HARVARD BIOSCIENCE INC
Form 10-K
March 14, 2014
UNITED STATES

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

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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, 2013
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 28,116,650 shares of voting common equity held by non-affiliates of the registrant as of June 28, 2013 was approximately $100,095,274 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. The registrant has no shares of non-voting common stock authorized or outstanding.

At March 7, 2014, there were 31,639,467 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 2014 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.

HARVARD BIOSCIENCE, INC.
TABLE OF CONTENTS
ANNUAL REPORT ON FORM 10-K
For the Year Ended December 31, 2013

INDEX

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," "estimat "predicts," "intends," "think," "strategy," "potential," "objectives," "optimistic," "new," "goal" and similar expressions intende 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 9 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 scientific instruments, systems and lab consumables used to advance life science research for basic research, drug discovery, clinical and environmental testing. Our products are sold to thousands of researchers in over 100 countries through our global sales organization, catalogs, websites, and through distributors including GE Healthcare, Thermo Fisher Scientific Inc., VWR and other specialized distributors. We have sales and manufacturing operations in the United States, the United Kingdom, Germany, Sweden, Spain, France and Canada.

From 2009 through November 1, 2013, Harvard Bioscience's operations included two main businesses, the Life Science Research Tools ("LSRT") business and the Regenerative Medicine Device ("RMD") business. In 2012, we made the decision to divest our RMD business which we believed was the best path to maximizing value for our shareholders. We formed Harvard Apparatus Regenerative Technology, Inc. ("HART") and operated our RMD business through HART. As of November 1, 2013, we consummated the spin-off of HART to our existing shareholders by means of a distribution of the stock we owned in HART. Following the spin-off, HART began trading as a separate public reporting company on the NASDAQ Capital Market under the trading symbol HART. Founder, former President and interim CEO of Harvard Bioscience, David Green, as well as former CFO, Thomas McNaughton, both left Harvard Bioscience to join HART as its CEO and CFO, respectively.

As a result of the departure of these key management members, considerable time and energy was required to recruit, train and build a new management team, making 2013 a transitional year for Harvard Bioscience. Jeffrey A.

Duchemin was hired by the Board of Directors and became the new CEO of our Company to replace departing founder, President and interim CEO, David Green. Other new hires included: Robert Gagnon as Chief Financial Officer; Yoav Sibony as Vice President, Global Sales; and, Yong Sun as Vice President, Strategic Marketing and Business Development.

Our History

Our business began in 1901 under the name Harvard Apparatus. It was founded by Dr. William T. Porter, a Professor of Physiology at Harvard Medical School and a pioneer of physiology education. The Company has grown over the years with the development and evolution of modern life science research and education. Our early inventions included ventilators based on Dr. Porter's design, the mechanical syringe pump for drug infusion in the 1950s, and the microprocessor controlled syringe pump in the 1980s.

In March 1996, a group of investors acquired a majority of the then existing business of our predecessor, Harvard Apparatus. Following this acquisition, the focus of our Company was redirected to participate in the higher growth areas within life science research by acquiring innovative technologies while continuing to grow the existing business through internal product development. 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, GeneQuant DNA/RNA/protein calculators, UVM plate readers, BTX Gemini X2 multi-waveform electroporation system, BioDrop micro volume cuvette and the microvolume spectrophotometer.

Our Strategy

Our vision is to be a world leading life science research tools company that excels in meeting the needs of our customers by providing a wide breath of innovative products and solutions, while providing exemplary customer service.

Our business strategy is to have a broad range of highly specialized products that have strong positions in targeted market segments within 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
- providing strong technical and application service helps customers solve their problems and provides additional value to the customer in their research.

We seek to grow this range of products through a combination of organic growth driven by internal development of new products, direct marketing, global sales and distribution channel expansion and the acquisition of 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 allows us to improve profitability at acquired companies.

Our Products

Today, our broad core product range is organized into five product families: Fluidics, Lab Equipment and Supplies, Molecular Analysis, Cell Analysis, and Physiology. We primarily sell these products under the brand names including Harvard Pumps, Harvard Apparatus, Denville, Biochrom, Warner Instruments, BTX, KD Scientific, Hugo Sachs Elektronik, Panlab, Coulbourn Instruments, and CMA Microdialysis.

Our products consist of instruments, consumables, and systems made up of several individual products. 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 $50,000. We manufacture our products at our locations in the United States, the United Kingdom, Germany, Sweden and Spain.

