as a result, we may not realize any of the anticipated benefits of these and other acquisitions. We cannot assure that our growth rate will equal the growth rates that have been experienced by us and these and other acquired companies, respectively, operating as separate companies in the past.

***We have been actively engaged in acquiring and divesting companies. As a result, we may be the subject of lawsuits from either an acquiring company s stockholders, an acquired company s previous stockholders, a divested company s stockholders or our current stockholders.***

We may be the subject of lawsuits from either an acquiring company s stockholders, an acquired company s previous stockholders, a divested company s stockholders or our current stockholders. Such lawsuits could result from the actions of the acquisition or divestiture target prior to the date of the acquisition or divestiture, from the acquisition or divestiture transaction itself or from actions after the acquisition or divestiture. Defending potential

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lawsuits could cost us significant expense and detract management s attention from the operation of the business. Additionally, these lawsuits could result in the cancellation of or the inability to renew certain insurance coverage that would be necessary to protect our assets.

***If our goodwill or intangible assets become impaired, we may be required to record a significant charge to earnings.***

Under accounting principles generally accepted in the United States ( US GAAP ), we review our goodwill and intangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. Goodwill is required to be tested for impairment at least annually. Factors that may be considered a change in circumstances indicating that the carrying value of our goodwill or other intangible assets may not be recoverable include a decline in our stock price and market capitalization, future cash flows, and slower growth rates in our industry. We may be required to record a significant charge to earnings in our financial statements during the period in which any impairment of our goodwill or other intangible assets is determined, which could adversely affect our results of operations.

***Accounting for goodwill and other intangible assets may have a material adverse effect on us.***

We assess the recoverability of identifiable intangibles with finite lives and other long-lived assets, such as property, plant and equipment, for impairment whenever events or changes in circumstances indicate that the carrying value may not be recoverable in accordance with the provisions of Financial Accounting Standards Board ( FASB ) Accounting Standards Codification ( ASU ) 360, *Property, Plant and Equipment* . In accordance with FASB ASU 350, *Intangibles-Goodwill and Other* , goodwill and intangible assets with indefinite lives from acquisitions are evaluated annually, or more frequently, if events or circumstances indicate there may be an impairment, to determine whether any portion of the remaining balance of goodwill and indefinite lived intangibles may not be recoverable. If it is determined in the future that a portion of our goodwill and other intangible assets is impaired, we will be required to write off that portion of the asset according to the methods defined by FASB ASU 360 and FASB ASU 350, which could have an adverse effect on net income for the period in which the write-off occurs. At December 31, 2012, our continuing operations had goodwill and intangible assets of $58.7 million, or 44%, of our total assets. We concluded that none of our goodwill or other intangible assets was impaired.

***Future changes in financial accounting standards may adversely affect our reported results of operations.***

We prepare our consolidated financial statements in accordance with US GAAP. These principles are subject to interpretation by the SEC and various bodies formed to interpret and create appropriate accounting principles. New accounting pronouncements and varying interpretations of accounting pronouncements have occurred and may occur in the future. A change in these principles can have a significant effect on our reported results and may even retroactively affect previously reported transactions. These new accounting pronouncements may adversely affect our reported financial results.

***If our accounting estimates are not correct, our financial results could be adversely affected.***

Management judgment and estimates are required in the application of our Critical Accounting Policies. We discuss these estimates in the subsection entitled critical accounting policies beginning on page 43 in Item 7, Management s Discussion and Analysis of Financial Condition and Results of Operations in this Annual Report on Form 10-K. If our estimates are incorrect, our future financial operating results and financial condition could be adversely affected.

***Our business is subject to economic, political and other risks associated with international revenues and operations.***

Since we manufacture and sell our products worldwide, our business is subject to risks associated with doing business internationally. Our revenues from our non-U.S. operations represented approximately 41.0% of

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total revenues for 2012. We anticipate that revenue from international operations will continue to represent a substantial portion of our revenues in the foreseeable future. In addition, a number of our manufacturing facilities and suppliers are located outside the United States. The recent global economic slowdown has and could continue to have a negative effect on various foreign markets in which we operate. Accordingly, our future results could be harmed by a variety of factors, including:

- the impact of recessions and other economic conditions in economies, including Europe in particular, outside the United States,
- disruptions of capital and trading markets,
- in-ability to collect accounts receivable,
- limitations on repatriations of funds,
- potentially negative consequences from changes in tax laws affecting the ability to or cost of repatriating profits,
- difficulty in staffing and managing widespread operations, unfavorable labor regulations applicable to European operations, such as severance and the unenforceability of non-competition agreements in the European Union,
- other factors beyond our control, including terrorism, political unrest, acts of war, natural disasters and diseases,
- unexpected changes in regulatory requirements, and
- interruption to transportation flows for delivery of parts to us and finished goods to our customers.

***Currency exchange rate fluctuations may have a negative impact on our reported earnings.***

We are also subject to the risks of fluctuating foreign exchange rates, which could have a materially adverse effect on the sales price of our products in foreign markets, as well as the costs and expenses of our foreign subsidiaries. Approximately 38.0% of our business during 2012 was conducted in functional currencies other than the U.S. dollar, which is our reporting currency. As a result, currency fluctuations among the U.S. dollar and the currencies in which we do business have caused and will continue to cause foreign currency translation and transaction gains and losses. Generally, we have not used forward exchange contracts to hedge our foreign currency exposures. We attempt to manage foreign currency risk through the matching of assets and liabilities. In the future, we may undertake to manage foreign currency risk through hedging methods, including foreign currency contracts. We recognize foreign currency gains or losses arising from our operations in the period incurred. We cannot guarantee that we will be successful in managing foreign currency risk or in predicting the effects of exchange rate fluctuations upon our future operating results because of the number of currencies involved, the variability of currency exposure and the potential volatility of currency exchange rates.

***If we are not able to manage our growth, our operating profits or losses may be adversely impacted.***

Our success will depend on the expansion of our operations through both organic growth and acquisitions. Effective growth management will place increased demands on our management team, operational and financial resources and expertise. To manage growth, we must expand our facilities, augment our operational, financial and management systems, and hire and train additional qualified personnel. Failure to manage this growth effectively could impair our ability to generate revenue or could cause our expenses to increase more rapidly than revenue, resulting in operating losses or reduced profitability.

***We may incur additional restructuring costs or not realize the expected benefits of our initiatives to reduce operating expenses.***

During the quarter ended September 30, 2010, we developed a plan to streamline our operations at Panlab s.l., our Harvard Apparatus business in Spain. The plan included workforce reduction in all functions of the organization and was carried out during that quarter.

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During the quarter ended December 31, 2010, we developed a plan to reduce operating expenses at our Biochrom U.K. subsidiary. The plan included workforce reduction in all functions of the organization, inventory impairment charges and other charges and was carried out during that quarter.

During the quarter ended September 30, 2011, we initiated a plan to relocate our Hoefer subsidiary s San Francisco, California facility as part of a business improvement initiative. We also developed a plan to improve operating margins at our Coulbourn Instruments subsidiary.

During 2012, we initiated a plan to reduce operating expenses at Panlab s.l., our Harvard Apparatus business in Spain. The plan included workforce reduction.

We have incurred approximately $1.4 million in restructuring charges relating to our 2012, 2011 and 2010 restructuring plans and we may incur additional restructuring costs and we may not be able to fully realize the expected benefits of these initiatives. See Note 9 to our consolidated financial statements Restructuring and Other Exit Costs.

***Spending in our Regenerative Medicine Device business will continue to have an adverse affect on our reported results of operations.***

As we continue to spend increased amounts to fund the development of our RMD business, such spending will reduce our net income from continuing operations as well as have an adverse impact on the adjusted earnings per share and results of operations.

***We may experience disruptions to our business in connection with the proposed initial public offering by our subsidiary Harvard Apparatus Regenerative Technology, Inc.***

On December 11, 2012, Harvard Apparatus Regenerative Technology, Inc., our wholly-owned subsidiary, filed a Registration Statement on Form S-1 with the SEC relating to its proposed initial public offering. In connection with the proposed offering, any related distribution we may make with respect to our ownership of such subsidiary, or other action:

- our stock price could fluctuate significantly in response to developments relating to the proposed offering or any related distribution or other action or market speculation regarding the proposed offering or any related distribution or other transaction;
- our financial results may be harmed, and our ability to execute effectively upon our business plans may be affected adversely, because of the competing demands on management s time and attention;
- we may not achieve our desired tax treatment of the proposed offering or any related distribution or other transaction;
- we may encounter difficulties in hiring, retaining and motivating key personnel during this process or as a result of uncertainties generated by this process or any developments or actions relating to it;
- we may incur substantial increases in general and administrative expense associated with the need to retain and compensate third party consultants and advisors (including legal counsel); and
- we may encounter difficulties in maintaining relationships or arrangements with customers, key suppliers, and other parties.

In addition, there can be no assurance as to when the proposed offering or any related distribution or transaction will be completed, if at all.

***If we fail to retain key personnel and hire, train and retain qualified employees, we may not be able to compete effectively, which could result in reduced revenue or increased costs.***

Our success is highly dependent on the continued services of key management, technical and scientific personnel. Our management and other employees may voluntarily terminate their employment at any time upon

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short notice. The loss of the services of any member of the senior management team, including the Chief Executive Officer, Chane Graziano, the President, David Green, the Chief Operating Officer, Susan Luscinski, the Chief Financial Officer, Thomas McNaughton, or any of the managerial, technical or scientific staff may significantly delay or prevent the achievement of product development and other business objectives. Our future success will also depend on our ability to identify, recruit and retain additional qualified scientific, technical and managerial personnel. We operate in several geographic locations where labor markets are particularly competitive, including Boston, Massachusetts, the New York metropolitan area, London and Cambridge, England, where demand for personnel with these skills is extremely high and is likely to remain high. As a result, competition for qualified personnel is intense, particularly in the areas of general management, finance, information technology, engineering and science, and the process of hiring suitably qualified personnel is often lengthy and expensive, and may become more expensive in the future. If we are unable to hire and retain a sufficient number of qualified employees, our ability to conduct and expand our business could be seriously reduced.

***We may be unsuccessful in developing new products for existing markets.***

Our strategy includes developing new products to drive organic growth in our businesses. We may be unsuccessful developing new products that will be well received in existing markets. The products we develop may have less market demand than we anticipate or the demand may be at substantially lower prices than we anticipate. Our competitors may develop new products or technologies that diminish demand for our new products. Our customers may receive decreased funding levels, which may cause their demand for our products to decrease. Our efforts to develop new intellectual property and new products may be costly. Failure in our new product development program could have a material impact on our results of operation and our financial condition.

***We may be unsuccessful in launching new products or expanding product offerings in the field of regenerative medicine.***

We announced the launch of our InBreath bioreactor, which was our first product in the field of regenerative medicine. Since that time, we have developed additional bioreactor products and we intend to expand our portfolio of bioreactors in the field of regenerative medicine. We have also developed synthetic scaffold products for regenerative medicine. Scaffolds are artificial structures capable of supporting three-dimensional tissue formation. In regenerative medicine cells are implanted or seeded into scaffold. Scaffolds usually serve at least one of the following purposes: allow cell attachment and migration, deliver and retain cells and biochemical factors, enable diffusion of vital cell nutrients and expressed products, and exert certain mechanical and biological influences to modify the behaviour of the cell phase. In addition to developing bioreactors and synthetic scaffolds, we are also developing a stem cell therapy injector based on our market leading Harvard Apparatus research syringe pump technology. We intend to develop a series of products to address what we believe is a long-term growth opportunity in the field of regenerative medicine.

Although we believe the field of regenerative medicine presents long-term opportunities for us, we may be unsuccessful in identifying and pursuing such opportunities. We will be required to obtain regulatory approvals, including FDA and EU approvals, for our products in the field of regenerative medicine and there is no assurance that we will be able to successfully obtain such approvals on a timely basis or at all. In addition, obtaining regulatory approvals may require us to complete clinical trials necessary to support the approvals for our products and such trials will be expensive and can take a significant amount of time. Even if our clinical trials are completed as planned, we cannot be certain that their results will support our product claims or that the FDA, foreign competent authorities or notified bodies will agree with our conclusions regarding them. Even if our products in the field of regenerative medicine are cleared or approved by regulatory authorities, if we or our suppliers fail to comply with ongoing FDA or other foreign regulatory authority requirements, or if we experience unanticipated problems with our products, these products could be subject to restrictions or withdrawal from the market.

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We may be unsuccessful in introducing new products in the field of regenerative medicine, expanding current product offerings and commercializing existing or new technologies. In addition, there may be a lack of demand in the present or in the future for the products that we introduce in the field of regenerative medicine.

The current size and the anticipated size of the regenerative medicine market may be smaller than what we currently believe. In addition, the existence and size of the opportunities that we believe currently are, or may in the future be, available to us may not exist or develop. We may experience competition from many competitors, some of whom may have greater resources or better products or technologies than we do. Our customers may experience decreased demand for our products and research funding levels from endowments at our university customers may decrease. Finally, we will need to acquire, develop and protect our intellectual property, which may involve significant costs, and operate without infringing on the intellectual property of others. Any failure in our pursuit of opportunities in the field of regenerative medicine could have a material impact on our financial condition and results of operations.

***If our collaborators in the field of regenerative medicine do not devote sufficient time and resources to successfully carry out their duties or meet expected deadlines, we may not be able to advance our products in the field of regenerative medicine in a timely manner or at all.***

We are currently collaborating in the field of regenerative medicine with multiple academic researchers and clinicians at a variety of research and clinical institutions. Our success in the field of regenerative medicine depends in part on the performance of our collaborators. Some collaborators may not be successful in their research and clinical trials or may not perform their obligations in a timely fashion or in a manner satisfactory to us. Typically, we cannot control the amount of resources or time our collaborators may devote to our programs or potential products that may be developed in collaboration with us. Our collaborators frequently depend on outside sources of funding to conduct or complete research and development, such as grants or other awards. In addition, our academic collaborators may depend on graduate students, medical students, or research assistants to conduct certain work, and such individuals may not be fully trained or experienced in certain areas, or they may elect to discontinue their participation in a particular research program, creating an inability to complete ongoing research in a timely and efficient manner. As a result of these uncertainties, we are unable to control the precise timing and execution of any experiments that may be conducted.

We do not have formal agreements in place with most of our collaborators in the field of regenerative medicine, who retain the ability to pursue other research, product development or commercial opportunities that may be directly competitive with our programs. If these collaborators elect to prioritize or pursue other programs in lieu of ours, we may not be able to advance product development programs in an efficient or effective manner, if at all. If a collaborator is pursuing a competitive program and encounters unexpected financial or capability limitations, they may be motivated to reduce the priority placed on our programs or delay certain activities related to our programs. Any of these developments could harm or slow our product and technology development efforts.

In particular, in the field of regenerative medicine we depend upon Dr. Paolo Macchiarini, the surgeon who has led all of the clinical surgeries to date using our technology. Dr. Macchiarini s team developed the initial version of our InBreath airway bioreactor, which we have licensed from the inventors. We continue to collaborate with Dr. Macchiarini on grant proposals and product development. If Dr. Macchiarini were not available to continue to collaborate with us or perform surgeries it would materially slow development of our products. On September 27, 2012, Dr. Macchiarini was arrested in Italy for attempted fraud and extortion for allegedly attempting to persuade severely ill patients to choose private hospitals in other countries over less expensive Italian public hospitals. He was temporarily placed under house arrest and on October 15, 2012 was released from house arrest and is free to travel internationally and to perform surgeries. The case is ongoing. Dr. Macchiarini believes these charges are without merit and has, and intends to continue to, vigorously defend these charges. These allegations do not relate to any surgeries involving our products and have not prevented Dr. Macchiarini from making preparations for further transplant surgeries using our products at the Karolinska Hospital, or in the U.S. or Russia. If Dr. Macchiarini decides to terminate his collaboration with us, if the case described above consumes a significant amount of his time, or if the case prevents him from performing

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surgeries, our product development efforts could be adversely affected and it could cause harm to our reputation or business.

***Our competitors and potential competitors may develop products and technologies that are more effective or commercially attractive than our products.***

We expect to encounter increased competition from both established and development-stage companies that continually enter the market. We anticipate that these competitors will include:

- companies developing and marketing life sciences research tools,
- health care companies that manufacture laboratory-based tests and analyzers,
- diagnostic and pharmaceutical companies,
- analytical instrument companies,
- companies developing life science or drug discovery technologies, and
- companies developing regenerative medicine technologies.

Currently, our principal competition comes from established companies that provide products that perform many of the same functions for which we market our products. Our competitors may develop or market products that are more effective or commercially attractive than our current or future products. Many of our competitors have substantially greater financial, operational, marketing and technical resources than we do. Moreover, these competitors may offer broader product lines and tactical discounts, and may have greater name recognition. In addition, we may face competition from new entrants into the field. We may not have the financial resources, technical expertise or marketing, distribution or support capabilities to compete successfully in the future.

***Our products compete in markets that are subject to technological change, and therefore one or more of our products could be made obsolete by new technologies.***

Because the market for life science tools is characterized by technological change and frequent new product introductions, our product lines may be made obsolete unless we are able to continually improve existing products and develop new products. To meet the evolving needs of customers, we must continually enhance our current and planned products and develop and introduce new products. However, we may experience difficulties that may delay or prevent the successful development, introduction and marketing of new products or product enhancements. In addition, our product lines are based on complex technologies that are subject to change as new technologies are developed and introduced in the marketplace. We may have difficulty in keeping abreast of the changes affecting each of the different markets we serve or intend to serve. Our failure to develop and introduce products in a timely manner in response to changing technology, market demands or the requirements of our customers could cause our product sales to decline, and we could experience significant losses.

We offer and plan to offer a broad product line and have incurred and expect to continue to incur substantial expenses for development of new products and enhanced versions of our existing products. The speed of technological change in our market may prevent us from being able to successfully market some or all of our products for the length of time required to recover development costs. Failure to recover the development costs of one or more products or product lines could decrease our profitability or cause us to experience significant losses.

***Rising commodity and precious metals costs could adversely impact our profitability.***

Raw material commodities such as resins, and precious metal commodities such as platinum are subject to wide price variations. Increases in the costs and availability of these commodities and the costs of energy, transportation and other necessary services may adversely affect our profit

margins if we are unable to pass along any higher costs in the form of price increases or otherwise achieve cost efficiencies such as in manufacturing and distribution.

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***Our $20.0 million credit facility contains certain financial and negative covenants, the breach of which may adversely affect our financial condition.***

We have a $20.0 million revolving credit loan agreement with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. As of December 31, 2012 and 2011, we had borrowings of $13.0 million and $16.3 million, respectively, under the credit facility. The credit facility includes covenants relating to income, debt coverage and cash flow and minimum working capital requirements. The credit facility also contains limitations on our ability to incur additional indebtedness and requires lender approval for acquisitions funded with cash, promissory notes and/or other consideration in excess of $6.0 million and for acquisitions funded solely with equity in excess of $10.0 million. If we are not in compliance with certain of these covenants, in addition to other actions the creditor may require, the amounts drawn on the $20.0 million facility may become immediately due and payable. This immediate payment may negatively impact our financial condition.

***Failure to raise additional capital or generate the significant capital necessary to implement our acquisition strategy, finance the development of our Regenerative Medicine Device business, expand our operations and invest in new products could reduce our ability to compete and result in less revenue.***

We anticipate that our financial resources, which include available cash, cash generated from operations, and debt and equity capacity, will be sufficient to finance operations and capital expenditures for at least twelve months. However, this expectation is premised on the current operating plan, which may change as a result of many factors, including market acceptance of new products and future opportunities with collaborators. Consequently, we may need additional funding sooner than anticipated. Our inability to raise sufficient capital on favorable terms and on a timely basis (if at all) could seriously harm our business, product development, development of our RMD business and acquisition efforts.

If we raise additional funds through the sale of equity or convertible debt or equity-linked securities, existing percentages of ownership in our common stock will be reduced. In addition, these transactions may dilute the value of our outstanding common stock. We may issue securities that have rights, preferences and privileges senior to our common stock. If we raise additional funds through collaborations or licensing arrangements, we may relinquish rights to certain of our technologies or products, or grant licenses to third parties on terms that are unfavorable. In addition, our revolving credit loan agreement with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders, contains limitations on our ability to incur additional indebtedness and requires lender approval for acquisitions funded with cash, promissory notes and/or other consideration in excess of $6.0 million and for acquisitions funded solely with equity in excess of $10.0 million. If future financing is not available or is not available on acceptable terms, we may have to alter our operations or change our business strategy. We cannot assure you that the capital required to fund operations or our acquisition strategy will be available in the future.

***If GE Healthcare (formerly Amersham Biosciences) terminates its distribution agreements with us, fails to renew such agreements on favorable terms or fails to perform its obligations under the distribution agreements, it could impair the marketing and distribution efforts for some of our products and result in lost revenues.***

We have distribution agreements with GE Healthcare in two of our businesses. In April 2008, our Biochrom subsidiary entered into a new distribution agreement with GE Healthcare that expires December 31, 2013 if it is not extended by GE Healthcare for an additional one-year period. In November 2003, in connection with the acquisition of Hoefer from GE Healthcare, we entered into a separate distribution agreement with GE Healthcare for the distribution of the Hoefer products. This contract expires in September 30, 2013. We believe our relationship with GE Healthcare is good. However, we cannot guarantee that the distribution agreements will be renewed, that GE Healthcare will aggressively market our products in the future or that GE Healthcare will continue the partnership. If any of these events occurs, our marketing and distribution efforts for some of our products may be impaired and our revenues may be adversely impacted.

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For 2012, approximately 6% of our revenues were generated through our two distribution agreements with GE Healthcare.

We have little or no control over GE Healthcare s marketing and sales activities or the use of its resources. GE Healthcare may fail to purchase sufficient quantities of products from us or perform appropriate marketing and sales activities. The failure by GE Healthcare to perform these activities could materially adversely affect our business and growth prospects. In addition, following any termination of such agreements, our inability to enter into new agreements with GE Healthcare for product distribution could materially impede the growth of our business and our ability to generate sufficient revenue.

***If we are unable to effectively protect our intellectual property, third parties may use our technology, which would impair our ability to compete in our markets.***

Our continued success will depend in significant part on our ability to obtain and maintain meaningful patent protection for certain of our products throughout the world. Patent law relating to the scope of claims in the technology fields in which we operate is still evolving. The degree of future protection for our proprietary rights is uncertain. We also own numerous U.S. registered trademarks and trade names and have applications for the registration of trademarks and trade names pending. We rely on patents to protect a significant part of our intellectual property and to enhance our competitive position. However, our presently pending or future patent applications may not be accepted and patents might not be issued, and any patent previously issued to us may be challenged, invalidated, held unenforceable or circumvented. Furthermore, the claims in patents which have been issued or which may be issued to us in the future may not be sufficiently broad to prevent third parties from producing competing products similar to our products. In addition, the laws of various foreign countries in which we compete may not protect our intellectual property to the same extent, as do the laws of the United States. If we fail to obtain adequate patent protection for our proprietary technology, our ability to be commercially competitive could be materially impaired.

In addition to patent protection, we also rely on protection of trade secrets, know-how and confidential and proprietary information. To maintain the confidentiality of trade-secrets and proprietary information, we generally seek to enter into confidentiality agreements with our employees, consultants and strategic partners upon the commencement of a relationship. However, we may not be able to obtain these agreements in all circumstances in part due to local regulations. In the event of unauthorized use or disclosure of this information, these agreements, even if obtained, may not provide meaningful protection for our trade-secrets or other confidential information. In addition, adequate remedies may not exist in the event of unauthorized use or disclosure of this information. The loss or exposure of our trade secrets and other proprietary information would impair our competitive advantages and could have a material adverse effect on our operating results, financial condition and future growth prospects.