In addition to our proprietary manufactured products, we sell many products that are made by other manufacturers. These distributed products accounted for approximately 36% of our revenues for the year ended December 31, 2013. Distributed products enable us to provide our customers with a single source for their experimental needs, and consist of a large variety of devices, instruments and consumable items used in experiments involving fluid handling, molecular and cell biology, tissue, organ and animal research. Many of our proprietary manufactured products are

leaders in their fields; however, researchers often need complementary products in order to conduct particular experiments. Following is a description of each product family.

Fluidics Product Family

Our Fluidics product family includes our traditional syringe pump and recently introduced peristaltic pump product lines. The products are used in many life science and industrial applications, including mass spectrometry calibration, infusion, perfusion, cellular microinjection, microfluidics, electrospinning and microdialysis that require accurately controlled fluid dispensing. The primary brands are Harvard Apparatus and KD Scientific. We also offer an expanded line of component pumping modules and original equipment manufacturing ("OEM") for specialized system development.

Lab Equipment and Supplies Product Family

Our Lab Equipment and Supplies product family includes a range of products for molecular biology labs with a liquid handling focus. It consists primarily of pipettes and pipette tips, gloves, gel electrophoresis and autoradiography, thermal cycler accessories and reagents, general lab equipment and consumables, and tissue culture products. Our brands include Denville Scientific, Hoefer and Scie-Plas. We sell these products through our U.S. field sales force and global distribution channel.

Molecular Analysis Product Family

The Molecular Analysis product family includes spectrophotometers, microplate readers, and amino acid analyzers. A spectrophotometer is an instrument widely used in molecular biology and cell biology to quantify the amount of DNA and protein in a sample. We sell a wide range of spectrophotometers under the names UltroSpec, NovaSpec, Libra and BioDrop. We sell them primarily through our distribution arrangements with GE Healthcare and other distributors. Multi-well plate readers are widely used for high throughput screening assays in the drug discovery process. Our product line includes absorbance readers and luminescence readers. We sell them primarily through distributors under our Asys Hitech and Anthos Labtec brand names. 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 as they flow out of the chromatography column. We sell these systems under the Biochrom brand through our U.S. direct sales force and global distribution channel.

Cell Analysis Product Family

The Cell Analysis product family includes electroporation, electrofusion and cell electrophysiology products. Electroporation is a technique for transfection, a process to introduce nucleic acid into cells. Our electroporation and electrofusion products include systems and generators, electrodes and accessories for research applications including in vivo, in ovo and in vitro gene delivery, cell fusion and nuclear transfer cloning. We sell these products under the Harvard Apparatus BTX brand through our global distribution channel. At the end of 2013, we introduced the Harvard Apparatus BTX Gemini X2 multi-waveform electroporation system.

Electrophysiology is the study of the electrical properties of biological cells and tissues. It involves measurements of voltage change or electric current on a wide variety of scales from single ion channel proteins on a cell membrane to tissue slices to whole organs. Our cell electrophysiology products include equipment for patch clamps, amplifiers, bilayer workstations, and temperature controllers, chambers and accessories for imaging and recording. We sell these products under the Warner Instrument brand and through our U.S direct sales force and global distribution channel.

Physiology Product Family

The physiology product family includes a broad range of instruments and accessories for tissue, organ and animal based lab research, ranging from surgical products, infusion systems, microdialysis instruments, behavior research products, isolated perfused organ and tissue bath systems, and research-based regenerative medicine products.

Surgical products include surgical equipment and instruments, anesthesia systems, ventilators, vital sign monitoring systems, infusion systems and accessories. Ventilators use an air pump to inflate the lungs of an anesthetized animal. Microdialysis instruments and probes are used to collect tissue fluids for analysis. Infusion systems are generally used for the testing of drug candidates or toxins. Syringe pumps are used to accurately infuse very small quantities of liquid containing chemicals of research interest, and collect samples from animal tissues. We design and manufacture behavioral research systems 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 isolated organ perfusion systems and tissue baths for isolated tissues are used to study organ and tissue

functions, and the effect of drug candidates and other chemicals on experimental models. Our physiology product offerings are marketed under Harvard Apparatus, CMA Microdialysis, Panlab, Coulbourn, Hugo-Sachs and InBreath Bioreactor brands. We sell these products through our global sales force, technical service team and our global distribution channel.

Our Customers

Our end-user customers are primarily research scientists at universities, hospitals, government laboratories, including the U.S. National Institute of Health (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, the University of California system and the University of Texas—MD Anderson Center. Our pharmaceutical and biotechnology 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. We have several thousand customers worldwide and no customer accounted for more than 5% of our revenues in 2013.