***The manufacture, sale and use of products and services may expose us to product liability claims for which we could have substantial liability.***

We face an inherent business risk of exposure to product liability claims if our products, services or product candidates, including without limitation, any of our life science research tools or our InBreath bioreactors , syringe pumps or synthetic scaffolds utilized now or in the future in relation to our Regenerative Medical Device division, are alleged or found to have caused injury, damage or loss. Such losses could include claims for liabilities relating to patients that suffer serious complications or death during or following transplants involving our Regenerative Medical Device division products. We may in the future be unable to obtain insurance with adequate levels of coverage for potential liability on acceptable terms or claims of this nature may be excluded from coverage under the terms of any insurance policy that we can obtain. If we are unable to obtain such insurance or the amounts of any claims successfully brought against us substantially exceed our coverage, then our business could be adversely impacted.

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***If we fail to maintain satisfactory compliance with the regulations of the United States Food and Drug Administration and other governmental agencies, we may be forced to recall products and cease their manufacture and distribution, and we could be subject to civil or criminal penalties.***

Our operations are subject to regulation by different state and federal government agencies in the United States and other countries. If we fail to comply with those regulations, we could be subject to fines, penalties, criminal prosecution or other sanctions. Some of the products we produce are subject to regulation by the United States Food and Drug Administration and similar foreign and domestic agencies. These regulations govern a wide variety of product activities, from design and development to labeling, manufacturing, promotion, sales, resales and distribution. If we fail to comply with those regulations or those of similar foreign and domestic agencies, we may have to recall products, cease their manufacture and distribution, and may be subject to fines or criminal prosecution.

***Our 2002 merger with Genomic Solutions may fail to qualify as a reorganization for federal income tax purposes, resulting in the recognition of taxable gain or loss in respect of our treatment of the merger as a taxable sale.***

Both we and Genomic Solutions intended the merger to qualify as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code of 1986, as amended. Although the Internal Revenue Service, or IRS, has not provided a ruling on the matter, Genomic Solutions obtained a legal opinion from its tax counsel that the merger constitutes a non-taxable reorganization for federal income tax purposes. This opinion does not bind the IRS or prevent the IRS from adopting a contrary position. If the merger fails to qualify as a non-taxable reorganization, the merger would be treated as a deemed taxable sale of assets by Genomic Solutions for an amount equal to the merger consideration received by Genomic Solutions stockholders plus any liabilities assumed by us. As successor to Genomic Solutions, we would be liable for any tax incurred by Genomic Solutions as a result of this deemed asset sale. If we were to be liable for any such tax, it could have a material adverse effect on our financial condition.

***We may be involved in lawsuits to protect or enforce our patents that would be expensive and time-consuming.***

In order to protect or enforce our patent rights, we may initiate patent litigation against third parties. We may also become subject to interference proceedings conducted in the patent and trademark offices of various countries to determine the priority of inventions. Several of our products are based on patents that are closely surrounded by patents held by competitors or potential competitors. As a result, we believe there is a greater likelihood of a patent dispute than would be expected if our patents were not closely surrounded by other patents. The defense and prosecution, if necessary, of intellectual property suits, interference proceedings and related legal and administrative proceedings would be costly and divert our technical and management personnel from their normal responsibilities. We may not prevail in any of these suits should they occur. An adverse determination of any litigation or defense proceedings could put our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of being rejected and no patents being issued.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. For example, during the course of this kind of litigation, there could be public announcements of the results of hearings, motions or other interim proceedings or developments in the litigation. Securities analysts or investors may perceive these announcements to be negative, which could cause the market price of our stock to decline.

***Our success will depend partly on our ability to operate without infringing on or misappropriating the intellectual property rights of others.***

We may be sued for infringing on the intellectual property rights of others, including the patent rights, trademarks and trade names of third parties. We have received correspondence from legal counsel to Nanofiber Solutions, Inc., or NFS, claiming that in developing our scaffold product and related intellectual property, we

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may have committed misappropriation, unauthorized use and disclosure of confidential information, and possible infringement of intellectual property rights of NFS. Intellectual property litigation is costly and the outcome is uncertain. If we do not prevail in any intellectual property litigation, in addition to any damages we might have to pay, we could be required to stop the infringing activity, or obtain a license to or design around the intellectual property in question. If we are unable to obtain a required license on acceptable terms, or are unable to design around any third party patent, we may be unable to sell some of our products and services, which could result in reduced revenue.

***Many of our current and potential customers are from the pharmaceutical and biotechnology industries and are subject to risks faced by those industries.***

We derive a substantial portion of our revenues from pharmaceutical and biotechnology companies. We expect that pharmaceutical and biotechnology companies will continue to be one of our major sources of revenues for the foreseeable future. As a result, we are subject to risks and uncertainties that affect the pharmaceutical and biotechnology industries, such as pricing pressures as third-party payers continue challenging the pricing of medical products and services, government regulation, ongoing consolidation and uncertainty of technological change, and to reductions and delays in research and development expenditures by companies in these industries.

In particular, the biotechnology industry is largely dependent on raising capital to fund its operations. If biotechnology companies that are our customers are unable to obtain the financing necessary to purchase our products, our business and results of operations could be materially adversely affected. As it relates to both the biotechnology and pharmaceutical industries, many companies have significant patents that have expired or are about to expire, which could result in reduced revenues for those companies. If pharmaceutical or biotechnology companies that are our customers suffer reduced revenues as a result of these patent expirations, they may be unable to purchase our products, and our business and results of operations could be materially adversely affected.

In addition, we are dependent, both directly and indirectly, upon general health care spending patterns, particularly in the research and development budgets of the pharmaceutical and biotechnology industries, as well as upon the financial condition and purchasing patterns of various governments and government agencies. Many of our customers, including universities, government research laboratories, private foundations and other institutions, obtain funding for the purchase of products from grants by governments or government agencies. A decrease in the level of governmental spending, such as the anticipated effects from sequestration on U.S. government spending, allocated to scientific and medical research could substantially reduce or even eliminate these grants, and could also have an adverse impact on our results of operations. If government funding necessary to purchase our products were to decrease, our business and results of operations could be materially adversely affected.

***Customer, vendor and employee uncertainty about the effects of any of our acquisitions could harm us.***

We and the customers of any company we acquire may, in response to the consummation of the acquisition, delay or defer purchasing decisions. Any delay or deferral in purchasing decisions by customers could adversely affect our business. Similarly, employees of acquired companies may experience uncertainty about their future role until or after we execute our post-acquisition strategies. This may adversely affect our ability to attract and retain key management, sales, marketing and technical personnel following an acquisition.

***Ethical concerns surrounding the use of our products and misunderstanding of the nature of our business could adversely affect our ability to develop and sell our existing products and new products.***

Some of our products may be used in areas of research and clinical usage involving cloning, cell-based technologies, including stem cells, human tissue and organ transplants, animal research and other techniques presently being explored in the life science or regenerative medicine industries. These techniques have drawn

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much negative attention recently in the public forum. Government authorities may regulate or prohibit any of these activities. Additionally, the public may disfavor or reject these activities.

***Our stock price has fluctuated in the past and could experience substantial declines in the future and, as a result, management s attention may be diverted from tasks that are more productive.***

The market price of our common stock has experienced significant fluctuations and may become volatile and could decline in the future, perhaps substantially, in response to various factors including:

- volatility of the financial markets,
- uncertainty regarding the prospects of the domestic and foreign economies,
- technological innovations by competitors or in competing technologies,
- revenues and operating results fluctuating or failing to meet the expectations of management, securities analysts, or investors in any quarter,
- developments relating to the proposed offering by HART or any related distribution or other action or market speculation regarding the proposed offering or any related distribution or other transaction,
- failure to achieve our desired tax treatment of the proposed offering by HART or any related distribution or other transaction,
- comments of securities analysts and mistakes by or misinterpretation of comments from analysts, downward revisions in securities analysts estimates or management guidance,
- investment banks and securities analysts becoming subject to lawsuits that may adversely affect the perception of the market,
- conditions or trends in the biotechnology and pharmaceutical industries,
- announcements of significant acquisitions or financings or changes in strategic partnerships,
- non-compliance with the internal control standards pursuant to the Sarbanes-Oxley Act of 2002, and
- a decrease in the demand for our common stock.

In addition, public stock markets have experienced extreme price and trading volatility. The stock market and the NASDAQ Global Market in general, and the biotechnology industry and small cap markets in particular, have experienced significant price and volume fluctuations that at times may have been unrelated or disproportionate to the operating performance of those companies. These broad market and industry factors may further harm the market price of our common stock, regardless of our operating performance. In the past, securities class action litigation

has often been instituted following periods of volatility in the market price of a company s securities. A securities class action suit against us could result in substantial costs, potential liabilities and the diversion of management s attention and resources.

***Provisions of Delaware law, of our charter and bylaws and our Shareholder Rights Plan may make a takeover more difficult, which could cause our stock price to decline.***

Provisions in our certificate of incorporation and bylaws and in the Delaware corporate law may make it difficult and expensive for a third party to pursue a tender offer, change in control or takeover attempt, which is opposed by management and the board of directors. Public stockholders who might desire to participate in such a transaction may not have an opportunity to do so. In February 2008, our Board of Directors adopted a Shareholder Rights Plan that could make it more difficult for a third party to acquire, or could discourage a third party from acquiring, the Company or a large block of our common stock. A third party that acquires 20% or more of our common stock (an Acquiring Person ) could suffer substantial dilution of its ownership interest under the terms of the Shareholder Rights Plan through the issuance of common stock to all shareholders other than the Acquiring Person. We also have a staggered board of directors that makes it difficult for stockholders to

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change the composition of the board of directors in any one year. These anti-takeover provisions could substantially impede the ability of public stockholders to change our management and board of directors. Such provisions may also limit the price that investors might be willing to pay for shares of our common stock in the future.

***An active trading market for our common stock may not be sustained.***

Although our common stock is quoted on the NASDAQ Global Market, an active trading market for the shares may not be sustained. This could negatively affect the price for our common stock, including investors ability to buy or sell our common stock and the listing thereof.

***Any issuance of preferred stock in the future may dilute the rights of our common stockholders.***

Our board of directors has the authority to issue up to 5,000,000 shares of preferred stock and to determine the price, privileges and other terms of these shares. The board of directors may exercise this authority without any further approval of stockholders. The rights of the holders of common stock may be adversely affected by the rights of future holders of preferred stock.

***Cash dividends will not likely be paid on our common stock.***

Currently, we intend to retain all of our earnings to finance the expansion and development of our business and do not anticipate paying any cash dividends to holders of our common stock in the near future. As a result, capital appreciation, if any, of our common stock will be a stockholder s sole source of gain for the near future.

**Item 1B.** ***Unresolved Staff Comments*.**

None.

**Item 2.** ***Properties.***

Our eleven principal facilities incorporate manufacturing, research and development, sales and marketing, and administration functions. Our facilities consist of:

- a leased 61,570 square foot facility in Holliston, Massachusetts, which includes our corporate headquarters,
- a leased 28,000 square foot facility in Cambridge, England,
- a leased 20,853 square foot facility in Barcelona, Spain,
- a leased 29,020 square foot facility in Richmond, California,
- a leased 17,436 square foot facility in South Plainfield, New Jersey,
- an owned 15,500 square foot facility in Edenbridge, England,

a leased 12,031 square foot facility in March-Hugstetten, Germany,

a leased 7,500 square foot facility in Hamden, Connecticut,

a leased 23,000 square foot facility in Whitehall, Pennsylvania,

a leased 3,000 square foot facility in Solna, Sweden, and

a leased 22,900 square foot facility in Nordhausen, Germany.

We also lease additional facilities for sales and administrative support in Les Ulis, France, St. Augustin, Germany and Montreal, Canada and warehouse space in Cambridge, England.

We believe our current facilities are adequate for our needs for the foreseeable future.

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**Item 3.** ***Legal Proceedings.***

On December 17, 2012, we received correspondence from legal counsel to Nanofiber Solutions, Inc., or NFS, claiming that in developing our HART synthetic trachea scaffold product and related intellectual property, we may have committed misappropriation, unauthorized use and disclosure of confidential information, and possible infringement of intellectual property rights of NFS. NFS s legal counsel has also threatened us with legal action, including seeking an injunction, if we are unable to respond in a satisfactory manner to NFS s claims. We believe that these claims are without merit, and we will vigorously seek to protect our rights regarding such claims. Until we are able to resolve this matter with NFS, we believe it is likely that NFS will continue to pursue this matter against us. Our legal counsel has corresponded with NFS s counsel since our receipt of the initial correspondence. While we are still investigating the matter, we do not believe that the matter will have a material adverse effect on our business, financial position or results of operations.

While we are not currently a party to any other legal proceedings, from time to time we may be a party to a variety of legal proceedings that arise in the normal course of our business.

**Item 4.** ***Mine Safety Disclosures***

Not Applicable.

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**PART II**

**Item 5.** ***Market for Registrant s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.***

**Price Range of Common Stock**

Our common stock has been quoted on the NASDAQ Global Market since our initial public offering on December 7, 2000, and currently trades under the symbol HBIO. The following table sets forth the range of the high and low sales prices per share of our common stock as reported on the NASDAQ Global Market for the quarterly periods indicated.

| **Fiscal Year Ended December 31, 2012** | **High** | **Low** |
|---|---|---|
| First Quarter | $ 4.40 | $ 3.65 |
| Second Quarter | $ 4.17 | $ 3.45 |
| Third Quarter | $ 4.63 | $ 3.58 |
| Fourth Quarter | $ 4.70 | $ 3.70 |

| **Fiscal Year Ended December 31, 2011** | **High** | **Low** |
|---|---|---|
| First Quarter | $ 6.26 | $ 4.00 |
| Second Quarter | $ 6.18 | $ 4.66 |
| Third Quarter | $ 6.04 | $ 3.82 |
| Fourth Quarter | $ 5.25 | $ 3.81 |

On March 8, 2013, the closing sale price of our common stock on the NASDAQ Global Market was $5.70 per share. There were 216 holders of record of our common stock as of March 8, 2013. We believe that the number of beneficial owners of our common stock at that date was substantially greater.

**Dividend Policy**

We have never declared or paid cash dividends on our common stock in the past and do not intend to pay cash dividends on our common stock in the foreseeable future. Any future determination to pay cash dividends will be at the discretion of our Board of Directors and will depend on our financial condition, results of operations, capital requirements and other factors our Board of Directors deems relevant.

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**Stockholder Return Performance Graph**

*This performance graph shall not be deemed filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the Exchange Act), or incorporated by reference into any filing of Harvard Bioscience under the Securities Act of 1933, as amended, or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.*

The following graph provides a comparison of the cumulative total stockholder return on the Company s common stock from December 31, 2007 to December 31, 2012 with the cumulative return of the Russell 2000 Index and the Nasdaq Biotechnology Index over the same period. The five-year cumulative return assumes an initial investment of $100 in the Company s common stock and in each index on December 31, 2012. The total return for the Company s common stock and the indices used assumes the reinvestment of all dividends.

**COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN***

Among Harvard Bioscience, Inc., the Russell 2000 Index,

and the NASDAQ Biotechnology Index

* $100 invested on 12/31/07 in stock or index, including reinvestment of dividends.

Fiscal year ending December 31.



| | 12/07 | 12/08 | 12/09 | 12/10 | 12/11 | 12/12 |
|---|---|---|---|---|---|---|
| **Harvard Bioscience, Inc.** | **100.00** | **57.86** | **77.95** | **89.08** | **84.50** | **95.63** |
| **Russell 2000** | **100.00** | **66.21** | **84.20** | **106.82** | **102.36** | **119.09** |
| **NASDAQ Biotechnology** | **100.00** | **93.40** | **103.19** | **113.89** | **129.12** | **163.33** |

*The stock price performance included in this graph is not necessarily indicative of future stock price performance.*

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**Item 6.** ***Selected Financial Data***

The financial data presented below have been derived from our audited consolidated financial statements. The selected historical financial data presented below should be read in conjunction with Item 7. Management s Discussion and Analysis of Financial Condition and Results of Operations and Item 8. Financial Statements and Supplementary Data. and with our previously filed Annual Reports on Form 10-K . The selected data in this section is not intended to replace the consolidated financial statements. The information presented below is not necessarily indicative of the results of our future operations.

| | For The Years Ended December 31, | | | | |
|---|---|---|---|---|---|
| | 2012 | 2011 | 2010 | 2009 | 2008 |
| | (in thousands, except per share data) | | | | |
| **Statement of Operations Data:** | | | | | |
| Revenues | $ 111,171 | $ 108,864 | $ 108,179 | $ 85,772 | $ 88,049 |
| Cost of product revenues | 58,753 | 58,604 | 56,372 | 44,089 | 45,893 |
| Gross profit | 52,418 | 50,260 | 51,807 | 41,683 | 42,156 |
| Operating expenses | 49,252 | 44,183 | 41,589 | 33,628 | 33,677 |
| Operating income | 3,166 | 6,077 | 10,218 | 8,055 | 8,479 |
| Other (expense) income, net | (938) | (1,535) | (655) | 1,757 | (829) |
| Income from continuing operations before income taxes | 2,228 | 4,542 | 9,563 | 9,812 | 7,650 |
| Income tax expense (benefit) | 696 | 730 | (9,452) | 2,673 | 2,240 |
| Income from continuing operations | 1,532 | 3,812 | 19,015 | 7,139 | 5,410 |
| Discontinued operations (1) | | | | | |
| Income (loss) from discontinued operations, net of tax | 838 | | | 94 | (457) |
| Loss on disposition of discontinued operations, net of tax | | | | | (3,280) |
| Total income (loss) from discontinued operations, net of tax | 838 | | | 94 | (3,737) |
| Net income | $ 2,370 | $ 3,812 | $ 19,015 | $ 7,233 | $ 1,673 |
| Income (loss) per share: | | | | | |
| Basic earnings per common share from continuing operations | $ 0.05 | $ 0.13 | $ 0.66 | $ 0.24 | $ 0.18 |
| Discontinued operations | 0.03 | | | 0.00 | (0.12) |
| Basic earnings per common share | $ 0.08 | $ 0.13 | $ 0.66 | $ 0.24 | $ 0.05 |
| Diluted earnings per common share from continuing operations | $ 0.05 | $ 0.13 | $ 0.65 | $ 0.24 | $ 0.17 |
| Discontinued operations | 0.03 | | | 0.00 | (0.12) |
| Diluted earnings per common share | $ 0.08 | $ 0.13 | $ 0.65 | $ 0.24 | $ 0.05 |
| Weighted average common shares: | | | | | |
| Basic | 28,799 | 28,451 | 28,967 | 29,649 | 30,882 |
| Diluted | 29,424 | 29,819 | 29,405 | 29,946 | 31,354 |

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| | As of December 31, | | | | |
|---|---|---|---|---|---|
| | 2012 | 2011 | 2010 | 2009 | 2008 |
| | | | (in thousands) | | |
| **Balance Sheet Data:** | | | | | |
| Cash and cash equivalents | $ 20,681 | $ 17,916 | $ 19,704 | $ 16,588 | $ 13,698 |
| Working capital | 49,071 | 48,004 | 47,270 | 35,941 | 32,249 |
| Total assets | 133,484 | 126,634 | 124,797 | 107,231 | 81,271 |
| Long-term debt, net of current portion | 12,950 | 16,300 | 18,009 | 13,308 | 59 |
| Stockholders equity | $ 104,213 | $ 95,499 | $ 90,248 | $ 75,257 | $ 66,718 |

(1) During the quarter ended September 30, 2005, we announced plans to divest our Capital Equipment Business segment and started reporting it as part of our discontinued operations.

In November 2007, we completed the sale of the assets of our Genomic Solutions Division and the stock of our Belgian subsidiary, MAIA Scientific, both of which were part of our Capital Equipment Business Segment, to Digilab, Inc. The purchase price paid by Digilab under the terms of the asset purchase agreement consisted of $1.0 million in cash plus additional consideration in the form of an earn-out based on 20% of the revenue generated by the acquired business as it was conducted by Digilab over a three-year period post-transaction. Earn-out amounts were evidenced by interest bearing promissory notes due on November 30, 2012. During the fourth quarter of 2007, we recorded a loss on this sale of $3.1 million. As at December 31, 2012, Digilab had delivered promissory notes of $4.6 million. The unpaid principal balance of the promissory notes bear an interest of LIBOR plus 1100 basis points per annum. To date we have recorded valuation allowances for 100% of the earn-out promissory notes as we have deemed their collectability as being uncertain.

On September 30, 2008, we completed the sale of assets of our Union Biometrica Division including its German subsidiary, Union Biometrica GmbH, representing at that time the remaining portion of our Capital Equipment Business Segment, to UBIO Acquisition Company. The purchase price paid by UBIO Acquisition Company included an earn-out based on the revenue generated by the acquired business over a five-year post-transaction period. Earn-out amounts are evidenced by interest-bearing promissory notes due on September 30, 2013 or at an earlier date based on certain triggering events. As at December 31, 2012, UBIO Acquisition Company had delivered earn-out promissory notes totaling $1.1 million. The unpaid principal balance of the promissory notes bear an interest of 12% per annum. Prior to the fourth quarter of 2012, we recorded valuation allowances for 100% of the earn-out promissory notes as we have deemed their collectability as being uncertain. During the fourth quarter of 2012, we determined that the realization was probable. Therefore we made a decision to reverse the valuation allowance and recognize the earn-out amount and the interest thereon of approximately $0.8 million (net of tax) in our financial statements.

**Item 7.** ***Management s Discussion and Analysis of Financial Condition and Results of Operations.***

**Forward-Looking Statements**

*The following section of this Annual Report on Form 10-K entitled Management s Discussion and Analysis of Financial Condition and Results of Operations contains statements that are not statements of historical fact and are forward-looking statements within the meaning of federal securities laws. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Factors that may cause our actual results to differ materially from those in the forward-looking statements include those factors described in Item 1A. Risk Factors beginning on page 14 of this Annual Report on Form 10-K. You should carefully review all of these factors, as well as the comprehensive discussion of forward-looking statements on page 1 of this Annual Report on Form 10-K.*

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**Overview**

Harvard Bioscience consists of a LSRT business and a RMD business.

Our strategy for the LSRT segment focuses on creating value through combining tuckunder acquisitions with organic growth and operational improvements.

In July 2011, we acquired the preclinical business unit of CMA Microdialysis AB. In February 2012, we acquired AHN Biotechnologie GmbH.

Our LSRT strategy is to have a broad range of highly specialized but relatively inexpensive products that have strong positions in niche markets in life science research. We believe that:

having a broad product offering reduces the risk of being dependent on a single technology;

having relatively inexpensive products reduces the volatility associated with expensive capital equipment; and

focusing on niche markets reduces head-to-head competition with the major instrument companies.

We seek to grow this range of products through a combination of organic growth driven by internal development of new products, direct marketing, distribution channel expansion and the acquisition of closely related products. We use acquisitions to expand our product offerings because we believe we can use our well-established brands and distribution channels to accelerate the growth of these acquired products. We also believe that our expertise in operational management frequently allows us to improve profitability at acquired companies.

In addition to driving growth in our core research markets, we have been investing to create new products to address what we believe is a long term growth opportunity in the emerging field of regenerative medicine. Regenerative medicine is using stem cells to repair damaged organs and to grow organs outside the body for transplant. The U.S. Department of Health and Human Services has projected that the U.S. market for regenerative medicine may be $100 billion in the coming years. The government s estimate appears to include the value of all regenerative medicine protocols and therapies, including potential cost savings versus current methodologies.

Our strategy is not to become a therapeutics company but instead to provide tools to researchers and clinicians in the field of regenerative medicine. These new tools currently fall into two main categories: bioreactors and synthetic scaffolds for growing tissue and organs outside the body; and injectors for stem cell therapy. These new tools we are creating are being built on our existing technologies such as our market leading Harvard Apparatus precision syringe pumps and market leading Hugo-Sachs isolated organ systems.

Our strategy in our RMD business is to (i) create devices in collaboration with leading surgeons, researchers and clinicians, (ii) build these devices using our existing technologies and brands in an effort to reduce the investment needed to get the devices to market, and (iii) develop devices with significant medical value to allow us to participate on a per-procedure basis.