Sales and Marketing

For the year ended December 31, 2013, 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 have a global sales organization managing both direct sales and distributors. Our websites and catalogs serve as the primary sales tool for the Harvard Apparatus, Denville and other product lines, which includes both proprietary manufactured products and complementary products from various suppliers. Our reputation as a leading producer of many of our manufactured products creates traffic to our website, enables cross-selling and facilitates the introduction of new products. 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 direct sales team, we use distributors.

Distributors

We engage distributors for the sales of our own branded and private label products in certain areas of the world and for certain product lines.

Research and Development

Our principal research and development mission is to develop products that address growth opportunities within the life science research process. Our research and development expenses from continuing operations were approximately $4.2 million, $4.3 million and $3.9 million for the years ended December 31, 2013, 2012 and 2011, respectively. In addition, we funded the research and development expenses of our RMD business which were approximately $3.1 million, $2.9 million and $1.4 million for the years ended December 31, 2013, 2012 and 2011, respectively. The RMD research and development expenses were classified as part of discontinued operations for all periods presented. 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 many of our manufacturing facilities to design and develop new products and to re-engineer existing products to bring them to the next generation.

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 our March-Hugstetten, Germany and Holliston, Massachusetts facilities. Our electrophoresis products are manufactured in our Richmond, California facility. Behavioral science products are manufactured in our Barcelona, Spain and Whitehall, Pennsylvania facilities. Our microdialysis products are manufactured in our Holliston, Massachusetts and Kista, Sweden facilities. We manufacture our pipette products in our Nordhausen, Germany facility. Going forward we will continue to evaluate our manufacturing facilities and operations in order to maintain an optimal manufacturing footprint.

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. Many of our competitors have greater financial, operational, sales and marketing resources, and more experience in research and development and commercialization than we 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 believe that we offer one of the broadest selections of products to organizations engaged in life science research. 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 life science research including, Amaxa GmbH, Becton Dickinson, Eppendorf AG, Kent Scientific Corporation, Razel Scientific Instruments, Inc., Ugo Basile, Danaher Corporation, Bio-Rad Laboratories, Inc., MDS Analytical Technologies, PerkinElmer, Inc. and Thermo Fisher Scientific, Inc.

Many of our 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 our 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, availability of supply, manufacturing, marketing and sales expertise and capability.

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.

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.

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.

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 products are not subject to pre-market approval by the U.S. Food and Drug Administration ("FDA") for use on human clinical patients. In addition, we believe we are currently in compliance with all relevant environmental laws.

Employees

As of December 31, 2013, we employed 368, of which 345 are full-time and 23 are part-time. As of December 31, 2012, we employed 422 employees, of which 398 were full-time and 24 were part-time. The decrease in the number of employees was primarily due to the spin-off of HART and the restructuring we announced in December 2013.

Geographical residence information for these employees is summarized in the table below:

	As of December 31, 2013
United States	186
United Kingdom	82
Germany	54
Spain	25
Sweden	9
Canada	7
France	3
China	2
Total	368

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 revenues 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 rate of London Interbank Offered Rate ("LIBOR") plus 1,100 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 ("UBI") including our German subsidiary, Union Biometrica GmbH, representing 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 revenues generated by the acquired business as it was conducted by UBIO Acquisition Company over a five-year post-transaction period in an amount equal to (i) 5% of the revenues generated up to and including $6.0 million each year and (ii) 8% of the revenues generated above $6.0 million each year. Any earn-out amounts were evidenced by interest-bearing promissory notes due on September 30, 2013, or at an earlier date based on certain triggering events. During 2013, UBIO Acquisition Company made payments, including interest, of $1.8 million. UBIO Acquisition Company's final payment under the earn-out obligation was received in October 2013.

On November 1, 2013, the previously announced spin-off of HART from our Company was completed. Through the spin-off date the historical operations of HART were reported as continuing operations in our consolidated statements of operations. Following the spin-off, and reported herein, the historical operations of HART were broken out and reported as discontinued operations for all periods presented. HART became an independent company that operates the regenerative medicine business previously owned by us. The spin-off was completed through the distribution to Harvard Bioscience's stockholders of record all the shares of common stock of HART (the "Distribution"). In the Distribution, we distributed to our stockholders one share of HART common stock for every four shares of Harvard Bioscience common stock outstanding as of the close of business on October 21, 2013, the record date for the Distribution. Fractional shares of HART common stock were not included in the distribution. Instead, Registrar & Transfer Company aggregated fractional shares into whole shares, sold the whole shares in the open market and distributed the aggregate net cash proceeds of the sales pro rata to each holder who otherwise would have been entitled to receive a fractional share in the Distribution.