Our first regenerative medicine tool, the InBreath hollow organ bioreactor, was used to perform the world s first human transplant of a regenerated bronchus. Dr. Paolo Macchiarini et al reported this success in The Lancet, a leading general medicine journal, in November 2008. We have licensed this product from Dr. Macchiarini s team, and worked to make it a commercial device. We believe that it is the world s first commercially available bioreactor that has been used to perform a human transplant of a regenerated organ. We believe it marks an important milestone in the development of the regenerative medicine field as the tools evolve from concepts to commercial quality products.

During the first half of 2010, one of our collaborators, Dr. Harald Ott at Massachusetts General Hospital ( MGH ) succeeded in regenerating a lung and subsequently transplanting it into a rat. In collaboration with Dr. Ott and MGH, we designed and developed a novel bioreactor, LB-2 Solid organ bioreactor, that was used to grow the lung. The work was published online in Nature Medicine in July 2010. The bioreactor used by Dr. Ott was a modified version of one of our market leading Hugo Sachs isolated organ systems.

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In June 2011, the InBreath bioreactor was used for the world s first successful transplantation of a synthetic tissue engineered windpipe. For the first time in history, a patient was given a new trachea made from a synthetic scaffold seeded with his own stem cells in a bioreactor. The cells were grown on the scaffold inside the bioreactor for two days before transplantation into the patient. Because the cells used to regenerate the trachea were the patient s own, there has been no rejection of the transplant, and the patient is not taking immunosuppressive drugs. The patient had been suffering from late stage trachea cancer, which before this surgery would have been inoperable, and is now alive and well twenty months after the surgery. The operation was performed at the Karolinska University Hospital in Huddinge, Stockholm, by Dr. Paolo Macchiarini of the Karolinska University Hospital and Karolinska Institutet, and colleagues. Dr. Macchiarini led an international team which included people who designed and built the nanocomposite trachea scaffold, and we produced a specifically designed bioreactor used to seed the scaffold with the patient s own stem cells. The success of this transplant surgery was noted in The Lancet on November 24, 2011.

In November 2011, a second patient was given a new trachea made from a synthetic scaffold seeded with his own stem cells in a bioreactor. The patient had been suffering from late stage trachea cancer. The patient was discharged from the hospital in January 2012. On March 5, 2012, this patient died. The official cause of death recorded on the death certificate was pneumonia secondary to trachea cancer. We know of no evidence that either the scaffold or the bioreactor played any part in the patient s death.

In June 2012, the InBreath bioreactors were used for the world s first and second successful laryngotracheal implants, using synthetic laryngotracheal scaffolds seeded with cells taken from the patients bone marrow. The surgeries took place at Krasnodar Regional Hospital in Krasnodar, Russia on June 19th and June 21st. Each bioreactor was loaded with a synthetic scaffold in the shape of the patient s original organ. The scaffolds were then seeded with the patient s own stem cells. Over the course of about two days, the bioreactor promoted proper cell seeding and development. Because the patients own stem cells were used, their bodies have accepted the transplants without the use of immunosuppressive drugs. The recipients of the implants are alive nine months after the surgeries. These surgeries are a part of a clinical trial funded under a $4.8 million grant provided by the Russian government to the Krasnodar Regional Hospital. The first transplant was filmed and that documentary is being broadcast on European television under the title of The Miracle of Krasnodar .

In addition to the Russian clinical trial, a European clinical trial in trachea cancer patients is expected to start in 2014. The European clinical trial is expected to enroll approximately 25 patients. This project is a consortium of European companies, hospitals and universities led by Dr. Macchiarini.

In February 2012, the US FDA approved the first trachea transplant surgery in the U.S. The surgery is expected to occur in early by mid 2013.

In addition to the bioreactors described above, we also have started the development of a clinical version of one of our market leading Harvard Apparatus research syringe pumps. The research version of this pump is called the PHD Ultra Nanomite stem cell therapy injection system. We anticipate that this pump will be used to inject cells into damaged tissue in cell therapy. We expect to submit this pump to the regulatory agencies this year for approval. In 2012 we established our own synthetic scaffold production initiative in our Holliston, Massachusetts facility.

In December 2012, our wholly owned subsidiary HART filed a registration statement on Form S-1 with the SEC for an IPO. Following the IPO, HART will own our RMD business, which develops life-saving medical devices in the field of regenerative medicine, including devices to be used by physicians for growing organs outside the body for transplant. Following the IPO, we will own more than 80% of HART s common stock. We intend to distribute our remaining interest in HART to our shareholders in a pro-rata, tax-free dividend approximately 120 days following the closing of the IPO. We have petitioned the IRS for a private letter ruling on the tax free nature of the proposed distribution. Receipt of such private letter ruling may be considered necessary for us to proceed with the HART IPO.

We believe that through execution of our strategy of organic growth, tuckunder acquisitions and operational improvements we will be able to strengthen our Company and position ourselves well as the economy recovers.

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While we expect the initiatives discussed above to positively impact our business, the success of these initiatives is subject to a number of factors described under the heading Item 1A. Risk Factors .

Generally, our management evaluates the financial performance of our operations before the effects of stock compensation expense, restructuring charges, certain one-time items and before the effects of purchase accounting and amortization of intangible assets related to our acquisitions. Our goal is to develop and sell products that improve life science research and regenerative medicine and as such, we monitor our operating metrics and when appropriate, effect organizational changes to leverage infrastructure and distribution channels. These changes may be effected as a result of various events, including acquisitions, the worldwide economy, general market conditions and personnel changes.

In the table below, we provide an overview of selected operating metrics.

| | 2012 | % of Revenue | 2011 | % of Revenue | 2010 | % of Revenue |
|---|---|---|---|---|---|---|
| | | | (in thousands) | | | |
| Total revenues | $ 111,171 | | $ 108,864 | | $ 108,179 | |
| Cost of product revenues | 58,753 | 52.8% | 58,604 | 53.8% | 56,372 | 52.1% |
| Sales and marketing expenses | 19,169 | 17.2% | 17,473 | 16.1% | 16,384 | 15.1% |
| General and administrative expenses | 19,700 | 17.7% | 18,063 | 16.6% | 17,674 | 16.3% |
| Research and development expenses | $ 7,321 | 6.6% | $ 5,434 | 5.0% | $ 4,669 | 4.3% |

*Revenues*. We generate revenues by selling apparatus, instruments, devices and consumables through our catalogs, our distributors, our direct sales force and our website. For products primarily priced under $10,000, we typically distribute a new, comprehensive catalog every one to three years, initially in a series of bulk mailings, first to our existing customers, followed by mailings to targeted markets of potential customers. Over the life of the catalog, distribution will also be made periodically to potential and existing customers through direct mail and trade shows and in response to e-mail and telephone inquiries. From time to time, we also distribute catalog supplements that promote selected areas of our catalog or new products to targeted subsets of our customer base. Future editions of our comprehensive catalog and our catalog supplements will be timed at least in part with the incidence of new product introductions. Our end user customers are research scientists at pharmaceutical and biotechnology companies, universities and government laboratories. Revenue from catalog sales in any period is influenced by the amount of time elapsed since the last mailing of the catalog, the number of catalogs mailed and the number of new items included in the catalog. We launched our latest comprehensive catalog in March 2010, with approximately 850 pages, 11,000 products and approximately 65,000 copies printed. Revenues from direct sales to end users represented approximately 57% and 58% of our revenues for the years ended December 31, 2012 and 2011, respectively.

Products sold under brand names of distributors, including GE Healthcare, are typically priced in the range of $5,000-$15,000. They are mainly scientific instruments like spectrophotometers and plate readers that analyze light to detect and quantify a wide range of molecular and cellular processes, or apparatus like gel electrophoresis units. We also use distributors for both our catalog products and our higher priced products, for sales in locations where we do not have subsidiaries or where we have distributors in place for acquired businesses. For the years ended December 31, 2012 and 2011, approximately 43% and 42%, respectively, of our revenues were derived from sales to distributors.

For the year ended December 31, 2012, approximately 67% of our revenues were derived from products we manufacture; approximately 10% were derived from complementary products we distribute in order to provide the researcher with a single source for all equipment needed to conduct a particular experiment and approximately 23% were derived from distributed products sold under our brand names. For the year ended December 31, 2011, approximately 62% of our revenues were derived from products we manufacture and approximately 13% were derived from complementary products we distribute in order to provide the researcher with a single source for all equipment needed to conduct a particular experiment and approximately 25% were derived from distributed products sold under our brand names.

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For the years ended December 31, 2012 and 2011, approximately 41% of our revenues were derived from sales made by our non-U.S. operations.

A large portion of our international sales during these periods consisted of sales to GE Healthcare, the distributor for our spectrophotometers and plate readers. GE Healthcare distributes these products to customers around the world, including to many customers in the United States, from its distribution center in Upsalla, Sweden. As a result, we believe our international sales would have been a lower percentage of our revenues if we had shipped our products directly to our end-users. Changes in the relative proportion of our revenue sources between catalog sales, direct sales and distribution sales are primarily the result of a different sales proportion of acquired companies.

*Cost of product revenues*. Cost of product revenues includes material, labor and manufacturing overhead costs, obsolescence charges, packaging costs, warranty costs, shipping costs and royalties. Our cost of product revenues may vary over time based on the mix of products sold. We sell products that we manufacture and products that we purchase from third parties. The products that we purchase from third parties have a higher cost of product revenues as a percent of revenue because the profit is effectively shared with the original manufacturer. We anticipate that our manufactured products will continue to have a lower cost of product revenues as a percentage of revenues as compared with the cost of non-manufactured products for the foreseeable future. Additionally, our cost of product revenues as a percent of product revenues will vary based on mix of direct to end user sales and distributor sales, mix by product line and mix by geography.

*Sales and marketing expenses*. Sales and marketing expense consists primarily of salaries and related expenses for personnel in sales, marketing and customer support functions. We also incur costs for travel, trade shows, demonstration equipment, public relations and marketing materials, consisting primarily of the printing and distribution of our catalogs, supplements and the maintenance of our websites. We may from time to time expand our marketing efforts by employing additional technical marketing specialists in an effort to increase sales of selected categories of products in our catalog. We may also from time to time expand our direct sales organizations in an effort to concentrate on key accounts or promote certain product lines.

*General and administrative expenses*. General and administrative expense consists primarily of salaries and other related costs for personnel in executive, finance, accounting, information technology and human relations functions. Other costs include professional fees for legal and accounting services, facility costs, investor relations, insurance and provision for doubtful accounts.

*Research and development expenses*. Research and development expense consists primarily of salaries and related expenses for personnel and spending to develop and enhance our products. Other research and development expense includes fees for consultants and outside service providers, and material costs for prototype and test units. We expense research and development costs as incurred. We believe that investment in product development is a competitive necessity and plan to continue to make these investments in order to realize the potential of new technologies that we develop, license or acquire for existing markets. Additionally, we are working to develop new products aimed at long term opportunities in the emerging field of regenerative medicine.

*Stock-based compensation expenses*. Stock-based compensation expense for the years ended December 31, 2012, 2011 and 2010 was $3.3 million, $2.9 million, and $2.8 million, respectively. The stock-based compensation expense was related to employee stock options, restricted stock units, and the employee stock purchase plan and was recorded as a component of cost of product revenues, sales and marketing expenses, general and administrative expenses, and research and development expenses.

**Results of Operations**

***Year Ended December 31, 2012 Compared to Year Ended December 31, 2011***

***Revenues.***

Revenues increased $2.3 million, or 2.1%, to $111.2 million for the year ended December 31, 2012 compared to $108.9 million for the same period in 2011. Our AHN and CMA acquisitions contributed

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approximately $3.4 million, or 3.1%, to the revenue increase for the year ended December 31, 2012. The effect of a stronger U.S. dollar decreased our revenues by $1.2 million, or 1.1%, compared with the same period in 2011. Adjusting for the effects of foreign currency and acquisitions, revenues increased $0.1 million, or 0.1%. Our organic revenue growth was negatively impacted by our Harvard Apparatus and Hoefer businesses. In Harvard Apparatus we experienced softer than expected academic and government research markets in both the U.S. and international markets. In Hoefer we experienced a decline in revenue from GE Healthcare ( GEHC ), which is Hoefer s largest customer.

***Cost of product revenues.***

Cost of product revenues increased $0.1 million, or 0.3%, to $58.8 million for the year ended December 31, 2012 compared with $58.6 million for the year ended December 31, 2011. The increase in cost of product revenues included $2.5 million, or 4.3%, attributable to our AHN and CMA acquisitions. A stronger U.S. dollar caused a $0.6 million, or 1.1%, favorable currency effect on cost of product revenues for the year ended December 31, 2012. Gross profit as a percentage of revenues increased to 47.2% for the year ended December 31, 2012 compared with 46.2% for the same period in 2011. The increase in gross profit as a percentage of revenues was primarily due to a more favorable sales mix.

***Sales and marketing expenses.***

Sales and marketing expenses increased $1.7 million, or 9.7%, to $19.2 million for the year ended December 31, 2012 compared with $17.5 million for the year ended December 31, 2011. In LSRT, sales and marketing expenses increased $1.4 million, or 8.4%, to $18.3 million, compared to $16.9 million for the year ended December 31, 2011, primarily due to $0.4 million, or 2.5%, of expenses related to our AHN and CMA acquisitions, and $1.1 million, or 6.8%, due to increased headcount at our Denville business. In RMD, sales and marketing expenses increased $0.3 million primarily due to an increase in business development efforts.

***General and administrative expenses.***

General and administrative expenses increased $1.6 million, or 9.1%, to $19.7 million for the year ended December 31, 2012 compared with $18.1 million for the year ended December 31, 2011. In LSRT, general and administrative expenses increased $0.2 million, or 1.1%, to $17.5 million, compared to $17.3 million for the year ended December 31, 2011. This was primarily due to a $0.7 million, or 3.9%, increase due to our AHN and CMA acquisitions, partially offset by a $0.4 million, or 2.1%, reduction related to various restructuring activities and a $0.1 million, or 0.9%, decrease due to the impact of a stronger U.S. dollar. In RMD, general and administrative expenses increased $1.5 million due to increased activity in our regenerative medicine device initiative.

***Research and development expenses.***

Research and development expenses increased $1.9 million, or 34.7%, to $7.3 million for the year ended December 31, 2012 compared with $5.4 million for the same period in 2011. In LSRT, research and development expenses increased $0.3 million, or 8.4%, to $4.0 million, compared to $3.7 million for the year ended December 31, 2011, due to higher expenses at our Harvard Apparatus businesses. In RMD, research and development expenses increased $1.6 million primarily due to increased activity in our stem cell therapy injector, scaffold and bioreactor development initiatives.

***Amortization of intangible assets.***

Amortization of intangible asset expenses was $2.8 million for the years ended December 31, 2012 compared with $2.7 million for the same period in 2011 and includes amortization expense of intangible assets related to our acquisitions.

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***Restructuring.***

During 2012, we initiated a plan to reduce operating expenses at Panlab s.l., our Harvard Apparatus Spain subsidiary. We recorded restructuring charges of approximately $0.3 million representing severance payments.

During the quarter ended September 30, 2011, we initiated a plan to relocate our Hoefer subsidiary s San Francisco, California facility as part of a business improvement initiative. We also developed a plan to improve operating margins at our Coulbourn Instruments subsidiary. We recorded restructuring charges of approximately $0.5 million, which included $0.3 million in fixed asset write offs, $0.1 million in severance payments and $0.1 million in other expenses.

***Other (expense) income, net.***

Other expense and income, net, was $0.9 million expense and $1.5 million expense for the year ended December 31, 2012 and 2011, respectively. Net interest expense was $0.5 million for the year ended December 31, 2012 compared to net interest expense of $0.7 million for the year ended December 31, 2011. The decrease in net interest expense was primarily due to lower average debt balances in 2012 compared to the prior year. Other expense and income, net, for the year ended December 31, 2012 and 2011, also included $0.3 million and $0.7 million, respectively, of primarily acquisition related expenses.

***Income taxes.***

Income taxes from continuing operations was approximately $0.7 million expense for the years ended December 31, 2012 and 2011. The effective income tax rate for continuing operations was 31.2% expense for the year ended December 31, 2012, compared with 16.7% expense for the same period in 2011. The difference between our effective tax rate and the U.S. statutory tax rate for the year ended December 31, 2012 was principally attributable to foreign tax rate differential and research and development tax credits partially offset by disallowed acquisition related costs and stock-based compensation expense and an increase in valuation allowance related to foreign tax credits. The difference between our effective tax rate and the U.S. statutory tax rate for the year ended December 31, 2011 was principally attributable to the reversal of a previously uncertain tax liability of $0.5 million and the associated accrued interest in the first quarter of 2011, foreign tax rate differential and increased research and development tax credits.

***Discontinued Operations.***

In September 2008, we completed the sale of assets of our Union Biometrica Division including our German subsidiary, Union Biometrica GmbH, representing at that time the remaining portion of our Capital Equipment Business Segment, to UBIO Acquisition Company. Any earn-out amounts are evidenced by interest-bearing promissory notes due on September 30, 2013 or at an earlier date based on certain triggering events. Prior to the fourth quarter of 2012, we recorded valuation allowances for 100% of the earn-out promissory notes as we have deemed their collectability as being uncertain. During the fourth quarter of 2012, we determined that the realization was probable. Therefore we made a decision to reverse the valuation allowance and recognize the earn-out amount and the interest thereon of approximately $0.8 million, net of tax.

***Year Ended December 31, 2011 Compared to Year Ended December 31, 2010***

***Revenues.***

Revenues increased $0.7 million, or 0.6%, to $108.9 million for the year ended December 31, 2011 compared to $108.2 million for the same period in 2010. Our Coulbourn Instruments and CMA Microdialysis acquisitions contributed approximately $3.2 million, or 2.9%, to the revenues for the year ended December 31, 2011. The effect of a weakened U.S. dollar increased our revenues by $1.6 million, or 1.5%, compared with the same period in 2010. Adjusting for the effects of foreign currency and acquisitions, revenues were down $4.1 million, or 3.8%.

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In our Biochrom business, sales to GE HealthCare decreased by $4.1 million, which affected our global year-to-year organic revenue comparison by negative 3.8%. Most of the decrease was due to GE HealthCare s acceleration of orders of our Nanovue microvolume spectrophotometer product during 2010 to secure an exclusive right to that product s technology. As a result, GE HeathCare ordered the Nanovue product at very low rates for most of 2011. In our Hoefer business, sales to GE HealthCare were down by $0.8 million, which accounted for an additional 0.7% organic decline. This was partially offset by an organic revenue increase in our Denville group.

***Cost of product revenues.***

Cost of product revenues increased $2.2 million, or 4.0%, to $58.6 million for the year ended December 31, 2011 compared with $56.4 million for the year ended December 31, 2010. The increase in cost of product revenues included $1.7 million, or 3.0%, attributable to our Coulbourn Instruments and CMA Microdialysis acquisitions. A weakened U.S. dollar caused a $0.8 million, or 1.5%, unfavorable currency effect on cost of product revenues for the year ended December 31, 2011. Gross profit as a percentage of revenues decreased to 46.2% for the year ended December 31, 2011 compared with 47.9% for the same period in 2010. The decrease in gross profit as a percentage of revenues was primarily due to a less favorable sales mix.

***Sales and marketing expenses.***

Sales and marketing expenses increased $1.1 million, or 6.6%, to $17.5 million for the year ended December 31, 2011 compared with $16.4 million for the year ended December 31, 2010. In LSRT, sales and marketing expenses increased $0.8 million, or 4.7%, to $16.9 million, compared to $16.2 million for the year ended December 31, 2010 primarily due to $0.5 million, or 3.2%, of expenses related to our Coulbourn Instruments and CMA Microdialysis acquisitions, and $0.2 million, or 1.2%, due to the impact of a weaker U.S. dollar compared to the same period in 2010. In RMD, sales and marketing expenses increased $0.3 million primarily due to an increase in business development efforts.

***General and administrative expenses.***

General and administrative expenses increased $0.4 million, or 2.2%, to $18.1 million for the year ended December 31, 2011 compared with $17.7 million for the year ended December 31, 2010. In LSRT, general and administrative expenses decreased $0.1 million, or 0.7%, to $17.3 million, compared to $17.4 million for the year ended December 31, 2010 due to a reduction in bonus expense of $1.3 million partially offset by $0.6 million, or 3.7%, increase due to our Coulbourn Instruments and CMA Microdialysis acquisitions, a $0.2 million, or 0.9%, increase due to the impact of a weaker U.S. dollar compared to the same period in 2010, and a $0.4 million, or 2.3% increase in other general and administrative areas combined. In RMD, general and administrative expenses increased $0.5 million due to increased activity in our RMD initiative.

***Research and development expenses.***

Research and development expenses increased $0.8 million, or 16.4%, to $5.4 million for the year ended December 31, 2011 compared with $4.7 million for the same period in 2010. In LSRT, the research and development expenses decreased $0.5 million, or 12.5%, to $3.7 million, compared to $4.3 million for the year ended December 31, 2010 due to lower expenses of $0.6 million at our Biochrom and Harvard Apparatus businesses partly offset by a $0.1 million, or 3.4%, increase due to our Coulbourn Instruments and CMA Microdialysis acquisitions. In RMD, research and development expenses increased $1.3 million primarily due to increased activity in our stem cell therapy injector and bioreactor development initiatives.

***Restructuring.***

During the quarter ended September 30, 2011, we initiated a plan to relocate our Hoefer subsidiary s San Francisco, California facility as part of a business improvement initiative. We also developed a plan to improve operating margins at our Coulbourn Instruments subsidiary. We recorded restructuring charges of approximately $0.5 million, which included $0.3 million in fixed asset write offs, $0.1 million in severance payments and $0.1 million in other expenses.

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During the quarter ended September 30, 2010, we developed a plan to streamline our operations at Panlab, our Harvard Apparatus business in Spain. The plan included workforce reduction in all functions of the organization. During the third quarter of 2010, we recorded restructuring expenses of approximately $0.3 million, representing severance payments to employees. No charges have been incurred beyond the third quarter of 2010.

During the quarter ended December 31, 2010, we developed a plan to reduce operating expenses at our Biochrom U.K. subsidiary. During the fourth quarter of 2010, we recorded restructuring expenses of approximately $0.3 million. The charges were comprised of $0.1 million in severance payments, $0.1 million in inventory impairment charges (included in cost of product revenues), and $0.1 million in various other costs.

***Amortization of intangible assets.***

Amortization of intangible asset expenses increased $0.4 million, or 16.2%, to $2.7 million for the year ended December 31, 2011 compared with $2.4 million for the same period in 2010. The year-to-year increase in the amortization expense was primarily due to the acquisition of Coulbourn Instruments in August 2010 and CMA Microdialysis in July 2011.

***Other (expense) income, net.***

Other expense and income, net, was $1.5 million expense and $0.7 million expense for the year ended December 31, 2011 and 2010, respectively. Net interest expense was $0.7 million for the year ended December 31, 2011 compared to net interest expense of $0.6 million for the year ended December 31, 2010. The increase in net interest expense was primarily due to higher average debt balances in 2011 compared to the prior year. Other expense and income, net, for the year ended December 31, 2010 also included a $0.4 million gain from adjustment of the contingent consideration related to our Denville Scientific acquisition and foreign exchange losses of $0.1 million. Other expense, net, for the year ended December 31, 2011 and 2010, also included $0.7 million and $0.3 million, respectively, of acquisition related expenses.

***Income taxes.***

Income tax expense (benefit) from continuing operations was approximately $0.7 million expense and $9.5 million benefit for the years ended December 31, 2011 and 2010, respectively. The effective income tax rate for continuing operations was 16.1% expense for the year ended December 31, 2011, compared with 98.8% benefit for the same period in 2010. The difference between our effective tax rate and the U.S. statutory tax rate for 2011 is principally attributable to the reversal of the uncertain tax liability and the related accrued interest due to the expiration of statute of limitations, foreign tax differential, and increased research and development tax credits. The difference between our effective tax rate and the U.S. statutory tax rate for 2010 is principally attributable to the changes in our valuation allowance, foreign tax differential, and increased research and development tax credits. The change in the valuation allowance included an $11.3 million benefit from the reversal of valuation allowances on certain deferred income tax assets during the third quarter of 2010. This conclusion was based, in part, on our achieving sustained profitability and projections of positive future earnings in the U.S.

***Liquidity and Capital Resources***

Historically, we have financed our business through cash provided by operating activities, the issuance of common stock and preferred stock, and bank borrowings. Our liquidity requirements have arisen primarily from investing activities, including funding of acquisitions, and other capital expenditures.

In our consolidated statements of cash flows, we have elected to combine the cash flows from both continuing and discontinued operations within each category, as allowed by FASB ASC 230 *Statement of Cash Flows* . Unless specifically noted otherwise, our discussion of our cash flows below refers to combined cash flows from both continuing and discontinued operations.

We ended 2012 with cash and cash equivalents of $20.7 million compared to $17.9 million at December 31, 2011. As of December 31, 2012 and 2011, we had $13.0 million and $16.3 million, respectively, of borrowings outstanding under our credit facility. Total cash and cash equivalents, net of debt was $7.7 million and $1.6 million at December 31, 2012 and 2011, respectively.

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As of December 31, 2012 and 2011, cash and cash equivalents held by our foreign subsidiaries was $19.2 million and $15.9 million, respectively. These funds are not available for domestic operations unless the funds are repatriated. If we planned to or did repatriate these funds, then U.S. federal and state income taxes would have to be recorded on such amounts. We currently have no plans and do not intend to repatriate any of our undistributed foreign earnings. These balances are considered permanently reinvested and will be used for foreign items including foreign acquisitions, capital investments and operations. It is impracticable to estimate the total tax liability, if any, which would be created by the future distribution of these earnings. In July 2011, we acquired the assets of CMA, a Swedish manufacturer, and utilized approximately $4.4 million of our foreign cash on hand. Additionally, in February 2012, we acquired all issued and outstanding shares of AHN Biotechnologie GmbH, a German manufacturer, and utilized approximately $2.0 million of our foreign cash on hand. In 2012, we used approximately $0.7 million additional foreign cash on hand for capital improvements at this new subsidiary. In 2013, we plan to use approximately $1.3 million additional foreign cash on hand for capital improvements at this new subsidiary.

**Overview of Cash Flows for the years ended December 31,**

| | 2012 | 2011 | 2010 |
|---|---|---|---|
| | | (in thousands) | |
| Cash flows from operations: | | | |
| Net income | $ 2,370 | $ 3,812 | $ 19,015 |
| Changes in assets and liabilities | 256 | (3,854) | (1,237) |
| Other adjustments to operating cash flows | 5,436 | 6,690 | (5,485) |
| Net cash provided by operating activities | 8,062 | 6,648 | 12,293 |
| Investing activities: | | | |
| Acquisitions, net of cash acquired | (2,878) | (5,465) | (7,115) |
| Other investing activities | (1,798) | (1,733) | (1,231) |
| Net cash used in investing activities | (4,676) | (7,198) | (8,346) |
| Financing activities: | | | |
| Net (repayments) proceeds from debt | (3,350) | (1,708) | 4,687 |
| Other financing activities | 2,287 | 567 | (4,718) |
| Net cash used in financing activities | (1,063) | (1,141) | (31) |
| Effect of exchange rate changes on cash | 442 | (97) | (800) |
| Increase (decrease) in cash and cash equivalents | $ 2,765 | $ (1,788) | $ 3,116 |

Our operating activities generated cash of $8.1 million for the year ended December 31, 2012, $ 6.6 million for the year ended December 31, 2011 and $12.3 million for the year ended December 31, 2010. The increase in the cash flow from operations in 2012 compared to 2011 was primarily due to changes to working capital year to year. The decrease in the cash flow from operations in 2011 compared to 2010 was primarily due to lower net income because of lower shipments of the Nanovue spectrophotometer product and the softness in the academic and government research spending in the U.S., and changes in working capital balances year to year.

Our investing activities used cash of $4.7 million in the year ended December 31, 2012. Investing activities during 2012, 2011 and 2010 included acquisitions, purchases of property, plant and equipment and expenditures for our catalogs. In February 2012, we acquired AHN for approximately $2.0 million. In May 2012, we acquired Modular SFC for approximately $0.5 million. In July 2011, we acquired CMA Microdialysis for approximately $5.2 million. These acquisitions were funded from our existing cash balances. In August 2010, we acquired Coulbourn Instruments for approximately $4.6 million. In December 2010, we signed a license agreement with Cellectis that granted us the worldwide exclusive right to manufacture and sell, for research use, the full line of Cyto Pulse electroporation-based instruments. Pursuant to the terms of the agreement, we paid $1.0 million in December 2010 with the remaining $0.3 million paid in 2011. These acquisitions were funded from our existing cash balances and borrowings under our credit facility. During 2009, we acquired Denville Scientific for

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approximately $22.3 million. The Denville purchase agreement required us to make the acquisition in three cash payments. During the second quarter of 2010 we made the final payment of approximately $1.5 million. All of these payments were included in Acquisitions, net of cash acquired under investing activities. During 2012, catalog costs were $0.1 million. We spent $1.8 million during 2012 on capital expenditures and expect to make approximately $3.0 million of capital expenditures during 2013. During 2011, catalog costs were $0.3 million. We spent $1.5 million during 2011 on capital expenditures. During 2010, catalog costs were $0.4 million. We spent $0.8 million during 2010 on capital expenditures.

Our financing activities have historically consisted of borrowings and repayments under a revolving credit facility, long-term debt, the issuance of preferred stock and common stock, including the common stock issued in our initial public offering, and repurchases of our common stock under our stock repurchase program. During the year ended December 31, 2012, financing activities used cash of $1.1 million. We repaid our debt by $3.4 million net of proceeds, and ended the year with $13.0 million of borrowings under our credit facility. We received $2.3 million in proceeds from the exercise of stock options and employee stock purchase plan. During the year ended December 31, 2011, financing activities used cash of $1.1 million. We repaid our debt by $1.7 million net of proceeds, and ended the year with $16.3 million of borrowings under our credit facility. We received $0.6 million in proceeds from the exercise of stock options and employee stock plan purchases. During the year ended December 31, 2010, financing activities used cash of $31,000. We increased our debt by $4.7 million net of repayments, and ended the year with $18.0 million of borrowings under our credit facility. The increase in the borrowings under our credit facility related to our acquisition of Coulbourn Instruments in August 2010, final payment of Denville Scientific subsidiary acquisition, and our stock repurchase activity. During 2010, we repurchased in the open market approximately 1.4 million shares of our common stock at a cost of $5.0 million, including commissions, and we received $0.3 million in proceeds from the exercise of stock options and employee stock plan purchases.

*Borrowing Arrangements*

On August 7, 2009, we entered into an amended and restated $20.0 million revolving credit loan agreement with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. On September 30, 2011, we entered into the First Amendment to the Amended and Restated Revolving Credit Loan Agreement (the First Amendment ) with Bank of America as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The First Amendment extended the maturity date of our credit facility to August 7, 2013 and reduced the interest rate to the London Interbank Offered Rate plus 3.0%. On October 4, 2012, we entered into the Second Amendment to the Amended and Restated Revolving Credit Loan Agreement (the Second Amendment ) with Bank of America as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The Second Amendment extends the maturity date of our credit facility to August 7, 2014 with no changes to other terms. At December 31, 2012, the interest rate for the facility was 3.21%. The amended and restated facility includes covenants relating to income, debt coverage and cash flow, as well as minimum working capital requirements. The credit facility also contains limitations on our ability to incur additional indebtedness and requires lender approval for acquisitions funded with cash, promissory notes and/or other consideration in excess of $6.0 million and for acquisitions funded solely with equity in excess of $10.0 million. As of December 31, 2012, we were in compliance with all financial covenants contained in the credit facility; we were not subject to any borrowing restrictions under the financial covenants and had available borrowing capacity under our revolving credit facility of $7.0 million.

Our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement that involves risks and uncertainties, and actual results could vary as a result of a number of factors. Based on our current operations and current operating plans, we expect that our available cash, cash generated from current operations and debt capacity will be sufficient to finance current operations and capital expenditures for 12 months and beyond. This may involve incurring additional debt or raising equity capital for this business. Additional capital raising activities will dilute the ownership interests of existing stockholders to the extent we raise capital by issuing equity securities and we cannot assure you that we will be successful in raising additional capital on favorable terms or at all.

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In December 2012, our wholly owned subsidiary HART filed a registration statement on Form S-1 with the SEC for an IPO. Following the IPO, HART will own our RMD business. Following the IPO, we will own more than 80% of HART s common stock. We intend to distribute our remaining interest in HART to our shareholders in a pro-rata, tax-free dividend approximately 120 days following the closing of the IPO. We have petitioned the IRS for a private letter ruling on the tax free nature of the proposed distribution. Receipt of such a private letter ruling may be considered necessary for us to proceed with the HART IPO.

**Off-Balance Sheet Arrangements**

We generally do not use special purpose entities or other off-balance sheet financing arrangements. Generally, we have not used foreign exchange contracts to hedge our foreign currency exposures.

**Contractual Obligations**

The following schedule represents our contractual obligations for our continuing operations, excluding interest, as of December 31, 2012.

| | Total | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 and Beyond |
|---|---|---|---|---|---|---|---|
| | | | (in thousands) | | | | |
| Bank credit facility and notes payable | $ 12,950 | $ | $ 12,950 | $ | $ | $ | $ |
| Operating leases | 4,480 | 1,104 | 1,062 | 934 | 708 | 443 | 229 |
| Total | $ 17,430 | $ 1,104 | $ 14,012 | $ 934 | $ 708 | $ 443 | $ 229 |

We have a liability at December 31, 2012 and 2011 of $0.2 million for uncertain tax positions taken in an income tax return. We do not know the ultimate resolution of these uncertain tax positions and as such, does not know the ultimate timing of payments related to this liability. Accordingly, this amount is not included in the above table.

We have an underfunded pension liability of $5.9 million and $4.9 million for the years ended December 31, 2012 and 2011, respectively, which is recognized as part of the Other long term liabilities line item in our consolidated balance sheets. Since we do not know the ultimate timing of payments related to this liability, this amount has not been included in the above table.

**Critical Accounting Policies**

We believe that our critical accounting policies are as follows:

- revenue recognition;
- accounting for income taxes;
- inventory;
- valuation of identifiable intangible assets in business combinations;
- valuation of long-lived and intangible assets and goodwill; and

stock-based compensation.

*Revenue recognition*. We follow the provisions of FASB ASC 605, *Revenue Recognition* . We recognize revenue of products when persuasive evidence of a sales arrangement exists, the price to the buyer is fixed or determinable, delivery has occurred, and collectibility of the sales price is reasonably assured. Sales of some of our products include provisions to provide additional services such as installation and training. Revenues on these products are recognized when the additional services have been performed. Service agreements on our equipment are typically sold separately from the sale of the equipment. Revenues on these service agreements are recognized ratably over the life of the agreement, typically one year, in accordance with the provisions of FASB ASC 605-20, *Revenue Recognition Services* .

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We account for shipping and handling fees and costs in accordance with the provisions of FASB ASC 605-45-45, *Revenue Recognition Principal Agent Considerations*, which requires all amounts charged to customers for shipping and handling to be classified as revenues. Our costs incurred related to shipping and handling are classified as cost of product revenues. Warranties and product returns are estimated and accrued for at the time sales are recorded. We have no obligations to customers after the date products are shipped or installed, if applicable, other than pursuant to warranty obligations and service or maintenance contracts. We provide for the estimated amount of future returns upon shipment of products or installation, if applicable, based on historical experience. Historically, product returns and warranty costs have not been significant, and they have been within our expectations and the provisions established, however, there is no assurance that we will continue to experience the same return rates and warranty repair costs that we have in the past. Any significant increase in product return rates or a significant increase in the cost to repair our products could have a material adverse impact on our operating results for the period or periods in which such returns or increased costs materialize.

We make estimates evaluating our allowance for doubtful accounts. On an ongoing basis, we monitor collections and payments from our customers and maintain a provision for estimated credit losses based upon our historical experience and any specific customer collection issues that we have identified. Historically, such credit losses have not been significant, and they have been within our expectations and the provisions established, however, there is no assurance that we will continue to experience the same credit loss rates that we have in the past. A significant change in the liquidity or financial position of our customers could have a material adverse impact on the collectibility of our accounts receivable and our future operating results.

*Accounting for income taxes*. We determine our annual income tax provision in each of the jurisdictions in which we operate. This involves determining our current and deferred income tax expense that reflects accounting for differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. The future tax consequences attributable to these differences result in deferred tax assets and liabilities, which are included in our consolidated balance sheets. We assess the recoverability of the deferred tax assets by considering whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. To the extent we believe that recovery does not meet this more likely than not standard as required in FASB ASC 740, *Income Taxes*, we must establish a valuation allowance.

Management s judgment and estimates are required in determining our income tax provision, deferred tax assets and liabilities and any valuation allowance recorded against deferred tax assets. We review the recoverability of deferred tax assets during each reporting period by reviewing estimates of future taxable income, future reversals of existing taxable temporary differences, and tax planning strategies that would, if necessary, be implemented to realize the benefit of a deferred tax asset before expiration.

During the year ended December 31, 2010, we concluded that it was more likely than not that a majority of our U.S. deferred tax assets will be realized through future taxable income. This conclusion was based, in part, on our achieving sustained profitability and projections of positive future earnings in the U.S. Therefore, we released a significant portion of the valuation allowances related to these deferred tax assets. The release of the above mentioned valuation allowances resulted in an income tax benefit of $11.3 million during the year ended December 31, 2010. At December 31, 2012, the remaining valuation allowance of $1.3 million related to deferred tax assets in certain foreign and state jurisdictions.

We assess tax positions taken on tax returns, including recognition of potential interest and penalties, in accordance with the recognition thresholds and measurement attributes outlined in FASB ASC 740. Interest and penalties recognized, if any, would be classified as a component of income tax expense.

*Inventory* . We value our inventory at the lower of the actual cost to purchase (first-in, first-out method) and/or manufacture the inventory or the current estimated market value of the inventory. We regularly review inventory quantities on hand and record a provision to write down excess and obsolete inventory to its estimated net realizable value if less than cost, based primarily on its estimated forecast of product demand. Since forecasted product demand quite often is a function of previous and current demand, a significant decrease in demand could result in an increase in the charges for excess inventory quantities on hand. In addition, our industry is subject to technological change and new product development, and technological advances could

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result in an increase in the amount of obsolete inventory quantities on hand. Therefore, any significant unanticipated changes in demand or technological developments could have a significant adverse impact on the value of our inventory and our reported operating results.

*Valuation of identifiable intangible assets acquired in business combinations*. Identifiable intangible assets consist primarily of customer relationships, trademarks, brand names and acquired technology. Amounts assigned to such identifiable intangible assets are primarily based on independent appraisals using established valuation techniques and management estimates. The value assigned to trademarks was determined by estimating the royalty income that would be negotiated at an arm s-length transaction if the asset were licensed from a third party. A discount factor, ranging from 13% to 40%, which represents both the business and financial risks of such investments, was used to determine the present value of the future streams of income attributable to trademarks. The specific approach used to value trademarks was the Relief from Royalty ( RFR ) method. The RFR method assumes that an intangible asset is valuable because the owner of the asset avoids the cost of licensing that asset. The royalty savings are then calculated by multiplying a royalty rate times a determined royalty base, i.e., the applicable level of future revenues. In determining an appropriate royalty rate, a sample of guideline, arm s length royalty and licensing agreements are analyzed. In determining the royalty base, forecasts are used based on management s judgments of expected conditions and expected courses of actions. The value assigned to acquired technology was determined by using a discounted cash flow model, which measures what a buyer would be willing to pay currently for the future cash stream potential of existing technology. The specific method used to value the technologies involved estimating future cash flows to be derived as a direct result of those technologies, and discounting those future streams to their present value. The discount factors used, ranging from 13% to 40%, reflect the business and financial risks of an investment in technologies. Forecasts of future cash flows are based on management s judgment of expected conditions and expected courses of action.

*Valuation of long-lived and intangible assets*. In accordance with the provisions of FASB ASC 360, *Property, Plant and Equipment* , we assess the value of identifiable intangibles with finite lives and long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors we consider important which could trigger an impairment review include the following: significant underperformance relative to expected historical or projected future operating results; significant changes in the manner of our use of the acquired assets or the strategy for our overall business; significant negative industry or economic trends; significant changes in who our competitors are and what they do; significant changes in our relationship with GE Healthcare; significant decline in our stock price for a sustained period; and our market capitalization relative to net book value.

If we were to determine that the value of long-lived assets and identifiable intangible assets with finite lives was not recoverable based on the existence of one or more of the aforementioned factors, then the recoverability of those assets to be held and used would be measured by a comparison of the carrying amount of those assets to undiscounted future net cash flows before tax effects expected to be generated by those assets. If such assets are considered to be impaired, the impairment to be recognized would be measured by the amount by which the carrying value of the assets exceeds the fair value of the assets.

*Goodwill and Other Intangible Assets* *Goodwill and Other Intangible Assets* FASB ASC 350, *Intangibles-Goodwill and Others* addresses financial accounting and reporting for acquired goodwill and other intangible assets. Among other things, FASB ASC 350 requires that goodwill and intangible assets with indefinite useful lives no longer be amortized, but rather tested annually for impairment or more frequently if events or circumstances indicate that there may be impairment. Goodwill is also subject to an annual impairment test, or more frequently, if indicators of potential impairment arise. ASU 2011-08 intends to simplify goodwill impairment testing by permitting an assessment of qualitative factors to determine when events and circumstances lead to the conclusion that is necessary to perform the two-step goodwill impairment test current required under ASC 350. The two-step goodwill impairment test consists of a comparison of the fair value of our reporting units with their carrying amount. If the carrying amount exceeds its fair value, we are required to perform the second step of the impairment test, as this is an indication that goodwill may be impaired. The impairment loss is measured by comparing the implied fair value of the reporting unit s goodwill with its carrying amount. If the carrying amount exceeds the implied fair value, an impairment loss shall be recognized in

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an amount equal to the excess. After an impairment loss is recognized, the adjusted carrying amount of the intangible asset shall be its new accounting basis. Subsequent reversal of a previously recognized impairment loss is prohibited. For unamortizable intangible assets, if the carrying amount were to exceed the fair value of the asset we would write down the unamortizable intangible asset to fair value.

In 2012, the Company completed a quantitative goodwill impairment analysis for its three reporting units. The determination of the fair value of the reporting units requires us to make significant estimates and assumptions. These estimates and assumptions include but are not limited to, forecasts of revenue and expense growth rates, discount rates, control premiums appropriate of industries in which we compete, terminal growth rates and other market data. We reconciled our fair value calculations to our overall market capitalization to help determine the reasonableness of our assumptions

The results of our test for goodwill impairment showed that the estimated fair values of our reporting units substantially exceeded their carrying values. We concluded that none of our goodwill was impaired. We also concluded that the fair value of the unamortized intangible asset significantly exceeds the carrying amount.

*Stock-based compensation* We account for stock-based payment awards in accordance with the provisions of FASB ASC 718, *Compensation Stock Compensation* , which requires us to recognize compensation expense for all stock-based payment awards made to employees and directors including employee stock options, restricted stock units and employee stock purchases ( employee stock purchases ) related to the Employee Stock Purchase Plan ( ESPP ). We issue new shares upon stock option exercises, upon the vesting of restricted stock units and under our ESPP.

FASB ASC 718 requires companies to estimate the fair value of stock-based payment awards on the date of grant using an option-pricing model. The value of the portion of the award that is ultimately expected to vest is recognized as expense over the requisite service periods in our consolidated statement of operations. Stock-based compensation expense has been reduced for estimated forfeitures. FASB ASC 718 requires forfeitures to be estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

We value stock-based payment awards, except restricted stock awards, at grant date using the Black-Scholes option-pricing model ( Black-Scholes model ). Our determination of fair value of stock-based payment awards on the date of grant using an option-pricing model is affected by our stock price as well as assumptions regarding a number of highly complex and subjective variables. These variables include, but are not limited to our expected stock price volatility over the term of the awards and actual and projected employee stock option exercise behaviors.

The fair value of restricted stock units are based on the market price of our common stock on the date of grant and are recorded as compensation expense ratably over the applicable service period, which is approximately four years. Unvested restricted stock units are forfeited in the event of termination of employment or engagement with our Company.

We record stock compensation expense on a straight-line basis over the requisite service period for all awards granted.

**Impact of Foreign Currencies**

We sell our products in many countries and a substantial portion of our sales, costs and expenses are denominated in foreign currencies, especially the British pound sterling and the Euro.

During 2012, the U.S dollar s strengthening in relation to those currencies resulted in a unfavorable translation effect on our consolidated revenue and earnings growth. Changes in foreign currency exchange rates resulted in a negative effect on revenues of $1.2 million for 2012 and positive effect on expenses of $1.1 million for 2012. During 2011, the U.S dollar s weakening in relation to those currencies resulted in a favorable translation effect on our consolidated revenue and earnings growth. Changes in foreign currency exchange rates resulted in a positive effect on revenues of $1.6 million and negative effect on expenses of $1.2 million for 2011. During 2010, the U.S. dollar s strengthening in relation to those currencies resulted in an adverse translation

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effect on our consolidated revenue and earnings growth. Changes in foreign currency exchange rates resulted in a negative effect on revenues of $1.3 million and positive effect on expenses of $1.0 million for 2010.

The gain associated with the translation of foreign equity into U.S. dollars was approximately $1.9 million for the year ended December 31, 2012. The loss associated with the translation of foreign equity into U.S. dollars was approximately $1.0 million for the year ended December 31, 2011. In addition, currency fluctuations resulted in approximately $0.1 million, $41,000 and $0.1 million in foreign currency losses during the years ended December 31, 2012, 2011 and 2010, respectively.

The U.S. dollar was weaker on December 31, 2012 against the British pound and the Euro compared with the rates at December 31, 2011. The weaker U.S. dollar has caused our foreign net assets to translate to a higher value, stated in U.S. dollars, which has a positive effect on our Accumulated Other Comprehensive Income, a component of Stockholders Equity. At December 31, 2012, our Stockholders Equity was higher by $1.9 million as compared to the value at December 31, 2011, due to the translation of foreign net assets based on a weaker dollar.

The U.S. dollar was stronger on December 31, 2011 against the British pound and the Euro compared with the rates at December 31, 2010. The stronger U.S. dollar has caused our foreign net assets to translate to a lower value, stated in U.S. dollars, which had a negative effect on our Accumulated Other Comprehensive Income, a component of Stockholders Equity. At December 31, 2011, our Stockholders Equity was lower by $1.0 million as compared to the value at December 31, 2010, due to the translation of foreign net assets based on a stronger dollar.

Since December 31, 2012, the U.S. dollar strengthened approximately 3.7% against the British pound and weakened approximately 2.1% against the Euro. Approximately 36% of our revenues are derived from business transacted in British pounds or Euros. If the U.S. dollar further strengthens against these currencies, our earnings and cash flows, stated in U.S. dollars, will be affected negatively.

**Recently Issued Accounting Pronouncements**

In July 2012, the FASB issued Accounting Standards Update No. 2012-02, *Intangibles Goodwill and Other Testing Indefinite-Lived Intangible Assets for Impairment (ASU 2012-02)*. Under the amendments in this update, the Company has the option first to assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the indefinite-lived intangible asset is impaired. If, after assessing the totality of events or circumstances, the Company concludes that it is not more likely than not that the indefinite-lived intangible asset is impaired, then the Company is not required to take further action. However, if the Company concludes otherwise, then it is required to determine the fair value of the indefinite-lived intangible asset and perform the quantitative impairment test by comparing the fair value with the carrying amount in accordance with subtopic 350-30. Under the amendments in this update, the Company has the option to bypass the qualitative assessment for any indefinite-lived intangible asset in any period and proceed directly to performing the quantitative impairment test. The Company may resume performing the qualitative assessment in any subsequent period. The provisions of this update will be effective for the Company in fiscal years beginning after September 15, 2012, and for the interim periods within fiscal years with early adoption permitted. The Company believes the adoption of this new guidance will not have a material impact on its consolidated results of operations or financial position.