Effective with the spin-off, we contributed $15.0 million in cash to HART to fund its operations. In addition, we transferred approximately $0.9 million in net assets to HART as part of the spin-off.

In connection with the spin-off of HART, certain required adjustments were made to our outstanding equity compensation awards under our employee benefit plans. Each outstanding option to purchase Harvard Bioscience common stock was converted on the date of the Distribution into both an adjusted Harvard Bioscience option to purchase Harvard Bioscience common stock and an option to purchase HART common stock. Black-Scholes valuation modeling was used to determine the value that each Harvard Bioscience option had lost at the time of the Distribution and to ensure the holder maintained such lost value, 80% of such lost value was provided back to the holder by making appropriate adjustments to the share amount and exercise price of the existing Harvard Bioscience option and 20% of such lost value was provided back to the holder through the issuance of an option to purchase HART common stock. Similar to the adjustment of the existing Harvard Bioscience options, with respect to each unvested Harvard Bioscience restricted stock unit outstanding at the time of the Distribution, such Harvard Bioscience restricted stock unit was converted on the date of the Distribution into both an adjusted Harvard Bioscience restricted stock unit and a HART restricted stock unit. The market prices of Harvard Bioscience and HART common stock were used to determine the value that each Harvard Bioscience restricted stock unit lost at the time of the Distribution and then to ensure the holder maintained such lost value, 80% of such lost value was provided back to the holder by making an appropriate increase of the share amount of the existing Harvard Bioscience restricted stock unit and 20% of such lost value was provided back to the holder through the issuance of a HART restricted stock unit. The share amounts and exercise prices of the adjusted Harvard Bioscience options and HART options, as well as the share amounts of the adjusted Harvard Bioscience restricted stock units and HART restricted stock units, were each adjusted and set in a manner to ensure the intrinsic value held by the holder pertaining to the existing Harvard Bioscience award was maintained immediately following the Distribution and was determined such that tax was not triggered under Section 409A of the Internal Revenue Code. As part of these required adjustments, we issued an approximately 1.7 million options and approximately 0.1 million restricted stock units to holders of our outstanding equity compensation awards.

In connection with the spin-off, on October 31, 2013, the Company entered into various commercial agreements with HART which contain many of the key provisions related to the Distribution. These agreements include: (i) a Separation and Distribution Agreement; (ii) an Intellectual Property Matters Agreement; (iii) a Product Distribution Agreement; (iv) a Tax Sharing Agreement; (v) a Transition Services Agreement; and (vi) a Sublease.

We intend for the HART contribution and Distribution, taken together, to qualify as a reorganization pursuant to which no gain or loss is recognized by us or our stockholders for federal income tax purposes under Sections 355, 368(a)(1)(D) and related provisions of the Internal Revenue Code. On June 28, 2013, we received a Supplemental Ruling to the Private Letter Ruling dated March 22, 2013 from the IRS to the effect that, among other things, the spin-off will qualify as a transaction that is tax-free for U.S. federal income tax purposes under Section 355 and 368(a)(1)(D) of the Internal Revenue Code continuing in effect. We also have received an opinion from our outside tax advisor to such effect. In connection with the ruling and the opinion, we made certain representations regarding ourselves and our business. We have agreed that we will not take or fail to take any action which prevents or could reasonably be expected to prevent the tax-free status of the spin-off. HART has agreed to certain restrictions that are intended to preserve the tax-free status of the contribution and the Distribution. HART may take certain actions otherwise prohibited by these covenants if we receive a private letter ruling from the IRS or if HART obtains, and provides to us, an opinion from a U.S. tax counsel or accountant of recognized national standing, in either case, acceptable to us in our sole and absolute discretion to the effect that such action would not jeopardize the tax-free status of the contribution and the Distribution. These covenants include restrictions on HART's:

• issuance or sale of stock or other securities (including securities convertible into HART's stock but excluding certain compensatory arrangements);

• sales of assets outside the ordinary course of business; and

• entering into any other corporate transaction which would cause HART to undergo a 50% or greater change in HART's stock ownership.