In February 2013, the FASB issued additional guidance in Accounting Standard Update No. 2013-02, *Reporting of amounts reclassified out of accumulated other comprehensive income* regarding the presentation of comprehensive income. The new guidance requires the Company to present the effects on net income line items of significant amounts reclassified out of accumulated other comprehensive income, but only if the item reclassified is required under U.S. GAAP to be reclassified to net income in its entirety in the same reporting period. The Company shall provide this information either on the face of the statements or in the notes to the consolidated financial statements. The guidance is effective for fiscal years beginning after December 15, 2012. The Company believes the adoption of this new guidance will not have a material impact on its consolidated results of operations or financial position.

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**Impact of Inflation**

We believe that our revenues and results of operations have not been significantly impacted by inflation during the past three years.

**Item 7A.** ***Quantitative and Qualitative Disclosures about Market Risk.***

We manufacture and test the majority of our products in research centers in the United States, the United Kingdom, Sweden, Germany and Spain. We sell our products globally through our catalogs, direct sales force and indirect distributor channels. As a result, our financial results are affected by factors such as changes in foreign currency exchange rates and weak economic conditions in foreign markets.

We collect amounts representing a substantial portion of our revenues and pay amounts representing a substantial portion of our operating expenses in foreign currencies. As a result, changes in currency exchange rates have affected, and may from time to time in the future affect, our operating results.

We are exposed to market risk from changes in interest rates primarily through our financing activities. As of December 31, 2012, we had $13.0 million outstanding under our revolving credit facility, which bears interest at LIBOR plus 3.0%. At December 31, 2012, the interest rate on this debt was 3.21%. Assuming no other changes which would affect the margin of the interest rate under our revolving credit facility, the effect of interest rate fluctuations on outstanding borrowings under our revolving credit facility as of December 31, 2012 over the next twelve months is quantified and summarized as follows:

| If compared to the rate as of December 31, 2012 | Interest expense increase (in thousands) |
|---|---|
| Interest rates increase by 1% | $ 130 |
| Interest rates increase by 2% | $ 259 |

**Item 8.** ***Financial Statements and Supplementary Data.***

The information required by this item is contained in the consolidated financial statements filed as part of this Annual Report on Form 10-K are listed under Item 15 of Part IV below.

**Item 9.** ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.***

None.

**Item 9A.** ***Controls and Procedures.***

This Report includes the certifications of our Chief Executive Officer and Chief Financial Officer required by Rule 13a-14 of the Securities Exchange Act of 1934, as amended (the Exchange Act ). See Exhibits 31.1 and 31.2. This Item 9A includes information concerning the controls and control evaluations referred to in those certifications.

**(a) Evaluation of Disclosure Controls and Procedures**

Disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) are designed to ensure that information required to be disclosed in reports filed or submitted under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms and that such information is accumulated and communicated to management, including the Chief Executive Officer and the Chief Financial Officer, to allow timely decisions regarding required disclosures.

In connection with the preparation of this Annual Report on the Form 10-K, our management, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2012. Our disclosure controls and procedures are designed to provide reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is

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recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission s rules and forms, and our management necessarily was required to apply its judgment in evaluating and implementing our disclosure controls and procedures. Based upon the evaluation described above, our Chief Executive Officer and Chief Financial Officer have concluded that they believe that our disclosure controls and procedures were effective, as of the end of the period covered by this report, in providing reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, to allow timely decisions regarding required disclosures, and is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission s rules and forms.

**(b) Management s Annual Report on Internal Control Over Financial Reporting**

Our management, under the supervision of the Chief Executive Officer and the Chief Financial Officer, is responsible for establishing and maintaining an adequate system of internal control over financial reporting. Internal control over financial reporting (as defined in Rules 13a-15(f) and 15d(f) under the Exchange Act) is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles in the United States of America ( US GAAP ).

A company s internal control over financial reporting includes those policies and procedures that (a) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets; (b) provide reasonable assurance that transactions are recorded as necessary to permit preparation of consolidated financial statements in accordance with US GAAP, (c) provide reasonable assurance that receipts and expenditures are being made only in accordance with appropriate authorization of management and the board of directors, and (d) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on the consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In connection with the preparation of this report, our management conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2012 based on the criteria established in *Internal Control Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). As a result of that evaluation, management has concluded that our internal control over financial reporting was effective as of December 31, 2012.

The effectiveness of our internal control over financial reporting as of December 31, 2012 has also been audited by KPMG LLP, our independent registered public accounting firm, as stated in their report, which is included below in Item 9A(d).

**(c) Changes in Internal Controls Over Financial Reporting**

Our management, with the participation of the Chief Executive Officer and the Chief Financial Officer, has evaluated whether any change in our internal control over financial reporting occurred during the fourth quarter ended December 31, 2012. Based on that evaluation, management concluded that there were no changes in our internal controls over financial reporting during the quarter ended December 31, 2012 that have materially affected, or are reasonably likely to materially affect our internal controls over financial reporting.

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**(d) Report of Independent Registered Public Accounting Firm**

The Board of Directors and Stockholders

Harvard Bioscience, Inc. and subsidiaries:

We have audited Harvard Bioscience, Inc. and subsidiaries internal control over financial reporting as of December 31, 2012, based on criteria established in *Internal Control Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Harvard Bioscience, Inc. and subsidiaries management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management s Annual Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company s internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, Harvard Bioscience, Inc. and subsidiaries maintained, in all material respects, effective internal control over financial reporting as of December 31, 2012, based on criteria established in *Internal Control Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of Harvard Bioscience, Inc. and subsidiaries as of December 31, 2012 and 2011, and the related consolidated statements of operations, stockholders equity and comprehensive income, and cash flows for each of the years in the three-year period ended December 31, 2012, and our report dated March 18, 2013 expressed an unqualified opinion on those consolidated financial statements.

/s/ KPMG LLP

Boston, Massachusetts

March 18, 2013

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**Item 9B.** ***Other Information.***
None.

**PART III**

**Item 10.** ***Directors, Executive Officers and Corporate Governance.***
Incorporated by reference to our definitive Proxy Statement filed pursuant to Regulation 14A under the Exchange Act, in connection with our 2013 Annual Meeting of Stockholders. Information concerning executive officers of our Company is included in Part I of this Annual Report on Form 10-K as Item 1. Business- Executive Officers of the Registrant and incorporated herein by reference.

**Item 11.** ***Executive Compensation.***
Incorporated by reference to our definitive Proxy Statement to be filed pursuant to Regulation 14A under the Exchange Act in connection with our 2013 Annual Meeting of Stockholders.

**Item 12.** ***Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.***
Incorporated by reference to our definitive Proxy Statement to be filed pursuant to Regulation 14A under the Exchange Act in connection with our 2013 Annual Meeting of Stockholders.

**Item 13.** ***Certain Relationships and Related Transactions, and Director Independence.***
Incorporated by reference to our definitive Proxy Statement to be filed pursuant to Regulation 14A under the Exchange Act in connection with our 2013 Annual Meeting of Stockholders.

**Item 14.** ***Principal Accounting Fees and Services.***
Incorporated by reference to our definitive Proxy Statement to be filed pursuant to Regulation 14A under the Exchange Act in connection with our 2013 Annual Meeting of Stockholders.

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**Item 15.** ***Exhibits, Financial Statement Schedules.***

(a) Documents Filed. The following documents are filed as part of this Annual Report on Form 10-K or incorporated by reference as indicated:

1 Financial Statements. The consolidated financial statements of Harvard Bioscience, Inc. and its subsidiaries filed under this Item 15:



2 Exhibits and Exhibit Index. See the Exhibit Index included as the last part of this Annual Report on Form 10-K, which is incorporated herein by reference.

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**INDEX TO CONSOLIDATED FINANCIAL STATEMENTS**

**HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES**

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**Report of Independent Registered Public Accounting Firm**

The Board of Directors and Stockholders

Harvard Bioscience, Inc. and subsidiaries:

We have audited the accompanying consolidated balance sheets of Harvard Bioscience, Inc. and subsidiaries as of December 31, 2012 and 2011, and the related consolidated statements of income, comprehensive income, stockholders equity and cash flows for each of the years in the three-year period ended December 31, 2012. These consolidated financial statements are the responsibility of the Company s management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Harvard Bioscience, Inc. and subsidiaries as of December 31, 2012 and 2011, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2012, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), Harvard Bioscience, Inc. and subsidiaries internal control over financial reporting as of December 31, 2012, based on criteria established in *Internal Control Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated March 18, 2013 expressed an unqualified opinion on the effectiveness of the Company s internal control over financial reporting.

/s/ KPMG LLP

Boston, Massachusetts

March 18, 2013

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**HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES**

**CONSOLIDATED BALANCE SHEETS**

**(In thousands, except share and per share data)**

| | December 31, 2012 | December 31, 2011 |
|---|---|---|
| **Assets** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 20,681 | $ 17,916 |
| Accounts receivable, net of allowance for doubtful accounts of $194 and $302, respectively | 14,357 | 15,078 |
| Inventories | 17,762 | 18,160 |
| Deferred income tax assets current | 1,553 | 3,908 |
| Other receivables and other assets | 4,619 | 2,501 |
| Total current assets | 58,972 | 57,563 |
| Property, plant and equipment, net | 4,551 | 3,086 |
| Deferred income tax assets non-current | 10,770 | 7,925 |
| Amortizable intangible assets, net | 21,225 | 22,367 |
| Goodwill | 36,200 | 34,209 |
| Other indefinite lived intangible assets | 1,276 | 1,269 |
| Other assets | 490 | 215 |
| Total assets | $ 133,484 | $ 126,634 |
| **Liabilities and Stockholders Equity** | | |
| Current liabilities: | | |
| Accounts payable | $ 4,680 | $ 4,959 |
| Deferred revenue | 482 | 483 |
| Accrued income taxes | 506 | 251 |
| Accrued expenses | 3,505 | 3,323 |
| Other liabilities current | 728 | 543 |
| Total current liabilities | 9,901 | 9,559 |
| Long-term debt, less current installments | 12,950 | 16,300 |
| Deferred income tax liabilities non-current | 277 | 369 |
| Other long term liabilities | 6,143 | 4,907 |
| Total liabilities | 29,271 | 31,135 |
| Commitments and contingencies | | |
| Stockholders equity: | | |
| Preferred stock, par value $0.01 per share, 5,000,000 shares authorized | | |
| Common stock, par value $0.01 per share, 80,000,000 shares authorized; 37,123,705 and 36,289,170 shares issued and 29,378,198 and 28,543,663 shares outstanding, respectively | 370 | 362 |
| Additional paid-in-capital | 196,634 | 191,157 |
| Accumulated deficit | (77,260) | (79,630) |
| Accumulated other comprehensive loss | (4,863) | (5,722) |
| Treasury stock at cost, 7,745,507 common shares | (10,668) | (10,668) |
| Total stockholders equity | 104,213 | 95,499 |

| | | | |
|---|---|---|---|
| Total liabilities and stockholders equity | $ 133,484 | $ 126,634 |

See accompanying notes to consolidated financial statements.

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**HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF INCOME**

**(In thousands, except per share data)**

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| Revenues | $ 111,171 | $ 108,864 | $ 108,179 |
| Cost of product revenues | 58,753 | 58,604 | 56,372 |
| Gross profit | 52,418 | 50,260 | 51,807 |
| Sales and marketing expenses | 19,169 | 17,473 | 16,384 |
| General and administrative expenses | 19,700 | 18,063 | 17,674 |
| Research and development expenses | 7,321 | 5,434 | 4,669 |
| Restructuring charges | 310 | 467 | 498 |
| Amortization of intangible assets | 2,752 | 2,746 | 2,364 |
| Total operating expenses | 49,252 | 44,183 | 41,589 |
| Operating income | 3,166 | 6,077 | 10,218 |
| Other (expense) income: | | | |
| Changes in fair value of acquisition contingencies | | | 429 |
| Foreign exchange | (113) | (41) | (89) |
| Interest expense | (584) | (752) | (677) |
| Interest income | 46 | 65 | 65 |
| Other expense, net | (287) | (807) | (383) |
| Other (expense) income, net | (938) | (1,535) | (655) |
| Income from continuing operations before income taxes | 2,228 | 4,542 | 9,563 |
| Income tax expense (benefit) | 696 | 730 | (9,452) |
| Income from continuing operations | 1,532 | 3,812 | 19,015 |
| Discontinued operations: | | | |
| Income from discontinued operations, net of tax | 838 | | |
| Income from discontinued operations, net of tax | 838 | | |
| Net income | $ 2,370 | $ 3,812 | $ 19,015 |
| Income per share: | | | |
| Basic earnings per common share from continuing operations | $ 0.05 | $ 0.13 | $ 0.66 |
| Discontinued operations | 0.03 | | |
| Basic earnings per common share | $ 0.08 | $ 0.13 | $ 0.66 |
| Diluted earnings per common share from continuing operations | $ 0.05 | $ 0.13 | $ 0.65 |
| Discontinued operations | 0.03 | | |

| | | | |
|---|---|---|---|
| Diluted earnings per common share | $ 0.08 | $ 0.13 | $ 0.65 |
| Weighted average common shares: | | | |
| Basic | 28,799 | 28,451 | 28,967 |
| Diluted | 29,424 | 29,819 | 29,405 |

See accompanying notes to consolidated financial statements.

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**HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME**

**(In thousands)**

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| Net income | $ 2,370 | $ 3,812 | $ 19,015 |
| Other comprehensive income (loss): | | | |
| Foreign currency translation adjustments | 1,863 | (976) | (2,057) |
| Defined benefit pension plans, net of tax: | | | |
| Amortization of net losses included in net periodic pension costs, net of tax expense of $57, $40 and $38 in 2012, 2011 and 2010, respectively | 191 | 119 | 103 |
| Net loss, net of tax benefits of $357, $323 and $40 in 2012, 2011 and 2010, respectively | (1,195) | (969) | (108) |
| Defined benefit pension plans, net of tax | (1,004) | (850) | (5) |
| Other comprehensive income (loss) | 859 | (1,826) | (2,062) |
| Comprehensive income | $ 3,229 | $ 1,986 | $ 16,953 |

See accompanying notes to consolidated financial statements.

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**HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF STOCKHOLDERS EQUITY**

**(In thousands)**

| | Number of Shares Issued | Common Stock | Additional Paid-in Capital | Accumulated Deficit | Accumulated Other Comprehensive Income (Loss) | Treasury Stock | Total Stockholders Equity |
|---|---|---|---|---|---|---|---|
| Balance at December 31, 2009 | 35,948 | $ 360 | $ 184,856 | $ (102,457) | $ (1,834) | $ (5,668) | $ 75,257 |
| Stock option exercises | 58 | 1 | 127 | | | | 128 |
| Stock purchase plan | 52 | | 154 | | | | 154 |
| Stock compensation expense | | | 2,756 | | | | 2,756 |
| Purchases of treasury stock | | | | | | (5,000) | (5,000) |
| Net income | | | | 19,015 | | | 19,015 |
| Other comprehensive income (loss) | | | | | (2,062) | | (2,062) |
| Balance at December 31, 2010 | 36,058 | 361 | 187,893 | (83,442) | (3,896) | (10,668) | 90,248 |
| Stock option exercises | 106 | 1 | 399 | | | | 400 |
| Stock purchase plan | 49 | | 167 | | | | 167 |
| Restricted stock unit issuance | 117 | | | | | | |
| Shares withheld for taxes | (41) | | (165) | | | | (165) |
| Stock compensation expense | | | 2,863 | | | | 2,863 |
| Net income | | | | 3,812 | | | 3,812 |
| Other comprehensive income (loss) | | | | | (1,826) | | (1,826) |
| Balance at December 31, 2011 | 36,289 | 362 | 191,157 | (79,630) | (5,722) | (10,668) | 95,499 |
| Stock option exercises | 648 | 7 | 2,110 | | | | 2,117 |
| Stock purchase plan | 60 | 1 | 191 | | | | 192 |
| Restricted stock unit issuance | 164 | | | | | | |
| Shares withheld for taxes | (37) | | (145) | | | | (145) |
| Stock compensation expense | | | 3,321 | | | | 3,321 |
| Net income | | | | 2,370 | | | 2,370 |
| Other comprehensive income (loss) | | | | | 859 | | 859 |
| Balance at December 31, 2012 | 37,124 | $ 370 | $ 196,634 | $ (77,260) | $ (4,863) | $ (10,668) | $ 104,213 |

See accompanying notes to consolidated financial statements.

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**HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF CASH FLOWS**

**(In thousands)**

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| Cash flows from operating activities: | | | |
| Net income | $ 2,370 | $ 3,812 | $ 19,015 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | | |
| Stock compensation expense | 3,321 | 2,863 | 2,756 |
| Depreciation | 1,270 | 1,276 | 1,196 |
| Earn-out related to discontinued operations | (1,344) | | |
| Gain on acquisition contingencies | | | (429) |
| Gain on sales of fixed assets | (24) | (19) | (15) |
| Non-cash restructuring (credit) charge | (13) | 210 | 79 |
| Amortization of catalog costs | 184 | 307 | 357 |
| (Recovery) provision for allowance for doubtful accounts | (31) | 67 | (150) |
| Amortization of intangible assets | 2,752 | 2,746 | 2,364 |
| Amortization of deferred financing costs | 52 | 89 | 89 |
| Deferred income taxes | (731) | (849) | (11,732) |
| Changes in operating assets and liabilities: | | | |
| Decrease (increase) in accounts receivable | 1,154 | 232 | (1,088) |
| Decrease (increase) in inventories | 1,174 | (1,705) | (1,238) |
| (Increase) decrease in other receivables and other assets | (925) | (73) | 123 |
| (Decrease) increase in trade accounts payable | (905) | 69 | 56 |
| Increase (decrease) in accrued income taxes | 213 | (544) | 443 |
| (Decrease) increase in accrued expenses | (485) | (1,368) | 386 |
| (Decrease) increase in deferred revenue | (48) | 31 | 23 |
| Increase (decrease) in other liabilities | 78 | (496) | 58 |
| Net cash provided by operating activities | 8,062 | 6,648 | 12,293 |
| Cash flows used in investing activities: | | | |
| Additions to property, plant and equipment | (1,769) | (1,506) | (844) |
| Additions to catalog costs | (62) | (252) | (418) |
| Proceeds from sales of property, plant and equipment | 33 | 25 | 31 |
| Acquisitions, net of cash acquired | (2,878) | (5,465) | (7,115) |
| Net cash used in investing activities | (4,676) | (7,198) | (8,346) |
| Cash flows used in financing activities: | | | |
| Proceeds from issuance of debt | 500 | | 10,350 |
| Repayments of debt | (3,850) | (1,708) | (5,663) |
| Purchases of treasury stock | | | (5,000) |
| Net proceeds from issuance of common stock | 2,287 | 567 | 282 |
| Net cash used in financing activities | (1,063) | (1,141) | (31) |
| Effect of exchange rate changes on cash | 442 | (97) | (800) |
| Increase (decrease) in cash and cash equivalents | 2,765 | (1,788) | 3,116 |
| Cash and cash equivalents at the beginning of period | 17,916 | 19,704 | 16,588 |

| | | | |
|---|---|---|---|
| Cash and cash equivalents at the end of period | $ 20,681 | $ 17,916 | $ 19,704 |
| Supplemental disclosures of cash flow information: | | | |
| Cash paid for interest | $ 577 | $ 638 | $ 652 |
| Cash paid for income taxes, net of refunds | $ 1,519 | $ 2,234 | $ 1,778 |

See accompanying notes to consolidated financial statements.

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**HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

**1. Organization**

Harvard Bioscience, Inc. and subsidiaries (collectively, Harvard Bioscience, the Company, our or we ) is a global developer, distributor, manufacturer and marketer of a broad range of specialized products, primarily apparatus and scientific instruments which are used to advance life science research and regenerative medicine. The Company s products are sold to thousands of researchers in over 100 countries primarily through its 850 page catalog (and various other specialty catalogs), its website, through distributors, including GE Healthcare, Thermo Fisher Scientific, Inc. and VWR, and via its field sales organization. The Company has sales and manufacturing operations in the United States, the United Kingdom, Germany, Sweden and Spain with sales facilities in France and Canada.

**2. Summary of Significant Accounting Policies**

***(a) Principles of Consolidation***

The consolidated financial statements include the accounts of Harvard Bioscience, Inc. and its wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

***(b) Use of Estimates***

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires the use of management estimates. Such estimates include the determination and establishment of certain accruals and provisions, including those for inventory obsolescence, catalog cost amortization periods, income tax and reserves for bad debts. In addition, certain estimates are required in order to determine the value of assets and liabilities associated with acquisitions. Estimates are also required to evaluate the value and recoverability of existing long-lived and intangible assets, including goodwill. On an ongoing basis, the Company reviews its estimates based upon currently available information. Actual results could differ materially from those estimates.

***(c) Cash and Cash Equivalents***

For purposes of the consolidated balance sheets and statements of cash flows, the Company considers all highly liquid instruments with original maturities of three months or less to be cash equivalents.

***(d) Allowance for Doubtful Accounts***

Allowance for doubtful accounts is based on the Company s assessment of collectability of customer accounts. The Company regularly reviews the allowance by considering factors such as historical experience, credit quality, age of the accounts receivable balances and other factors that may affect a customer s ability to pay.

***(e) Inventories***

The Company values its inventories at the lower of the actual cost to purchase (first-in, first-out method) and/or manufacture the inventories or the current estimated market value of the inventories. The Company regularly reviews inventory quantities on hand and records a provision to write down excess and obsolete inventories to its estimated net realizable value if less than cost, based primarily on its estimated forecast of product demand.

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***(f) Property, Plant and Equipment***

Property, plant and equipment are stated at cost and depreciated using the straight-line method over the estimated useful lives of the assets as follows:

| | |
|---|---|
| Buildings | 40 years |
| Machinery and equipment | 3-10 years |
| Computer equipment and software | 3-7 years |
| Furniture and fixtures | 5-10 years |
| Automobiles | 3-6 years |

Property and equipment held under capital leases and leasehold improvements are amortized using the straight line method over the shorter of the lease term or estimated useful life of the asset.

***(g) Catalog Costs***

Significant costs of product catalog design, development and production are capitalized and amortized over the expected useful life of the catalog (usually one to three years).

***(h) Income Taxes***

Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to be applied to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is more than 50% likely of being realized. Changes in recognition are reflected in the period in which the judgement occurs.

***(i) Foreign Currency Translation***

The functional currency of the Company s foreign subsidiaries is generally their local currency. All assets and liabilities of its foreign subsidiaries are translated at exchange rates in effect at period-end. Income and expenses are translated at rates which approximate those in effect on the transaction dates. The resulting translation adjustment is recorded as a separate component of stockholders equity in accumulated other comprehensive income in the consolidated balance sheets. Gains and losses resulting from foreign currency transactions are included in net income. The effects of the exchange rate fluctuations on certain short-term classified debt between the Company and a foreign subsidiary and between subsidiaries are also included in net income.

***(j) Earnings per Share***

Basic earnings per share is computed by dividing the net income by the weighted average number of shares of common stock outstanding during the periods presented. The computation of diluted earnings per share is similar to the computation of basic earnings per share, except that the denominator is increased for the assumed exercise of dilutive options and other potentially dilutive securities using the treasury stock method unless the effect is antidilutive. Since the Company is reporting discontinued operations, it used income from continuing operations as the control number in determining whether those potential dilutive securities are dilutive or antidilutive.

***(k) Comprehensive Income***

The Company follows the provisions of Financial Accounting Standards Board ( FASB ) Accounting Standards Codification ( ASC ) 220, *Comprehensive Income* . FASB ASC 220 requires companies to report all

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changes in equity during a period, resulting from net income (loss) and transactions from non-owner sources, in a financial statement in the period in which they are recognized. We have chosen to disclose comprehensive income, which encompasses net income, foreign currency translation adjustments, the underfunded status of our pension plans, and pension minimum additional liability adjustments, net of tax, in the consolidated statements of comprehensive income.

***(l) Revenue Recognition***

The Company follows the provisions of FASB ASC 605, *Revenue Recognition*. The Company recognizes product revenue when persuasive evidence of a sales arrangement exists, the price to the buyer is fixed or determinable, delivery has occurred, and collectibility of the sales price is reasonably assured. Sales of some of its products include provisions to provide additional services such as installation and training. Revenues on these products are recognized when the additional services have been performed. Service agreements on its equipment are typically sold separately from the sale of the equipment. Revenues on these service agreements are recognized ratably over the life of the agreement, typically one year, in accordance with the provisions of FASB ASC 605-20, *Revenue Recognition Services*.

The Company accounts for shipping and handling fees and costs in accordance with the provisions of FASB ASC 605-45-45, *Revenue Recognition Principal Agent Considerations*, which requires all amounts charged to customers for shipping and handling to be classified as revenues. The costs incurred related to shipping and handling is classified as cost of product revenues. Warranties and product returns are estimated and accrued for at the time sales are recorded. The Company has no obligations to customers after the date products are shipped or installed, if applicable, other than pursuant to warranty obligations and service or maintenance contracts. The Company provides for the estimated amount of future returns upon shipment of products or installation, if applicable, based on historical experience.

***(m) Goodwill and Other Intangible Assets***

Goodwill and other intangible assets include goodwill, unamortizable intangible assets and amortizable intangible assets. Amortizable intangible assets (those intangible assets with definite estimated useful lives) are initially recorded at fair value and amortized, using the straight-line method, over their estimated useful lives. At December 31, 2012, amortizable intangible assets include existing technology, trade names, distribution agreements, customer relationships and patents. These amortizable intangible assets are amortized on a straight-line basis over 7 to 15 years, 15 years, 5 years, 5 to 15 years and 15 years, respectively.

Goodwill and unamortizable intangible assets acquired in a business combination and determined to have an indefinite useful life are not amortized, but instead are tested for impairment annually or more frequently if events or changes in circumstances indicate that the asset might be impaired, in accordance with the provisions of FASB ASC 350, *Intangibles Goodwill and Other*.

For the purpose of its goodwill analysis, the Company has three reporting units, the Physiology division reporting unit, Molecular Biology division reporting unit and the Regenerative Medicine Device ( RMD ) reporting unit. The Company conducted its annual impairment analysis in the fourth quarter of fiscal year 2012. The goodwill impairment test was a two-step process in 2012. The first step of the impairment analysis compares the reporting unit s fair value to its carrying value to determine if there is any indication of impairment. Step two of the analysis compares the implied fair value of goodwill to its carrying amount in a manner similar to a purchase price allocation for business combination. If the carrying amount of goodwill exceeds its implied fair value, an impairment loss is recognized equal to that excess. For unamortizable intangible assets if the carrying amount exceeds the fair value of the asset, the Company would write down the unamortizable intangible asset to fair value.

The Company calculated the estimated fair value of each of its reporting units as at December 31, 2012. Management arrived at the estimated fair values by preparing discounted cash flow analyses using updated financial projections of the reporting units estimated future operating results and discounted to present value using appropriate discount rates. At December 31, 2012, the fair value of the reporting units significantly

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exceeded the carrying value. The Company reconciled the aggregate fair value of the reporting units to its overall market capitalization to help determine the reasonableness of its assumptions. The Company concluded that none of its goodwill was impaired.

The company evaluates indefinite-lived intangible assets for impairment annually and when events occur or circumstances change that may reduce the fair value of the asset below its carrying amount. Events or circumstances that might require an interim evaluation include unexpected adverse business conditions, economic factors, unanticipated technological changes or competitive activities, loss of key personnel and acts by governments and courts. At December 31, 2012 the Company concluded that none of its indefinite-lived intangible assets were impaired.

***(n) Impairment of Long-Lived Assets***

The Company assesses recoverability of its long-lived assets that are held for use, such as property, plant and equipment and amortizable intangible assets in accordance with FASB ASC 360, *Property, Plant and Equipment* when events or changes in circumstances indicate that the carrying amount of an asset or asset group may not be recoverable. Recoverability of assets or an asset group to be held and used is measured by a comparison of the carrying amount of an asset or asset group to estimated undiscounted future cash flows expected to be generated by the asset or the asset group. Cash flow projections are based on trends of historical performance and management s estimate of future performance. If the carrying amount of the asset or asset group exceeds the estimated future cash flows, an impairment charge is recognized by the amount by which the carrying amount of the asset or asset group exceeds its estimated fair value. At December 31, 2012 the Company concluded than none of its long-lived assets were impaired.

***(o) Fair Value of Financial Instruments***

The carrying value of our cash and cash equivalents, trade accounts receivable and trade accounts payable and short-term debt approximate their fair values because of the short maturities of those instruments. The fair value of our long-term debt approximates its carrying amount and is based on the amount of future cash flows associated with the debt discounted using our current borrowing rate for similar debt instruments of comparable maturity.

Financial reporting standards define a fair value hierarchy that consists of three levels:

Level 1 includes instruments for which quoted prices in active markets for identical assets or liabilities accessible to Company at the measurement date.

Level 2 includes instruments for which the valuations are based on quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable data for substantially the full term of the assets or liabilities.

Level 3 Valuations based on inputs that are unobservable and significant to the overall fair value measurement.

***(p) Stock-based Compensation***

The Company accounts for stock-based payment awards in accordance with the provisions of FASB ASC 718, *Compensation Stock Compensation* , which requires it to recognize compensation expense for all stock-based payment awards made to employees and directors including employee stock options, restricted stock units and employee stock purchases ( employee stock purchases ) related to the Employee Stock Purchase Plan ( ESPP ). The Company issues new shares upon stock option exercises, upon vesting of the restricted stock units and under the Company s ESPP.

Stock-based compensation expense recognized is based on the value of the portion of stock-based payment awards that is ultimately expected to vest and has been reduced for estimated forfeitures. The Company values stock-based payment awards, except restricted stock units at grant date using the Black-Scholes option-pricing model ( Black-Scholes model ). The determination of fair value of stock-based payment awards on the

date of

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grant using an option-pricing model is affected by its stock price as well as assumptions regarding a number of highly complex and subjective variables. These variables include, but are not limited to its expected stock price volatility over the term of the awards and actual and projected employee stock option exercise behaviors.

The fair value of restricted stock units are based on the market price of the Company s stock on the date of grant and are recorded as compensation expense ratably over the applicable service period, which is approximately four years. Unvested restricted stock units are forfeited in the event of termination of employment with the Company.

Stock-based compensation expense recognized under FASB ASC 718 for the years ended December 31, 2012, 2011 and 2010 consisted of stock-based compensation expense related to employee stock options, the employee stock purchase plan, and the restricted stock units and was recorded as a component of cost of product revenues, sales and marketing expenses, general and administrative expenses, and research and development expenses.

***(q) Recently Issued Accounting Pronouncements***

In July 2012, the FASB issued Accounting Standards Update No. 2012-02, *Intangibles- Goodwill and Other- Testing Indefinite-Lived Intangible Assets for Impairment (ASU 2012-02)*. Under the amendments in this update, the Company has the option first to assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the indefinite-lived intangible asset is impaired. If, after assessing the totality of events or circumstances, the Company concludes that it is not more likely than not that the indefinite-lived intangible asset is impaired, then the Company is not required to take further action. However, if the Company concludes otherwise, then it is required to determine the fair value of the indefinite-lived intangible asset and perform the quantitative impairment test by comparing the fair value with the carrying amount in accordance with subtopic 350-30. Under the amendments in this update, the Company has the option to bypass the qualitative assessment for any indefinite-lived intangible asset in any period and proceed directly to performing the quantitative impairment test. The Company may resume performing the qualitative assessment in any subsequent period. The provisions of this update will be effective for the Company in fiscal years beginning after September 15, 2012, and for the interim periods within fiscal years with early adoption permitted. The Company believes the adoption of this new guidance will not have a material impact on its consolidated results of operations or financial position.

In February 2013, the FASB issued additional guidance in Accounting Standard Update No. 2013-02, *Reporting of amounts reclassified out of accumulated other comprehensive income* regarding the presentation of comprehensive income. The new guidance requires the Company to present the effects on net income line items of significant amounts reclassified out of accumulated other comprehensive income, but only if the item reclassified is required under U.S. GAAP to be reclassified to net income in its entirety in the same reporting period. The Company shall provide this information either on the face of the statements or in the notes to the consolidated financial statements. The guidance is effective for fiscal years beginning after December 15, 2012. The Company believes the adoption of this new guidance will not have a material impact on its consolidated results of operations or financial position.

**3. Concentrations**

No customer accounted for more than 10% of the revenues for the year ended December 31, 2012 and 2011. One customer accounted for 10% of revenues for the year ended December 31, 2010. At December 31, 2012 and 2011, no customer accounted for more than 10% of net accounts receivable.

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**4. Inventories**

Inventories consist of the following:

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Finished goods | $ 8,023 | $ 8,372 |
| Work in process | 731 | 626 |
| Raw materials | 9,008 | 9,162 |
| Total | $ 17,762 | $ 18,160 |

**5. Property, Plant and equipment**

Property, plant and equipment consist of the following:

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Land, buildings and leasehold improvements | $ 2,790 | $ 2,226 |
| Machinery and equipment | 8,760 | 5,282 |
| Computer equipment and software | 4,917 | 4,587 |
| Furniture and fixtures | 1,201 | 1,008 |
| Automobiles | 194 | 279 |
| | 17,862 | 13,382 |
| Less: accumulated depreciation | (13,311) | (10,296) |
| Property, plant and equipment, net | $ 4,551 | $ 3,086 |

**6. Acquisitions**

The Company s continuing operations have completed two acquisitions since January 1, 2012.

***AHN Biotechnologie GmbH***

On February 3, 2012, the Company acquired all issued and outstanding shares of AHN Biotechnologie GmbH ( AHN ) for approximately $2.0 million. The Company funded the acquisition from its existing cash balances.

AHN is located in Nordhausen, Germany and manufactures plastic laboratory consumables which include pipettes, pipette tips, PCR tubes and spin columns. This acquisition is complementary to the Company s molecular biology product line.

With the assistance of an external valuation company, the fair values of the assets and liabilities was as follows:

| | (in thousands) |
|---|---|
| Tangible assets | $ 1,500 |

| | | |
|---|---|---|
| Liabilities assumed | | (1,454) |
| Net assets assumed | | 46 |
| Goodwill and intangible assets: | | |
| Goodwill | | 1,308 |
| Customer relationships | | 474 |
| Trade name | | 180 |
| Total goodwill and intangible assets | | 1,962 |
| Acquisition purchase price | $ | 2,008 |

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The results of operations for AHN have been included in the LSRT segment in the Company s consolidated financial statements from the date of acquisition. The financial results of this acquisition are considered immaterial for the purposes of pro forma financial statement disclosures. Goodwill recorded as a result of the acquisition of AHN is not deductible for tax purposes.

***Modular SFC, Inc.***

On May 31, 2012, the Company, through its Harvard Apparatus U.S. division, acquired substantially all of the assets of Modular SFC, Inc. ( Modular ) for approximately $0.5 million. The Company funded the acquisition from its existing cash balances.

Consideration for the acquisition comprised of the following:

| | | (in thousands) |
|---|---|---|
| Cash | $ | 500 |
| Contingent consideration | | 20 |
| Total | $ | 520 |

The fair values of the assets and liabilities was as follows:

| | | (in thousands) |
|---|---|---|
| Tangible assets | $ | 30 |
| Liabilities assumed | | |
| Net assets assumed | | 30 |
| Goodwill and intangible assets: | | |
| Goodwill | | 145 |
| Customer relationships | | 50 |
| Technology | | 200 |
| Trade name | | 95 |
| Total goodwill and intangible assets | | 490 |
| Acquisition purchase price | $ | 520 |

The results of operations for Modular have been included in the LSRT segment in the Company s consolidated financial statements from the date of acquisition. The financial results of this acquisition are considered immaterial for the purposes of pro forma financial statement disclosures. Goodwill recorded as a result of the acquisition of Modular is deductible for tax purposes.

Direct acquisition costs recorded in other expense, net in our consolidated statements of income was $0.3 million for the year ended December 31, 2012.

**7. Discontinued Operations**

In November 2007, the Company completed the sale of the assets of its Genomic Solutions Division and the stock of its Belgian subsidiary, MAIA Scientific, both of which were part of its Capital Equipment Business Segment, to Digilab, Inc. The purchase price paid by Digilab under the terms of the Asset Purchase Agreement consisted of $1.0 million in cash plus additional consideration in the form of an earn-out based on 20% of the revenue generated by the acquired business as it is conducted by Digilab over a three-year period post-transaction. Any earn-out amounts were evidenced by interest bearing promissory notes which were due on November 30, 2012. The unpaid principal balance of the promissory notes had an interest of LIBOR plus 1100 basis points per annum. Digilab had delivered promissory notes of $4.6 million. The

Company has recorded valuation allowances for 100% of the earn-out promissory notes as their collectability is uncertain. Going forward, the Company will continue to monitor the financial performance of Digilab and recognize any

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contingent consideration in discontinued operations when and if realization of earn-out amounts is probable. The Company has included the contingent consideration as sale proceeds in its income tax returns. Accordingly, the tax effect of this contingent consideration is included in the Company s deferred tax assets.

In September 2008, the Company completed the sale of assets of its Union Biometrica Division including its German subsidiary, Union Biometrica GmbH, representing at that time the remaining portion of its Capital Equipment Business Segment, to UBIO Acquisition Company. The purchase price paid by UBIO Acquisition Company under the terms of the Asset Purchase Agreement consisted of $1 in cash, the assumption of certain liabilities, plus additional consideration in the form of an earn-out based on the revenue generated by the acquired business as it is conducted by UBIO Acquisition Company over a five-year post-transaction period in an amount equal to (i) 5% of the revenue generated up to and including $6.0 million and (ii) 8% of the revenue generated above $6.0 million each year. Any earn-out amounts are evidenced by interest-bearing promissory notes due on September 30, 2013 or at an earlier date based on certain triggering events. As of December 31, 2012, UBIO Acquisition Company had delivered promissory notes of $1.1 million. The unpaid principal balance of the promissory notes bear an interest of 12% per annum. Prior to the fourth quarter of 2012, the Company recorded valuation allowances for 100% of the earn-out promissory notes as the Company deemed their collectability as being uncertain. During the fourth quarter of 2012, the Company determined that the realization was probable. Therefore the Company made a decision to reverse the valuation allowance and recognize the earn-out amount and the interest thereon of approximately $0.8 million in its consolidated statements of income under Income from discontinued operations, net of tax .

**8. Goodwill and Other Intangible Assets**

Goodwill and other indefinite-lived intangible assets are subject to impairment reviews annually, or more frequently if events or circumstances indicate there may be impairment.

As of December 31, 2012, the Company completed its annual goodwill impairment tests and concluded there was no impairment to goodwill. Intangible assets consist of the following:

| | December 31, | | | | |
|---|---|---|---|---|---|
| | 2012 | | 2011 | | |
| | (in thousands) | | | | |
| **Amortizable intangible assets:** | **Gross** | **Accumulated Amortization** | **Gross** | **Accumulated Amortization** | **Weighted Average Life (a)** |
| Existing technology | $ 13,258 | $ (10,207) | $ 12,405 | $ (9,101) | 5.1 Years |
| Tradename | 6,167 | (1,756) | 5,840 | (1,339) | 11.7 Years |
| Distribution agreement/customer relationships | 21,699 | (7,938) | 20,997 | (6,438) | 11.2 Years |
| Patents | 9 | (7) | 9 | (6) | 3.3 Years |
| Total amortizable intangible assets | 41,133 | $ (19,908) | 39,251 | $ (16,884) | |
| Indefinite-lived intangible assets: | | | | | |
| Goodwill | 36,200 | | 34,209 | | |
| Other indefinite-lived intangible assets | 1,276 | | 1,269 | | |
| Total goodwill and other indefinite-lived intangible assets | 37,476 | | 35,478 | | |
| Total intangible assets | $ 78,609 | | $ 74,729 | | |

(a) Weighted average life is as of December 31, 2012.

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The changes in the carrying amount of goodwill for the years ended December 31, 2012 and 2011 is as follows:

| | (in thousands) |
|---|---|
| Balance at December 31, 2010 | $ 33,416 |
| Goodwill arising from business combination | 969 |
| Effect of change in foreign currencies | (176) |
| Balance at December 31, 2011 | $ 34,209 |
| Goodwill arising from business combinations | 1,453 |
| Effect of change in foreign currencies | 538 |
| Balance at December 31, 2012 | $ 36,200 |

Intangible asset amortization expense was $ 2.8 million, $ 2.7 million and $2.4 million for the years ended December 31, 2012, 2011 and 2010, respectively. Amortization expense of existing amortizable intangible assets is currently estimated to be $2.6 million for the year ending December 31, 2013, $2.4 million for the year ending December 31, 2014, $2.1 million for the year ending December 31, 2015, $2.0 million for the year ending December 31, 2016 and $1.8 million for the year ending December 31, 2017.

**9. Restructuring and Other Exit Costs**

***2012 Restructuring Plans***

During 2012, the management of Harvard Bioscience initiated a plan to reduce operating expenses at Panlab s.l., its Harvard Apparatus Spain subsidiary. The Company recorded restructuring charges of approximately $0.3 million representing severance payments. No charges will be incurred beyond the fourth quarter of 2012 on this matter.

Activity and liability balances related to these charges were as follows:

| | Severance and Related Costs | Other | Total |
|---|---|---|---|
| | | (in thousands) | |
| Restructuring charges | $ 312 | $ 11 | $ 323 |
| Cash payments | (179) | | (179) |
| Restructuring balance at December 31, 2012 | $ 133 | $ 11 | $ 144 |

***2011 Restructuring Plan***

During the quarter ended September 30, 2011, the management of Harvard Bioscience initiated a plan to relocate our Hoefer subsidiary s San Francisco, California facility as part of a business improvement initiative. The Company also developed a plan to improve operating margins at our Coulbourn Instruments subsidiary. The Company recorded restructuring charges of approximately $0.5 million, which included $0.3 million in fixed asset write offs, $0.1 million in severance payments and $0.1 million in other expenses. No further charges are expected to be incurred on this matter.

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Activity and liability balances related to these charges were as follows:

| | Severance and Related Costs | Fixed Asset Write offs | Other | Total |
|---|---|---|---|---|
| | | (in thousands) | | |
| Restructuring charges | $ 78 | $ 307 | $ 110 | $ 495 |
| Cash payments | (33) | | (180) | (213) |
| Non-cash charges | | (307) | 70 | (237) |
| Restructuring balance at December 31, 2011 | 45 | | | 45 |
| Cash payments | (45) | | | (45) |
| Restructuring balance at December 31, 2012 | $ | $ | $ | $ |

***2010 Restructuring Plan***

During the third quarter of 2010, the management of Harvard Bioscience developed a plan to streamline its operations at Panlab, the Harvard Apparatus business in Spain. The plan included workforce reduction in all functions of the organization. During the third quarter of 2010, the Company recorded restructuring charges of approximately $0.3 million, representing severance payments to employees. No charges were incurred beyond the third quarter of 2010 on this matter.

The restructuring charges related to the 2010 Restructuring Plan were as follows:

| | Severance and related Costs | Total |
|---|---|---|
| | (in thousands) | |
| Restructuring charges | $ 283 | $ 283 |
| Cash payments | (283) | (283) |
| Restructuring balance at December 31, 2010 | $ | $ |

During the quarter ended December 31, 2010, the management of Harvard Bioscience developed a plan to reduce operating expenses at our Biochrom U.K. subsidiary. During the fourth quarter of 2010, the Company recorded restructuring expenses of approximately $0.3 million. The charges were comprised of $0.1 million in severance payments, $0.1 million in inventory impairment charges (included in cost of product revenues), and $0.1 million in various other costs. No further charges are expected to be incurred on this matter.

Activity and liability balances related to these restructuring charges in connection with the 2010 Restructuring Plan were as follows:

| | Severance and Related Costs | Inventory | Other | Total |
|---|---|---|---|---|
| | | (in thousands) | | |
| Restructuring charges | $ 145 | $ 79 | $ 70 | $ 294 |
| Cash payments | (94) | | | (94) |
| Non-cash charges | | (79) | | (79) |
| Currency Translation | (1) | | | (1) |
| Restructuring balance at December 31, 2010 | 50 | | 70 | 120 |

| | | | | |
|---|---|---|---|---|
| Cash payments | (36) | | (43) | (79) |
| Non-cash charges | (14) | | (14) | (28) |
| Restructuring balance at December 31, 2011 | | | 13 | 13 |
| Non-cash charges | | | (13) | (13) |
| Restructuring balance at December 31, 2012 | $ | $ | $ | $ |

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Aggregate restructuring charges relating to the 2012 Restructuring Plan, 2011 Restructuring Plan and the 2010 Restructuring Plan were as follows:

| | Years ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| | (in thousands) | | |
| Restructuring charges | $ 310 | $ 467 | $ 577 |

**10. Long Term Debt**

On August 7, 2009, the Company entered into an amended and restated $20.0 million revolving credit loan agreement with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. On September 30, 2011, the Company entered into the First Amendment to the Amended and Restated Revolving Credit Loan Agreement (the First Amendment ) with Bank of America as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The First Amendment extended the maturity date of the credit facility to August 7, 2013 and reduced the interest rate to the London Interbank Offered Rate plus 3.0%. On October 4, 2012, the Company entered into the Second Amendment to the Amended and Restated Revolving Credit Loan Agreement (the Second Amendment ) with Bank of America as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The Second Amendment extends the maturity date of the credit facility to August 7, 2014 with no changes to other terms. At December 31, 2012, the interest rate for the facility was 3.21%. The amended and restated facility includes covenants relating to income, debt coverage and cash flow, as well as minimum working capital requirements. The credit facility also contains limitations on the Company s ability to incur additional indebtedness and requires lender approval for acquisitions funded with cash, promissory notes and/or other consideration in excess of $6.0 million and for acquisitions funded solely with equity in excess of $10.0 million.

As of December 31, 2012 and 2011, the Company had $13.0 million and $16.3 million, respectively, outstanding under its credit facility. As of December 31, 2012, the Company was in compliance with all financial covenants contained in its credit facility; the Company was not subject to any borrowing restrictions under the financial covenants and had available borrowing capacity under its revolving credit facility of $7.0 million.

The debt repayment schedule is as follows:

| | (in thousands) |
|---|---|
| 2013 | $ |
| 2014 | 12,950 |
| Total | $ 12,950 |

**11. Leases**

In May 2010, the Company entered into the second amendment to its Lease Agreement dated December 30, 2005 for its headquarters, office, light manufacturing and warehouse space located in Holliston, Massachusetts which provides for an extended lease term and an additional 9,200 square feet of space. The Company now has noncancelable operating leases for office and warehouse space expiring at various dates through 2017. Rent expense, which is recorded on a straight-line basis, was approximately $1.3 million, $1.5 million and $1.7 million for the years ended December 31, 2012, 2011 and 2010, respectively.