In addition, current U.S. federal income tax law creates a presumption that our spin-off of HART would be taxable to us, but not our stockholders, if such spin-off is part of a "plan or series of related transactions" pursuant to which one or more persons acquire directly or indirectly stock representing a 50% or greater interest (by vote or value) in us or HART. Acquisitions that occur during the four-year period that begins two years before the date of the spin-off are presumed to occur pursuant to a plan or series of related transactions, unless it is established that the acquisition is not pursuant to a plan or series of transactions that includes the spin-off. U.S. Treasury regulations currently in effect generally provide that whether an acquisition and a spin-off are part of a plan is determined based on all of the facts and circumstances, including, but not limited to, specific factors described in the U.S. Treasury regulations. In addition, the U.S. Treasury regulations provide several "safe harbors" for acquisitions that are not considered to be part of a plan. These rules will limit our ability during the two-year period following the spin-off to enter into certain transactions that may be advantageous to us and our stockholders, particularly issuing equity securities to satisfy financing needs, repurchasing equity securities, disposing of certain assets, engaging in mergers and acquisitions, and, under certain circumstances, acquiring businesses or assets with equity securities or agreeing to be acquired.

Geographic Area

Financial information regarding geographic areas in which we operate is provided in Note 21 of the "Notes to Consolidated Financial Statements," which are included elsewhere in this report.

Executive Officers of the Registrant

The following table shows information about our executive officers as of December 31, 2013.

Name	Age	Position
Jeffrey Duchemin	48	Chief Executive Officer, President and Director
Robert Gagnon	39	Chief Financial Officer
Yong Sun	50	Vice President, Strategic Marketing and Business Development

Yoav Sibony	42	Vice President, Global Sales

Jeffrey A. Duchemin was appointed Chief Executive Officer on August 26, 2013. He assumed the additional roles of President and Director on November 4, 2013. Prior to joining Harvard Bioscience, Mr. Duchemin spent 16 years with Becton Dickinson ("BD") in progressive sales, marketing and executive leadership positions across BD's three business segments; BD Medical Systems, BD Diagnostic Systems, and BD Biosciences. In October 2012, BD Biosciences Discovery Labware was acquired by Corning Life Sciences. Mr. Duchemin was a Global Business Director for Corning Life Sciences until his recent departure to Harvard Bioscience. He is a transformational leader with demonstrated business results. The depth of his experience spans across a broad range of life science research and medical device products resulting in growth on a global basis. Mr. Duchemin earned an M.B.A. from Southern New Hampshire University and a B.S. in Accounting from the University of Massachusetts Dartmouth.

Robert E. Gagnon was appointed Chief Financial Officer on November 1, 2013. Prior to joining the company he was recently Executive Vice President, Chief Financial Officer and Treasurer at Clean Harbors, Inc. (NYSE:CLH), a leading provider of environmental, energy and industrial services throughout North America. Prior to this, he served in progressive executive positions at Biogen Idec, Inc., a Fortune 500 company developing treatments in the areas of immunology and neurology. Earlier, he worked in a variety of senior positions at Deloitte & Touche, LLP, and PricewaterhouseCoopers, LLP. Mr. Gagnon is a certified public accountant who holds an M.B.A. from the MIT Sloan School of Management and a bachelor of arts degree in accounting from Bentley College.

Yong Sun, a veteran global marketing and sales leader in the life sciences and medical device industries, was hired as Harvard Bioscience's Vice President Strategic Marketing and Business Development, a newly created position, effective October 28, 2013. Prior to joining Harvard Bioscience, he served as Vice President of Global Marketing and Americas Sales at Beaver-Visitec International, a company combining former ophthalmic business units from BD and Medtronic; in this role he led global marketing to develop and implement strategic marketing plans in target surgical markets. Prior to this, he served in progressive positions at BD, including Director of Global Marketing & U.S. Sales. Earlier, he served as Marketing Manager, Global Life Sciences Market & Greater China Region at Eli Lilly & Company's eLilly Unit (now InnoCentive, Inc.). Prior to his role at Eli Lilly & Company, Mr. Sun held brand management and strategic marketing positions at Fairmarket, Inc. (now part of eBay), Polaroid Corp. and Booz & Company. Mr. Sun earned a bachelor of science degree in biochemistry from Peking University and a master of science degree in environmental science & engineering from Northeastern University. Mr. Sun holds an M.B.A. from the MIT Sloan School of Management.