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Future minimum lease payments for operating leases, with initial or remaining terms in excess of one year at December 31, 2012, for its continuing operations are as follows:

| | Operating Leases (in thousands) |
|---|---|
| 2013 | $ 1,104 |
| 2014 | 1,062 |
| 2015 | 934 |
| 2016 | 708 |
| 2017 | 443 |
| Thereafter | 229 |
| Net minimum lease payments | $ 4,480 |

**12. Accrued Expenses**

Accrued expenses consist of:

| | December 31, 2012 | 2011 |
|---|---|---|
| | (in thousands) | |
| Accrued compensation and payroll | $ 1,389 | $ 1,225 |
| Accrued legal and professional fees | 869 | 829 |
| Warranty costs | 222 | 144 |
| Other | 1,025 | 1,125 |
| Total | $ 3,505 | $ 3,323 |

**13. Income Tax**

Income tax expense (benefit) attributable to income from continuing operations for the years ended December 31, 2012, 2011 and 2010 consisted of:

| | Years ended December 31, 2012 | 2011 | 2010 |
|---|---|---|---|
| | | (in thousands) | |
| Current income tax expense: | | | |
| Federal and state | $ 70 | $ 111 | $ 313 |
| Foreign | 1,705 | 1,156 | 2,069 |
| | 1,775 | 1,267 | 2,382 |
| Deferred income tax benefit: | | | |
| Federal and state | (771) | (371) | (11,576) |
| Foreign | (308) | (166) | (258) |

| | | | |
|---|---|---|---|
| | (1,079) | (537) | (11,834) |
| Total income tax expense (benefit) | $ 696 | $ 730 | $ (9,452) |

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Income tax expense (benefit) for the periods ended December 31, 2012, 2011 and 2010 differed from the amount computed by applying the U.S. federal income tax rate of 34% to pre-tax continuing operations income as a result of the following:

| | Years ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| | | (in thousands) | |
| Computed expected income tax expense | $ 756 | $ 1,543 | $ 3,252 |
| Increase (decrease) in income taxes resulting from: | | | |
| Permanent differences, net | (25) | 109 | 32 |
| Foreign tax rate differential | (435) | (333) | (331) |
| State income taxes, net of federal income tax benefit | 20 | 56 | 206 |
| Non-deductible stock compensation expense | 254 | 345 | 199 |
| Adjustment of prior year tax accruals | (6) | (327) | 343 |
| Tax credits | (127) | (231) | (279) |
| Release of uncertain tax position liability due to expiration of statute of limitations | | (528) | |
| Change in valuation allowance allocated to income tax expense (benefit) | 281 | 63 | (12,747) |
| Other | (22) | 33 | (127) |
| Total income tax expense (benefit) | $ 696 | $ 730 | $ (9,452) |

Income tax expense (benefit) is based on the following pre-tax continuing operations income (loss) for the years ended December 31, 2012, 2011 and 2010:

| | Years ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| | | (in thousands) | |
| Domestic | $ (3,888) | $ (1,862) | $ 2,719 |
| Foreign | 6,116 | 6,404 | 6,844 |
| Total | $ 2,228 | $ 4,542 | $ 9,563 |

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The tax effects of temporary differences that give rise to significant components of the deferred tax assets and deferred tax liabilities from continuing operations at December 31, 2012 and 2011 are as follows:

| | 2012 | 2011 |
|---|---|---|
| | (in thousands) | |
| Deferred tax assets: | | |
| Accounts receivable | $ 62 | $ 91 |
| Inventory | 1,251 | 1,057 |
| Operating loss and credit carryforwards | 8,829 | 8,355 |
| Property, plant and equipment | | 33 |
| Accrued expenses | 107 | 113 |
| Pension liabilities | 1,366 | 1,387 |
| Contingent consideration | 2,413 | 2,488 |
| Compensation and other accrued liabilities | 3,761 | 3,173 |
| Total gross deferred assets | 17,789 | 16,697 |
| Less: valuation allowance | (1,307) | (1,231) |
| Deferred tax assets | $ 16,482 | $ 15,466 |
| Deferred tax liabilities: | | |
| Intangible assets | $ 4,057 | $ 3,781 |
| Property, plant and equipment | 115 | |
| Other accrued liabilities | 264 | 221 |
| Total deferred tax liabilities | 4,436 | 4,002 |
| Net deferred tax assets | $ 12,046 | $ 11,464 |

The amounts recorded as deferred tax assets as of December 31, 2012 and 2011 represent the amount of tax benefits of existing deductible temporary differences and carryforwards that are more likely than not to be realized through the generation of sufficient future taxable income within the carryforward period. Significant management judgment is required in determining any valuation allowance recorded against deferred tax assets and liabilities. During the year ended December 31, 2010, management concluded that it is more likely than not that a majority of our U.S. deferred tax assets will be realized through future taxable income. This conclusion was based, in part, on our achieving sustained profitability and projections of positive future earnings in the U.S. Therefore, we released a significant portion of the valuation allowances related to these deferred tax assets. The release of the above mentioned valuation allowances resulted in an income tax benefit of $11.3 million during the year ending December 31, 2010. We provide valuation allowances for net deferred tax assets in several foreign jurisdictions. In 2012, the Company corrected the classification of deferred tax assets related to stock-based compensation expense of $2.7 million from current to non-current.

At December 31, 2012, we had federal and state net operating loss carryforwards available to offset future taxable income of approximately $16.4 million. The operating loss carryforwards will begin to expire in 2013. Furthermore, we had foreign operating loss carryforwards to offset future taxable income of approximately $2.9 million, which begin to expire in 2013. The Company also had federal and state general business and minimum tax credit carryforwards available to reduce future federal and state regular income taxes of approximately $4.3 million, which begin to expire in 2013. Approximately $7.2 million of net operating losses are subject to an annual limitation of $0.7 million imposed by change in ownership provisions of Section 382 of the Internal Revenue Code. As mentioned above, certain of these net operating loss and credit carryforwards have full valuation allowances set up against them.

Undistributed earnings of our foreign subsidiaries amounted to approximately $46.0 million, $40.9 million and $35.4 million at December 31, 2012, 2011 and 2010, respectively. Our undistributed foreign earnings are indefinitely reinvested and, accordingly, no related provision for U.S federal and state income taxes has been provided. It is impracticable to estimate the total tax liability, if any, which would be created by the future distribution of these earnings.

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At December 31, 2012 and 2011, cash and cash equivalents held by our foreign subsidiaries was $19.2 million and $15.9 million, respectively. These funds are not available for domestic operations unless the funds are repatriated. If the Company planned to or did repatriate these funds then U.S. federal and state income taxes would have to be recorded on such amounts. We currently have no plans and do not intend to repatriate any of our undistributed foreign earnings. The foreign earnings are considered permanently reinvested and will be used for foreign acquisitions, capital investments and operations. In July 2011, we acquired the assets of CMA, a Swedish manufacturer, and utilized approximately $4.4 million of our foreign cash on hand to do so. In February 2012, the Company acquired all issued and outstanding shares of AHN Biotechnologie GmbH, a German manufacturer, and utilized approximately $2.0 million of our foreign cash on hand. We also plan to use approximately $1.3 million additional foreign cash on hand in 2013 for capital improvements at this new subsidiary.

During the year ended December 31, 2009 the Company filed a final tax return for its Genomic Solutions, Ltd. subsidiary that included the activity related to the sale of the business. The final return included uncertain tax positions. We recorded an uncertain tax liability in the amount of $0.5 million. In January 2011, the statute of limitations expired for the return that included these uncertain tax positions with no change from the tax authorities. Accordingly, the uncertain tax liability and the related accrued interest was reversed in the first quarter of 2011. During 2010, the Company completed an analysis of its research and development credit carryforwards and determined that due to certain documentation requirements to substantiate the credit, an uncertain tax liability of $0.2 million should be recorded. No penalties or interest have been accrued on this liability because the credits have not yet been utilized. If payment of these amounts ultimately proves to be unnecessary, the reversal of the liabilities would result in tax benefits being recognized in the period when we determine the liabilities are no longer necessary. If the estimate of tax liabilities proves to be less than the ultimate assessment, a further charge to expense would result. A reconciliation of uncertain tax liabilities is as follows:

| | (in thousands) |
|---|---|
| Balance at December 31, 2010 | $ 719 |
| Release due to expiration of statute of limitations | (528) |
| Balance at December 31, 2011 | 191 |
| Additions based on tax positions of prior years | |
| Balance at December 31, 2012 | $ 191 |

The Company or one of its subsidiaries files income tax returns in the U.S. federal jurisdiction, and various states and foreign jurisdictions. With few exceptions, the Company is no longer subject to income tax examinations by tax authorities for years before 2008. The Company is under audit by the IRS for the 2009 tax year. The Company is also under audit for tax years 2009 and 2010 by the Massachusetts Department of Revenue. The Company is not aware of any tax audits in other major jurisdictions.

**14. Employee Benefit Plans**

The Company sponsors profit sharing retirement plans for its U.S. employees, which includes employee savings plans established under Section 401(k) of the U.S. Internal Revenue Code (the 401(k) Plan ). The 401(k) Plans cover substantially all full-time employees who meet certain eligibility requirements. Contributions to the profit sharing retirement plans are at the discretion of management. For the year ended December 31, 2012, 2011 and 2010, we contributed approximately $0.5 million, $0.6 million and $0.4 million, respectively, to the plan.

Certain of our subsidiaries in the United Kingdom (UK), Harvard Apparatus Limited and Biochrom Limited maintain contributory, defined benefit or defined contribution pension plans for substantially all of their employees. The provisions of FASB ASC 715-20 require that the funded status of our pension plans be recognized in its balance sheet. FASB ASC 715-20 does not change the measurement or income statement

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recognition of these plans, although it does require that plan assets and benefit obligations be measured as of the balance sheet date. We have historically measured the plan assets and benefit obligations as of the balance sheet date.

The components of our pension expense follows:

| | Years ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| | (in thousands) | | |
| Components of net periodic benefit cost: | | | |
| Service cost | $ 314 | $ 298 | $ 252 |
| Interest cost | 819 | 836 | 784 |
| Expected return on plan assets | (570) | (608) | (614) |
| Net amortization loss | 248 | 159 | 131 |
| Net periodic benefit cost | $ 811 | $ 685 | $ 553 |

The measurement date is December 31 for these plans. The funded status of our defined benefit pension plans and the amount recognized in the consolidated balance sheets at December 31, 2012 and 2011 is as follows:.

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Change in benefit obligation: | | |
| Balance at beginning of year | $ 16,866 | $ 15,568 |
| Service cost | 303 | 282 |
| Interest cost | 819 | 836 |
| Participants contributions | 60 | 65 |
| Actuarial loss | 1,547 | 637 |
| Benefits paid | (663) | (415) |
| Currency translation adjustment | 711 | (107) |
| Balance at end of year | $ 19,643 | $ 16,866 |

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Change in fair value of plan assets: | | |
| Balance at beginning of year | $ 12,006 | $ 11,843 |
| Actual return on plan assets | 944 | (314) |
| Participants contributions | 60 | 65 |
| Employer contributions | 873 | 905 |
| Benefits paid | (663) | (415) |
| Currency translation adjustment | 484 | (78) |
| Balance at end of year | $ 13,704 | $ 12,006 |

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| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Change in benefit obligation: | | |
| Funded status | $ (5,939) | $ (4,860) |
| Unrecognized net loss | N/A | N/A |
| Net amount recognized | $ (5,939) | $ (4,860) |

The accumulated benefit obligation for all defined benefit pension plans was $18.1 million and $15.7 million at December 31, 2012 and 2011, respectively.

The amounts recognized in the consolidated balance sheets consist of:

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Deferred income tax assets | $ 1,366 | $ 1,291 |
| Other liabilities | (5,939) | (4,860) |
| Net amount recognized | $ (4,573) | $ (3,569) |

The amounts recognized in accumulated other comprehensive income, net of tax consist of:

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Underfunded status of pension plans | $ (4,573) | $ (3,569) |
| Net amount recognized | $ (4,573) | $ (3,569) |

The weighted average assumptions used in determining the net pension cost for these plans follows:

| | Years ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| Discount rate | 4.09% | 4.70% | 5.40% |
| Expected return on assets | 4.02% | 4.40% | 5.00% |
| Rate of compensation increase | 3.51% | 3.50% | 4.00% |

The discount rate assumptions used for pension accounting reflect the prevailing rates available on high-quality, fixed-income debt instruments with terms that match the average expected duration of our defined benefit pension plan obligations. We use the iBoxx AA 15yr+ index, which matches the average duration of our pension plan liability of approximately 16 years. With the current base of assets in our pension plans, a 0.1% increase/decrease in the discount rate assumption would decrease/increase our annual pension expense by approximately $87,000.

The Company s mix of pension plan investments among asset classes also affects the long-term expected rate of return on plan assets. As of December 31, 2012, the Company s actual asset mix approximated its target mix. Differences between actual and expected returns are recognized in the calculation of net periodic pension (income)/cost over the average remaining expected future working lifetime, which is approximately 16 years, of active plan participants. With the current base of assets, a 0.1% increase/decrease in the asset return assumption would decrease/increase the annual pension expense by approximately $13,000.

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The fair value and asset allocations of the Company s pension benefits as of December 31, 2012 and 2011 measurement dates were as follows:

| | December 31, | | | |
|---|---|---|---|---|
| | 2012 | | 2011 | |
| | (in thousands) | | | |
| Asset category: | | | | |
| Equity securities | $ 6,918 | 50% | $ 5,861 | 49% |
| Debt securities | 5,049 | 37% | 4,333 | 36% |
| Cash and cash equivalents | 969 | 7% | 770 | 6% |
| Other | 768 | 6% | 1,042 | 9% |
| Total | $ 13,704 | 100% | $ 12,006 | 100% |

Financial reporting standards define a fair value hierarchy that consists of three levels. The fair values of the plan assets by fair value hierarchy level as of December 31, 2012 and 2011 is as follows:

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Quoted Prices in Active Markets for Identical Assets (Level 1) | $ 969 | $ 770 |
| Significant Other Observable Inputs (Level 2) | 11,967 | 10,194 |
| Significant Other Unobservable Inputs (Level 3) | 768 | 1,042 |
| Total | $ 13,704 | $ 12,006 |

Level 1 assets consist of cash and cash equivalents held in the pension plans at December 31, 2012. The Level 2 assets primarily consist of investments in private investment funds that are valued using the net asset values provided by the trust or fund, including an insurance contract. Although these funds are not traded in an active market with quoted prices, the investments underlying the net asset value are based on quoted prices. Level 3 assets consist of investments in a longevity fund which invests in a portfolio of physical life insurance settlements that are valued using the net asset values provided by the fund. Since June 2011, the fund has been closed to all activity. During the current year, the Company wrote down the value of this investment by $0.3 million. This is due to the fact that the fund has entered into premium financing contracts to ensure premium obligations on the policies are met for the foreseeable future or until maturities result in reliable liquidity. Going forward, the Company will monitor the financial condition of this fund to determine if additional write down is necessary.

The following table presents a summary of changes in our Level 3 investments measured at fair value on a recurring basis:

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| Balance at beginning of year | $ 1,042 | $ 1,112 |
| Purchases during the year | | |
| Unrealized loss | (274) | (70) |
| Balance at end of year | $ 768 | $ 1,042 |

We expect to contribute approximately $0.9 million to our pension plans during 2013.

The benefits expected to be paid from the pension plans are $0.5 million in 2013, $0.4 million in 2014, $0.6 million in 2015, $0.9 million in 2016 and $0.6 million in 2017. The expected benefits to be paid in the five years from 2018 2022 are $3.5 million. The expected benefits are based on the same assumptions used to measure the Company s benefit obligation at December 31, 2012 and include estimated future employee

service.

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**15. Commitments and Contingent Liabilities**

From time to time, the Company may be involved in various claims and legal proceedings arising in the ordinary course of business. The Company is not currently a party to any such claims or proceedings.

**16. Capital Stock**

*Common Stock*

On February 5, 2008, the Company s Board of Directors adopted a Shareholder Rights Plan and declared a dividend distribution of one preferred stock purchase right for each outstanding share of the Company s common stock to shareholders of record as of the close of business on February 6, 2008. Initially, these rights will not be exercisable and will trade with the shares of the Company s common stock. Under the Shareholder Rights Plan, the rights generally will become exercisable if a person becomes an acquiring person by acquiring 20% or more of the common stock of the Company or if a person commences a tender offer that could result in that person owning 20% or more of the common stock of the Company. If a person becomes an acquiring person, each holder of a right (other than the acquiring person) would be entitled to purchase, at the then-current exercise price, such number of shares of preferred stock which are equivalent to shares of the Company s common stock having a value of twice the exercise price of the right. If the Company is acquired in a merger or other business combination transaction after any such event, each holder of a right would then be entitled to purchase, at the then-current exercise price, shares of the acquiring company s common stock having a value of twice the exercise price of the right.

*Employee Stock Purchase Plan*

In 2000, the Company approved a stock purchase plan. Under this plan, participating employees can authorize the Company to withhold a portion of their base pay during consecutive six-month payment periods for the purchase of shares of the Company s common stock. At the conclusion of the period, participating employees can purchase shares of the Company s common stock at 85% of the lower of the fair market value of the Company s common stock at the beginning or end of the period. Shares are issued under the plan for the six-month periods ending June 30 and December 31. Under this plan, 500,000 shares of common stock are authorized for issuance of which 470,403 shares were issued as of December 31, 2012. During the years ended December 31, 2012 and 2011, we issued 60,028 shares and 49,400 shares, respectively, under the Employee Stock Purchase Plan.

*Stock-Based Payment Awards*

The Company accounts for stock-based payment awards in accordance with the provisions of FASB ASC 718, which requires it to recognize compensation expense for all stock-based payment awards made to employees and directors including employee stock options, restricted stock units, and employee stock purchases related to the Employee Stock Purchase Plan ( employee stock purchases ).

FASB ASC 718 requires companies to estimate the fair value of stock-based payment awards, except restricted stock units, on the date of grant using an option-pricing model. The value of the portion of the award that is ultimately expected to vest is recognized as expense over the requisite service periods in its consolidated statements of income.

Upon adoption of FASB ASC 718, the Company elected to retain its method of valuation for stock-based payment awards using the Black-Scholes option-pricing model ( Black-Scholes model ). The determination of fair value of stock-based payment awards on the date of grant using an option-pricing model is affected by its stock price as well as assumptions regarding a number of highly complex and subjective variables. These variables include, but are not limited to its expected stock price volatility over the term of the awards and actual and projected employee stock option exercise behaviors. The Company records stock compensation expense on a straight-line basis over the requisite service period for all awards granted since the adoption of FASB ASC 718.

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*Stock Option Plans*

*1996 Stock Option and Grant Plan*

In 1996, the Company adopted the 1996 Stock Option and Grant Plan (the 1996 Stock Plan ) pursuant to which the Board of Directors could grant stock options to employees, directors and consultants. The 1996 Stock Plan authorized grants of options to purchase 4,072,480 shares of authorized but unissued common stock. In 2000, the 1996 Stock Plan was replaced by the 2000 Stock Option and Incentive Plan. As of December 31, 2012, there were no options to purchase shares outstanding under the 1996 Stock Plan.

*Amended and Restated 2000 Stock Option and Incentive Plan*

The Third Amended and Restated 2000 Stock Option and Incentive Plan (the 2000 Plan ) was adopted by the Board of Directors on April 13, 2011. Such amendment to the 2000 Plan was approved by the stockholders at the Company s 2011 Annual Meeting. The 2000 Plan made the following changes, among others, to the Second Amended and Restated 2000 Stock Option and Incentive Plan (the Plan ):

- the aggregate number of shares authorized for issuance under the Plan was increased by 3,700,000 shares to 13,067,675 shares of Common Stock;
- the current limitation that no more than 3,750,000 shares of restricted stock awards, unrestricted stock awards, and performance share awards may be issued under the Plan was replaced with a fungible share provision deducting from shares available for grant under the Plan 1.79 shares for each share that underlies an award granted under our 2000 Plan for deferred stock awards of restricted stock units, restricted stock awards, unrestricted stock awards, performance share awards or other awards under our 2000 Plan for which the full value of such share is transferred by the Company to the award recipient; and
- other clarifying and updating changes.

The Company currently has 13,067,675 shares of its common stock reserved for the issuance of awards under the 2000 Plan. As of December 31, 2012, there were options to purchase 8,078,509 shares, and 677,193 restricted stock units outstanding.

Through December 31, 2012 and 2011, incentive stock options to purchase 8,990,395 and 8,461,068 shares and non-qualified stock options to purchase 8,906,684 and 8,215,077 shares, respectively, had been granted to employees and directors under the Stock Plans. Generally, both the incentive stock options and non-qualified stock options become fully vested over approximately a four-year period.

During the years ended December 31, 2012, 2011 and 2010, 1,220,934, 1,030,500 and 674,100 options, respectively, were granted to employees and directors at exercise prices equal to or greater than fair market value of the Company s common stock on the date of grant.

During 2012, 2011 and 2010, 349,295, 188,750 and 467,600 restricted stock units, respectively, were granted to certain employees under the 2000 Plan.

*Earnings per share*

Basic earnings per share is based upon net income divided by the number of weighted average common shares outstanding during the period. The calculation of diluted earnings per share assumes conversion of stock options and restricted stock units into common stock using the treasury method. The weighted average number of shares used to compute basic and diluted earnings per share consists of the following:

| | Years ended December 31, | | |
|---|---|---|---|
| | **2012** | **2011** | **2010** |
| Basic | 28,799,377 | 28,451,386 | 28,967,439 |
| | 624,123 | 1,367,348 | 437,270 |

| | | | |
|---|---|---|---|
| Effect of assumed conversion of employee and director stock options and restricted stock units | | | |
| Diluted | 29,423,500 | 29,818,734 | 29,404,709 |

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Excluded from the shares used in calculating the diluted earnings per common share in the above table are options to purchase approximately 4,740,318 shares, 3,653,317 shares and 5,801,313 shares of common stock for the years ended December 31, 2012, 2011 and 2010, respectively, as the impact of these shares would be anti-dilutive.

*General Option Information*

The following is a summary of stock option and the restricted stock unit activity:

| | | Stock Options | | Restricted Stock Units | |
|---|---|---|---|---|---|
| | Available for Grant | Stock Options Outstanding | Weighted Average Exercise Price | Restricted Stock Units Outstanding | Grant Date Fair Value |
| Balance at December 31, 2009 | 946,729 | 7,502,235 | $ 4.45 | | $ |
| Granted | (1,141,700) | 674,100 | 3.61 | 467,600 | 3.61 |
| Exercised | | (58,385) | 2.17 | | |
| Cancelled / forfeited | 291,750 | (291,750) | 4.68 | | |
| Balance at December 31, 2010 | 96,779 | 7,826,200 | 4.38 | 467,600 | 3.61 |
| Approved by shareholders | 3,700,000 | | | | |
| Granted | (1,219,250) | 1,030,500 | 5.64 | 188,750 | 5.64 |
| Fungible share adjustment for RSU s granted | (149,113) | | | | |
| Exercised | | (105,625) | 3.79 | | |
| Vested (RSU s) | | | | (116,900) | |
| Shares Traded for Taxes | 40,729 | | | | |
| Cancelled / forfeited | 231,500 | (231,500) | 5.27 | | |
| Balance at December 31, 2011 | 2,700,645 | 8,519,575 | 4.52 | 539,450 | 4.32 |
| Granted | (1,570,229) | 1,220,934 | 3.60 | 349,295 | 3.57 |
| Fungible share adjustment for RSU s granted | (275,943) | | | | |
| Exercised | | (648,000) | 3.94 | | |
| Vested (RSU s) | | | | (164,090) | |
| Shares Traded for Taxes | 45,912 | | | | |
| Cancelled / forfeited | 1,061,462 | (1,014,000) | 6.36 | (47,462) | 4.21 |
| Fungible share adjustment for RSU s cancelled | 11,109 | | | | |
| Balance at December 31, 2012 | 1,972,956 | 8,078,509 | $ 4.25 | 677,193 | $ 3.97 |

The Company s policy is to issue stock available from its registered but unissued stock pool through its transfer agent to satisfy stock option exercises and vesting of the restricted stock units.