Yoav Sibony, a veteran sales leader, was hired as Harvard Bioscience's Vice President of Global Sales, a newly created position, effective October 21, 2013. Prior to joining Harvard Bioscience, Mr. Sibony served as Global Sales Effectiveness Manager at Corning Life Sciences, a division of Corning Inc. In this role, he oversaw global business operations and strategy development for this approximately $800 million division. Prior to this, from 2002 to 2012, he served in progressive positions at the medical technology company, BD; as Regional Business Manager at BD Biosciences Discovery Labware, he oversaw 12 sales territories with combined value of $45 million. Mr. Sibony holds an M.B.A. from Pacific Lutheran University and earned a bachelor of business administration degree from Baruch College-City University of New York.

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 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.

The following factors should be reviewed carefully, in conjunction with the other information contained in this Annual Report on Form 10-K. 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.

Sustained uncertainty concerning government spending and adverse changes in general economic conditions may continue to adversely affect our business.

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. Spending by some of these customers fluctuates based on budget allocations and the timely passage of the annual federal budget. An impasse in

federal government budget decisions could lead to substantial delays or reductions in federal spending.

During 2013 and continuing to today research customers in our major markets have been especially concerned about levels of future government spending. On March 1, 2013, an enforcement mechanism known as sequestration went into effect, which triggered government spending reductions over the next decade. Under sequestration, government funding was reduced for certain of our customers, including those who are dependent on funding from the National Institutes of Health, which would likely have a significant effect on these entities' spending policies. These policies in turn can have a significant effect on the demand for our products. In the U.S., researchers are concerned about the continued effects of the sequestration on the federal government's future funding levels for life science research. Although Congress approved a federal budget in December 2013 that limits some of the negative impact that sequestration has had on our business and the U.S. economy generally, it is likely that the reduction in future government spending will continue to adversely affect our financial results.

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, deteriorate, 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 exist, 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.

A significant portion of our revenues are derived from customers from the pharmaceutical and biotechnology industries and are subject to risks faced by those industries. Such risks may adversely affect our financial results.

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 government regulation, ongoing consolidation and uncertainty of technological change, and 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. 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. 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, the pharmaceutical and biotechnology industries have experienced a significant amount of consolidation. As a result of this consolidation, competition to provide life science research tools has increased which could result in additional pressure on the prices of our products.

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

We manufacture and sell our products worldwide and as a result, our business is subject to risks associated with doing business internationally. Our revenues from our non-U.S. operations represented approximately 39.0% of total revenues for 2013. We anticipate that revenue from international operations will continue to represent a substantial portion of our revenues in the foreseeable future and is likely to increase as a result of our efforts to expand our business in Asia, including China and other emerging markets. In addition, a number of our manufacturing facilities and suppliers are located outside the United States. Accordingly, our future results could be harmed by a variety of factors, including:

- the impact of recessions and other economic conditions in economies outside the United States,
- inability to effectively expand our business and operations in Asia, including China and other emerging markets,
- disruptions of capital and trading markets,
- inability to collect accounts receivable,
- limitations on repatriations of funds, as well as our inability to utilize overseas cash balances to fund U.S. based operations, obligations and strategic acquisitions in a cost-effective manner, or at all,
- 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,

10

- 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.

Specifically with respect to the expansion of our business into China, our financial performance may be subject to the following risks, among others effecting companies that operate in China:

- Regulation of foreign investment and business activities by the Chinese government may limit our ability to expand our business in China,
- Uncertainties with respect to the legal system in China, may limit the legal protections available to us in China,
- We may be subject to government restrictions on the remittance of currency out of China and the ability of any subsidiary we may establish in China to pay dividends and make other distributions to us,
- We may be subject to unfavorable tax consequences as a result of our operations in China.

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 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.

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 36.0% of our business during 2013 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. 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.

The failure of any banking institution in which we deposit our funds or the failure of such banking institution to provide services 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 any 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.

We have substantial debt and other financial obligations and we may incur even more debt.

We have substantial debt and other financial obligations and significant unused borrowing capacity. On March 29, 2013, we entered into a Second Amended and Restated Revolving Credit Agreement with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders, as amended on October 31, 2013 (the "Credit Agreement"). As of December 31, 2013, we had borrowings of $24.8 million under the Credit Agreement. The Credit Agreement includes covenants relating to income, debt coverage and cash flow and minimum working capital requirements. The Credit Agreement 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 Credit Agreement may become immediately due and payable. This immediate payment may negatively impact our financial condition.