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The following table summarizes information concerning currently outstanding and exercisable options as of December 31, 2012 (Aggregate Intrinsic Value, in thousands):

| | Options Outstanding | | | | Options Exercisable | | | |
|---|---|---|---|---|---|---|---|---|
| Range of Exercise Price | Number Outstanding at December 31, 2012 | Weighted Average Remaining Contractual Life in Years | Weighted Average Exercise Price | Aggregate Intrinsic Value | Shares Exercisable at December 31, 2012 | Weighted Average Remaining Contractual Life in Years | Weighted Average Exercise Price | Aggregate Intrinsic Value |
| $1.99-2.98 | 1,000,000 | 4.87 | $ 2.37 | $ 2,010 | 1,000,000 | 4.87 | $ 2.37 | $ 2,010 |
| 3.00-3.11 | 136,350 | 1.27 | 3.01 | 187 | 136,350 | 1.27 | 3.01 | 187 |
| 3.18-3.18 | 1,633,000 | 6.39 | 3.18 | 1,960 | 1,247,000 | 6.39 | 3.18 | 1,496 |
| 3.42-3.45 | 52,500 | 1.93 | 3.43 | 50 | 52,500 | 1.93 | 3.43 | 50 |
| 3.57-3.57 | 1,144,934 | 9.40 | 3.57 | 927 | | | | |
| 3.61-4.28 | 1,400,475 | 4.80 | 3.98 | 560 | 1,115,775 | 4.04 | 4.05 | 368 |
| 4.36-5.57 | 1,191,250 | 4.48 | 5.24 | | 1,181,250 | 4.45 | 5.25 | |
| 5.64-5.64 | 870,000 | 8.42 | 5.64 | | 230,250 | 8.24 | 5.64 | |
| 7.99-8.79 | 640,000 | 1.23 | 8.24 | | 640,000 | 1.23 | 8.24 | |
| 9.17-9.17 | 10,000 | 1.14 | 9.17 | | 10,000 | 1.14 | 9.17 | |
| $1.99-9.17 | 8,078,509 | 5.74 | $ 4.25 | $ 5,694 | 5,613,125 | 4.55 | $ 4.33 | $ 4,111 |

The aggregate intrinsic value in the preceding table represents the total pre-tax intrinsic value, based on the Company s closing stock price of $4.38 as of December 31, 2012, which would have been received by the option holders had all option holders exercised their options as of that date. The aggregate intrinsic value of options exercised for the year ended December 31, 2012 and 2011 was approximately $0.3 million and $8,450, respectively. The total number of in-the-money options that were exercisable as of December 31, 2012 was 3,551,625.

For the year ended December 31, 2012, the total compensation costs related to unvested awards not yet recognized is $5.1 million and the weighted average period over which it is expected to be recognized is 1.56 years.

*Valuation and Expense Information under Stock-Base-Payment Accounting*

Stock-based compensation expense related to employee stock options, restricted stock units and the employee stock purchase plan for the years ended December 31, 2012, 2011 and 2010 was allocated as follows:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| | | (in thousands) | |
| Cost of product revenues | $ 87 | $ 76 | $ 65 |
| Sales and marketing | 219 | 196 | 112 |
| General and administrative | 2,990 | 2,570 | 2,560 |
| Research and development | 25 | 21 | 19 |
| Total stock-based compensation | $ 3,321 | $ 2,863 | $ 2,756 |

The Company did not capitalize any stock-based compensation.

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The weighted-average estimated value per share of employee stock options granted during 2012, 2011 and 2010 was $1.84, $2.94 and $1.97, respectively, using the Black Scholes option-pricing model with the following weighted-average assumptions:

| | Years Ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| Volatility | 55.09 % | 54.24 % | 55.96 % |
| Risk-free interest rate | 0.80 % | 2.01 % | 2.22 % |
| Expected holding period | 5.98 years | 5.94 years | 6.13 years |
| Dividend Yield | 0 % | 0 % | 0 % |

The Company used historical volatility to calculate the expected volatility as of December 31, 2012. Historical volatility was determined by calculating the mean reversion of the daily adjusted closing stock price. The risk-free interest rate assumption is based upon observed Treasury bill interest rates (risk free) appropriate for the term of the Company s employee stock options. The expected life of employee stock options represents the period of time options are expected to be outstanding and were based on historical experience. The vesting period is approximately four years and the contractual life is ten years.

Stock-based compensation expense recognized in the consolidated statement of income for the years ended December 31, 2012, 2011 and 2010 is based on awards ultimately expected to vest and has been reduced for annualized estimated forfeitures of 5.38%, 5.04% and 4.74%, respectively. Stock-based-payment accounting requires forfeitures to be estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. Forfeitures were estimated based on historical experience.

**17. Segment and Related Information**

Operating segments are based on products and services provided by each segment, internal organization structure, manner in which operations are managed, criteria used by the Chief Operating Decision Maker ( CODM ) to assess the segment performance as well as resources allocation and the availability of discrete financial information.

The Company has two reportable segments, namely the LSRT segment and the Regenerative Medicine Device ( RMD ) segment. The Company has two operating segments aggregated under the LSRT segment. These operating segments have similar products and services, customer channels, distribution methods and historical margins. The LSRT segment is engaged in the development, manufacture and marketing of specialized products, primarily apparatus and scientific instruments, used to advance life science research at pharmaceutical and biotechnology companies, universities and government laboratories worldwide.

The RMD segment is engaged in the development, manufacturing and marketing of devices used by clinicians and researchers in the field of regenerative medicine.

Non operating expenses that are not allocated to operating segments are under the caption Unallocated Expenses . Unallocated expenses also include certain corporate related expenses that are not allocated to the operating segments.

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Business segment information for the periods indicated is as follows:

| | LSRT | RMD | Unallocated | Total |
|---|---|---|---|---|
| | | (in thousands) | | |
| **Year ended December 31, 2012** | | | | |
| Total revenues | $ 111,171 | $ | $ | $ 111,171 |
| Segment operating income (loss) | 13,898 | (6,331) | (4,401) | 3,166 |
| Interest income | 46 | | | 46 |
| Interest expense | (38) | | (546) | (584) |
| Other (expense) income, net | (917) | | (21) | (938) |
| Segment income (loss) before income taxes | 12,981 | (6,331) | (4,422) | 2,228 |
| Depreciation and amortization | 4,047 | 60 | 99 | 4,206 |
| Capital expenditures | 1,557 | 195 | 17 | 1,769 |
| Goodwill and indefinite lived intangible assets | 37,476 | | | 37,476 |
| Total assets | $ 132,714 | $ 439 | $ 331 | $ 133,484 |
| **Year ended December 31, 2011** | | | | |
| Total revenues | $ 108,864 | $ | $ | $ 108,864 |
| Segment operating income (loss) | 13,815 | (3,036) | (4,702) | 6,077 |
| Interest income | 65 | | | 65 |
| Interest expense | (14) | | (738) | (752) |
| Other (expense) income, net | (2,080) | | 545 | (1,535) |
| Segment income (loss) before income taxes | 11,735 | (3,036) | (4,157) | 4,542 |
| Depreciation and amortization | 4,224 | 20 | 85 | 4,329 |
| Capital expenditures | 1,199 | 183 | 124 | 1,506 |
| Goodwill and indefinite lived intangible assets | 35,478 | | | 35,478 |
| Total assets | $ 126,042 | $ 178 | $ 414 | $ 126,634 |
| **Year ended December 31, 2010** | | | | |
| Total revenues | $ 108,179 | $ | $ | $ 108,179 |
| Segment operating income (loss) | 16,603 | (839) | (5,546) | 10,218 |
| Interest income | 65 | | | 65 |
| Interest expense | | | (677) | (677) |
| Other (expense) income, net | (941) | | 286 | (655) |
| Segment income (loss) before income taxes | 15,662 | (839) | (5,260) | 9,563 |
| Depreciation and amortization | 3,832 | 1 | 84 | 3,917 |
| Capital expenditures | 696 | 1 | 147 | 844 |
| Goodwill and indefinite lived intangible assets | 34,692 | | | 34,692 |
| Total assets | $ 124,410 | $ 1 | $ 386 | $ 124,797 |

The depreciation and amortization costs above include the amortization of catalog costs of $0.2 million and $0.3 million for the years ended December 31, 2012 and 2011, respectively.

The following tables summarize selected financial information of the Company s continuing operations by geographic location:

Revenues by geographic area consist of the following:

| | Years ended December 31, | | |
|---|---|---|---|
| | 2012 | 2011 | 2010 |
| | | (in thousands) | |
| United States | $ 65,190 | $ 64,185 | $ 63,538 |
| United Kingdom | 27,137 | 26,160 | 27,820 |
| Rest of the world | 18,844 | 18,519 | 16,821 |
| Total revenues | $ 111,171 | $ 108,864 | $ 108,179 |

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Tangible long-lived assets by geographic area consist of the following:

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| United States | $ 1,714 | $ 1,685 |
| United Kingdom | 1,341 | 1,127 |
| Rest of the world | 1,496 | 274 |
| Total tangible long-lived assets | $ 4,551 | $ 3,086 |

Net assets by geographic area consist of the following:

| | December 31, | |
|---|---|---|
| | 2012 | 2011 |
| | (in thousands) | |
| United States | $ 51,218 | $ 48,356 |
| United Kingdom | 29,741 | 27,818 |
| Rest of the world | 23,254 | 19,325 |
| Total net assets | $ 104,213 | $ 95,499 |

**18. Allowance for Doubtful Accounts**

Allowance for doubtful accounts is based on our assessment of the collectability of customer accounts. A rollforward of allowance for doubtful accounts is as follows:

| | | Charged (credited) to | | |
|---|---|---|---|---|
| | Beginning Balance | Bad Debt Expense | Charged to Allowance | Ending Balance |
| | | (in thousands) | | |
| Year ended December 31, 2010 | $ 403 | (117) | (13) | $ 273 |
| Year ended December 31, 2011 | 273 | 67 | (38) | 302 |
| Year ended December 31, 2012 | $ 302 | (31) | (77) | $ 194 |

**19. Warranties**

A rollforward of product warranties is as follows:

| | Beginning Balance | Payments | Additions | Ending Balance |
|---|---|---|---|---|
| | | (in thousands) | | |
| Year ended December 31, 2010 | $ 162 | $ (54) | $ 50 | $ 158 |
| Year ended December 31, 2011 | $ 158 | $ (58) | $ 44 | $ 144 |
| Year ended December 31, 2012 | $ 144 | $ (136) | $ 214 | $ 222 |

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**20. Quarterly Financial Information (unaudited)**

**Statement of Operations Data:**

| 2012 | First Quarter | Second Quarter | Third Quarter | Fourth Quarter | Fiscal Year |
|---|---|---|---|---|---|
| | (in thousands, except per share data) | | | | |
| Revenues | $ 28,322 | $ 28,496 | $ 26,104 | $ 28,249 | $ 111,171 |
| Cost of product revenues | 14,922 | 14,881 | 14,110 | 14,840 | 58,753 |
| Gross profit | 13,400 | 13,615 | 11,994 | 13,409 | 52,418 |
| Total operating expenses | 12,171 | 12,316 | 12,073 | 12,692 | 49,252 |
| Operating income | 1,229 | 1,299 | (79) | 717 | 3,166 |
| Other (expense) income, net | (385) | (226) | (178) | (149) | (938) |
| Income (loss) from continuing operations before income taxes | 844 | 1,073 | (257) | 568 | 2,228 |
| Income tax expense (benefit) | 315 | 299 | (124) | 206 | 696 |
| Income (loss) from continuing operations | 529 | 774 | (133) | 362 | 1,532 |
| Income from discontinued operations, net of tax | | | | 838 | 838 |
| Net income (loss) | $ 529 | $ 774 | $ (133) | $ 1,200 | $ 2,370 |
| Income per share: | | | | | |
| Basic earnings per common share from continuing operations | $ 0.02 | $ 0.03 | $ (0.00) | $ 0.01 | $ 0.05 |
| Discontinued operations | | | | 0.03 | 0.03 |
| Basic earnings per common share | $ 0.02 | $ 0.03 | $ (0.00) | $ 0.04 | $ 0.08 |
| Diluted earnings per common share from continuing operations | $ 0.02 | $ 0.03 | $ (0.00) | $ 0.01 | $ 0.05 |
| Discontinued operations | | | | 0.03 | 0.03 |
| Diluted earnings per common share | $ 0.02 | $ 0.03 | $ (0.00) | $ 0.04 | $ 0.08 |

**Statement of Operations Data:**

| 2011 | First Quarter | Second Quarter | Third Quarter | Fourth Quarter | Fiscal Year |
|---|---|---|---|---|---|
| | (in thousands, except per share data) | | | | |
| Revenues | $ 26,312 | $ 27,143 | $ 26,381 | $ 29,028 | $ 108,864 |
| Cost of product revenues | 13,943 | 14,358 | 14,503 | 15,800 | 58,604 |
| Gross profit | 12,369 | 12,785 | 11,878 | 13,228 | 50,260 |
| Total operating expenses | 10,419 | 10,266 | 11,658 | 11,840 | 44,183 |
| Operating income | 1,950 | 2,519 | 220 | 1,388 | 6,077 |
| Other (expense) income, net | (275) | (519) | (338) | (403) | (1,535) |
| Income (loss) before income taxes | 1,675 | 2,000 | (118) | 985 | 4,542 |
| Income tax (benefit) expense | (1) | 630 | (146) | 247 | 730 |

| | | | | | |
|---|---|---|---|---|---|
| Net income | $ 1,676 | $ 1,370 | $ 28 | $ 738 | $ 3,812 |
| Income per share: | | | | | |
| Basic earnings per common share | $ 0.06 | $ 0.05 | $ 0.00 | $ 0.03 | $ 0.13 |
| Diluted earnings per common share | $ 0.06 | $ 0.05 | $ 0.00 | $ 0.02 | $ 0.13 |

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**SIGNATURES**

Pursuant to the requirements of Section 13 and 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

HARVARD BIOSCIENCE, INC.

Date: March 18, 2013

By: /s/ CHANE GRAZIANO
Chane Graziano
Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated:

| Signature | Title | Date |
|---|---|---|
| /s/ CHANE GRAZIANO<br>**Chane Graziano** | Chief Executive Officer and Director (Principal Executive Officer) | March 18, 2013 |
| /s/ THOMAS MCNAUGHTON<br>**Thomas McNaughton** | Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer) | March 18, 2013 |
| /s/ DAVID GREEN<br>**David Green** | President and Director | March 18, 2013 |
| /s/ ROBERT DISHMAN<br>**Robert Dishman** | Director | March 18, 2013 |
| /s/ NEAL J. HARTE<br>**Neal J. Harte** | Director | March 18, 2013 |
| /s/ JOHN F. KENNEDY<br>**John F. Kennedy** | Director | March 18, 2013 |
| /s/ EARL R. LEWIS<br>**Earl R. Lewis** | Director | March 18, 2013 |
| /s/ GEORGE UVEGES<br>**George Uveges** | Director | March 18, 2013 |

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**EXHIBIT INDEX**

The following exhibits are filed as part of this Annual Report on Form 10-K. Where such filing is made by incorporation by reference to a previously filed document, such document is identified.

| | |
|---|---|
| (5)2.1 | Asset Purchase Agreement, dated September 30, 2008, by and among Harvard Bioscience, Inc., as Parent, Union Biometrica, Inc., as Seller, and UBIO Acquisition Company, as Buyer. |
| (14)2.3 | Asset Purchase Agreement, dated September 2, 2009, by and among Harvard Bioscience, Inc., as Parent, and DAC Acquisition Holding, Inc., as Purchaser, Denville Scientific, Inc., as Seller, and Walter Demsia and Ryan Sharp, as Shareholders. |
| (1a)3.1 | Second Amended and Restated Certificate of Incorporation of Harvard Bioscience, Inc. |
| (1a)3.2 | Amended and Restated By-laws of Harvard Bioscience, Inc. |
| (2)3.3 | Amendment No. 1 to Amended and Restated Bylaws of Harvard Bioscience, Inc. (as adopted October 30, 2007). |
| (6)3.4 | Certificate of Designations, Preferences and Rights of a Series of Preferred Stock of Harvard Bioscience, Inc. classifying and designating the Series A Junior Participating Cumulative Preferred Stock. |
| (1a)4.1 | Specimen certificate for shares of Common Stock, $0.01 par value, of Harvard Bioscience, Inc. |
| (1b)4.2 | Amended and Restated Securityholders Agreement dated as of March 2, 1999 by and among Harvard Apparatus, Inc., Pioneer Partnership II, Pioneer Capital Corp., First New England Capital, L.P. and Citizens Capital, Inc. and Chane Graziano and David Green. |
| (7)4.3 | Shareholders Rights Agreement, dated as of February 5, 2008 between Harvard Bioscience, Inc., and Registrar and Transfer Company, as Rights Agent. |
| (1b)10.1 | Harvard Apparatus, Inc. 1996 Stock Option and Grant Plan. |
| (9)10.2 | Harvard Bioscience, Inc. Second Amended and Restated 2000 Stock Option and Incentive Plan. |
| (1a)10.3 | Harvard Bioscience, Inc. Employee Stock Purchase Plan. |
| #(16)10.4 | Amended and Restated Employment Agreement between Harvard Bioscience, Inc. and Chane Graziano, dated December 18, 2008. |
| #(16)10.5 | Amended and Restated Employment Agreement between Harvard Bioscience, Inc. and David Green, dated December 18, 2008. |
| (1b)10.6 | Form of Director Indemnification Agreement. |
| (16)10.7 | Lease of Unit 22 Phase I Cambridge Science Park, Milton Road, Cambridge dated May 8, 2008 between The Master Fellows and Scholars of Trinity College Cambridge and Biochrom Limited. |
| #(16)10.8 | Amended and Restated Employment Agreement between Harvard Bioscience, Inc. and Susan Luscinski dated December 18, 2008. |
| +(4)10.12 | Strategic Supplier Alliance Agreement, dated April 10, 2008, by and between Biochrom Limited and GE Healthcare Biosciences, Corp. |
| (12)10.13 | Lease, dated February 23, 2004, by and between William Cash Forman and Hoefer, Inc. |
| +(8)10.14 | Trademark License Agreement, dated December 9, 2002, by and between Harvard Bioscience, Inc. and President and Fellows of Harvard College. |

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| | |
|---|---|
| (10)10.16 | Lease Agreement Between Seven October Hill, LLC and Harvard Bioscience, Inc. dated December 30, 2005. |
| (11)10.18 | Form of Incentive Stock Option Agreement (Executive Officers). |
| (11)10.19 | Form of Non-Qualified Stock Option Agreement (Executive Officers). |
| (11)10.20 | Form of Non-Qualified Stock Option Agreement (Non-Employee Directors). |
| # (3)10.21 | Employment Agreement Between Harvard Bioscience, Inc. and Thomas McNaughton, dated November 14, 2008. |
| (13)10.22 | First Amendment to the Harvard Bioscience, Inc. Second Amended and Restated 2000 Stock Option and Incentive Plan. |
| (15)10.23 | Amended and Restated Revolving Credit Loan Agreement, dated as of August 7, 2009, by and among Harvard Bioscience, Inc. and the Lenders from time to time party thereto, including Bank of America, N.A. (both in its capacity as Lender and in its capacity as Agent ), and Brown Brothers Harriman & Co. |
| (17) 10.24 | Amendment No. 2, dated as of May 22, 2010, to Lease Agreement, as subsequently amended, between Seven October Hill LLC and Harvard Bioscience, Inc. |
| (19) 10.25 | Form of Deferred Stock Award Agreement under the Harvard Bioscience, Inc. Second Amended and Restated 2000 Stock Option and Incentive Plan. |
| (21) 10.26 | Director Compensation Arrangements. |
| (20) 10.27 | Harvard Bioscience, Inc. Third Amended and Restated 2000 Stock Option and Incentive Plan. |
| 21.1* | Subsidiaries of the Registrant. |
| 23.1* | Consent of KPMG LLP. |
| 31.1* | Certification of Chief Financial Officer of Harvard Bioscience, Inc., pursuant to Rules 13a-15(e) and 15d-15(e), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 31.2* | Certification of Chief Executive Officer of Harvard Bioscience, Inc., pursuant to Rules 13a-15(e) and 15d-15(e), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 32.1** | Certification of Chief Financial Officer of Harvard Bioscience, Inc., pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 32.2** | Certification of Chief Executive Officer of Harvard Bioscience, Inc., pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 101.INS*** | XBRL Instance Document |
| 101.SCH*** | XBRL Taxonomy Extension Schema Document |
| 101.CAL*** | XBRL Taxonomy Extension Calculation Linkbase Document |
| 101.DEF*** | XBRL Taxonomy Extension Definition Linkbase Document |
| 101.LAB*** | XBRL Taxonomy Extension Label Linkbase Document |
| 101.PRE*** | XBRL Taxonomy Extension Presentation Linkbase Document |

(1a) Previously filed as an exhibit to the Company s Registration Statement on Form S-1/A (File No. 333-45996) (filed on November 9, 2000) and incorporated by reference thereto.

(1b) Previously filed as an exhibit to the Company s Registration Statement on Form S-1/A (File No. 333-45996) (filed on October 25, 2000) and incorporated by reference thereto.

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(2) Previously filed as an exhibit to the Company s Current Report on Form 8-K (filed on November 1, 2007) and incorporated by reference thereto.

(3) Previously filed as an exhibit to the Company s Current Report on Form 8-K (filed November 18, 2008) and incorporated by reference thereto.

(4) Previously filed as an exhibit to the Company s Quarterly Report on Form 10-Q/A, as amended (filed February 19, 2009) and incorporated by reference thereto.

(5) Previously filed as an exhibit to the Company s Current Report on Form 8-K (filed on October 6, 2008) and incorporated by reference thereto.

(6) Previously filed as an exhibit to the Company s Registration Statement on Form 8-A (filed February 8, 2008) and incorporated by reference thereto.

(7) Previously filed as an exhibit to the Company s Current Report on Form 8-K (filed on February 8, 2008) and incorporated by reference thereto.

(8) Previously filed as an exhibit to the Company s Quarterly Report on Form 10-Q (filed May 15, 2003) and incorporated by reference thereto.

(9) Previously filed as Appendix A to the Company s Proxy Statement on Schedule 14A (filed April 16, 2008) and incorporated by reference thereto.

(10) Previously filed as an exhibit to the Company s Current Report on Form 8-K (filed January 4, 2006) and incorporated by reference thereto.

(11) Previously filed as an exhibit to the Company s Annual Report on Form 10-K (filed March 16, 2006) and incorporated by reference thereto.

(12) Previously filed as an exhibit to the Company s Annual Report on Form 10-K (filed March 15, 2004)) and incorporated by reference thereto.

(13) Previously filed as an exhibit to the Company s Quarterly Report on Form 10-Q (filed May 7, 2009) and incorporated by reference thereto.

(14) Previously filed as an exhibit to the Company s Current Report on Form 8-K (filed September 9, 2009) and incorporated by reference thereto.

(15) Previously filed as an exhibit to the Company s Current Report on Form 8-K (filed August 13, 2009) and incorporated by reference thereto.

(16) Previously filed as an exhibit to the Company s Annual Report on Form 10-K (filed March 11, 2009) and incorporated by reference thereto.

(17) Previously filed as an exhibit to the Company s Current Report on Form 8-K (filed June 3, 2010) and incorporated by reference thereto.

(18) Previously disclosed in the Company s Proxy Statement on Schedule 14A (filed April 23, 2010) and incorporated by reference thereto.

(19) Previously filed as an exhibit to the Company s Annual Report on Form 10-K (filed March 16, 2011) and incorporated by reference thereto.

(20) Previously disclosed in the Company s Proxy Statement on Schedule 14A (filed April 15, 2011) and incorporated by reference thereto.

(21) Previously filed as an exhibit to the Company s Annual Report on Form 10-K (filed March 16, 2012) and incorporated by reference thereto

+ Certain portions of this document have been granted confidential treatment by the Securities and Exchange Commission (the Commission ).

* Filed herewith.

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** This certification shall not be deemed filed for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section, nor shall it be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934.

*** XBRL (Extensive Business Reporting Language) information is furnished and not filed or a part of a registration statement or prospectus for purposes of sections 11 or 12 of the Securities Act of 1933, is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, and otherwise is not subject to liability under these sections.

# Management contract or compensatory plan or arrangement.

The Company will furnish to stockholders a copy of any exhibit without charge upon written request.