We have pledged substantially all of our assets (including the assets of our restricted subsidiaries) to secure our indebtedness. Our Credit Agreement and related obligations:

- Require us to dedicate significant cash flow to the payment of principal and interest on our debt, which reduces the funds we have available for other purposes;
- May limit our flexibility in planning for or reacting to changes in our business and market conditions or funding our strategic growth plan;
- Impose on us additional financial and operational restrictions;
- Expose us to interest rate risk since a portion of our debt obligations is at variable rates (which is mitigated to a certain extent, by interest rate hedging transactions we entered into in connection with our Credit Agreement); and
- Restrict our ability to fund certain acquisitions.

In addition, investors may be apprehensive about investing in companies such as ours that carry a substantial amount of leverage on their balance sheets, and this apprehension may adversely affect the price of our common stock.

Failure to comply with the financial covenants, or any other non-financial or restrictive covenant, could create a default under our Credit Agreement. Upon a default, our lenders could accelerate the indebtedness under the Credit Agreement, foreclose against their collateral or seek other remedies, which would jeopardize our ability to continue our current operations. We may be required to amend our Credit Agreement, refinance all or part of our existing debt, sell assets, incur additional indebtedness or raise equity. Further, based upon our actual performance levels, our covenants relating to income, debt coverage and cash flow and minimum working capital requirements could limit our ability to incur additional debt, which could hinder our ability to execute our current business strategy.

Our ability to make scheduled payments on our debt and other financial obligations and comply with financial covenants depends on our financial and operating performance. Our financial and operating performance will continue to be subject to prevailing economic conditions and to financial, business and other factors, some of which are beyond our control.

Failure to raise additional capital or generate the significant capital necessary to implement our acquisition strategy, 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. In addition, our line of credit may not be sufficient to fund our acquisition strategy. In such case, our inability to raise sufficient capital on favorable terms and in a timely manner (if at all) could seriously harm our business, product development, 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 Credit Agreement 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 our spin-off of Harvard Apparatus Regenerative Technology, Inc., or HART, together with certain related transactions, does not qualify as a transaction that is generally tax-free for U.S. federal income tax purposes, we could be subject to significant tax liability.

On June 28, 2013, we received a Supplemental Ruling to the Private Letter Ruling dated March 22, 2013, from the IRS to the effect that, among other things, the spin-off of HART will qualify as a transaction that is tax-free for U.S. federal income tax purposes under Section 355 and 368(a)(1)(D) of the Internal Revenue Code continuing in effect. The private letter and supplemental rulings and the tax opinion that we received from Burns & Levinson LLP, special counsel to Harvard Bioscience, Inc. rely on certain representations, assumptions and undertakings, including those relating to the past and future conduct of our business and HART's business, and neither the private letter and supplemental rulings nor the opinion would be valid if such representations, assumptions and undertakings were incorrect. Moreover, the private letter and supplemental rulings do not address all the issues that are relevant to determining whether the spin-off distribution will qualify for tax-free treatment. Notwithstanding the private letter and supplemental rulings and opinion, the IRS could determine the spin-off distribution should be treated as a taxable transaction for U.S. federal income tax purposes if, among other reasons, it determines any of the representations, assumptions or undertakings that were included in the request for the private letter and supplemental rulings are false or have been violated or if it disagrees with the conclusions in the opinion that are not covered by the IRS ruling.

If the spin-off distribution fails to qualify for tax-free treatment, in general, we would be subject to tax as if we had sold HART's common stock in a taxable sale for its fair market value, and stockholders who receive shares of HART's common stock in the spin-off distribution would be subject to tax as if they had received a taxable distribution equal to the fair market value of such shares.

To the extent we do not structure certain corporate transactions in compliance with the requirements of certain "safe harbor" provision of the internal revenue code, the tax rules applicable to a tax-free spin-off may limit our ability to engage in certain corporate transactions or raise equity capital beyond certain thresholds for a period of time after the spin-off of HART.

Current U.S. federal income tax law creates a presumption that our spin-off of HART would be taxable to us, but not our stockholders, if such spin-off is part of a "plan or series of related transactions" pursuant to which one or more persons acquire directly or indirectly, stock representing a 50% or greater interest (by vote or value) in us or HART. Although acquisitions that occur during the four-year period that begins two years before the date of the spin-off are presumed to occur pursuant to a plan or series of related transactions, the U.S. Treasury regulations provide several "safe harbors" for acquisitions that would not be considered to be part of such a plan. Such regulations generally provide that whether an acquisition and a spin-off are part of a plan is determined based on all of the facts and circumstances, including, but not limited to, specific factors described in the U.S. Treasury regulations.

To the extent we acquire any businesses or engage in certain other corporate transactions during the two year period following the spin-off, we intend to structure such transactions in a manner that complies with the safe harbors provided by the U.S. Treasury regulations, however, the presumption that acquisitions will be part of a "plan or series of related transactions" may limit our ability during the two-year period following the spin-off to enter into certain transactions that may be advantageous to us and our stockholders, particularly, issuing equity securities to satisfy financing needs, repurchasing equity securities, disposing of certain assets, engaging in mergers and acquisitions, and, under certain circumstances, acquiring businesses or assets with equity securities or agreeing to be acquired.

To preserve the tax-free treatment of the spin-off to us and our stockholders, under the tax matters agreement that we entered into with HART in connection with the spin-off, we are prohibited from taking or failing to take (or permitting any of our subsidiaries, other than HART and its subsidiaries, to take or fail to take) any action where such action or failure to act would prevent the tax-free nature of the spin-off or be inconsistent with any material, information, covenant or representation that relates to facts or matters related to Harvard Bioscience (or any of our subsidiaries,

other than HART and its subsidiaries) or our business or within our control and is contained in any representation letter related to the private letter ruling, supplemental private letter ruling or tax opinion (or any other supplemental private letter ruling or tax opinion that may be necessary) mentioned above. These restrictions may limit our ability to pursue strategic transactions of a certain magnitude that involve the issuance or acquisition of our stock or engage in new businesses or other transactions that might increase the value of our business. These restrictions may also limit our ability to raise significant amounts of cash through the issuance of stock, especially if our stock price were to suffer substantial declines, or through the sale of certain of our assets.

Third parties may seek to hold us responsible for HART's liabilities, including liabilities that HART has assumed from us.

Third parties may seek to hold us responsible for HART's liabilities, including any of the liabilities that HART agreed to retain or assume in connection with the separation of the HART business from our businesses, and related spin-off distribution. Pursuant to our agreements with HART, HART has agreed to indemnify us for claims and losses relating to certain liabilities that it has assumed from us, including liabilities in connection with the sale of HART's products, intellectually property infringement and other liabilities related to the operation of HART's business. However, if those liabilities are significant and we are ultimately held liable for them, we cannot assure you that HART will have the ability to satisfy its obligations to us. If HART is unable to satisfy its obligations under its indemnity to us, we may have to satisfy these obligations, which could have a material adverse impact on our financial condition, results of operations or cash flows.

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

During the quarter ended December 31, 2013, we initiated a realignment plan to reduce our operating costs through the elimination of approximately 13% of our workforce which was determined to be redundant following an analysis of our global operations. We incurred approximately $2.1 million in restructuring charges relating to our 2013 realignment plan and the costs incurred from the elimination of the position of Chief Operating Officer.

We may not be able to implement all of the actions that we intend to take in the restructuring of our operations and we may not be able to fully realize the expected benefits from our 2013 realignment plan or other similar restructurings in the future. In addition, we may incur additional restructuring costs in implementing the 2013 realignment plan or other similar future plans in excess of our expectations. The implementation of our restructuring efforts including the reduction of our workforce may not improve our operational and cost structure or result in greater efficiency of our organization; and we may not be able to support sustainable revenue growth and profitability following such restructurings.

We plan to expand our business in the near future into Asia, including China and other emerging markets. If our products are not accepted in these new markets our financial performance may suffer.

We are undertaking an initiative to aggressively expand our sales and marketing efforts in Asia, including China and other emerging markets. The cost and diversion of resources to these efforts may not result in an increase in revenues in our business. Expansion of our business into new markets may be more costly and require the devotion of more of our management's time than we anticipate, which may hurt our business performance in other markets. Our operating results may suffer to the extent that our efforts to expand our products sales in these new markets are delayed or prove to be unsuccessful.

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 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 are 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.

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, and

· companies developing life science or drug discovery 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.

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. In addition, to the extent we acquire any businesses or engage in certain other corporate transactions during the two year period following the spin-off of HART, we intend to structure such transactions in a manner that complies with certain safe harbors provided by the U.S. Treasury regulations, as discussed above. Such structuring requirements may discourage us from entering into certain transactions which we would otherwise pursue.

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 may have difficulty successfully integrating 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 the acquisitions we make. 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.

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.

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 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 ("U.S. 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, 2013, our continuing operations had goodwill and intangible assets of $56.9 million, or 42.0%, of our total assets and 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 U.S. 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 32 in Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations in this Annual Report. If our estimates are incorrect, our future financial operating results and financial condition could be adversely affected.

As a result of events occurring in 2013, including the spin-off of HART to our stockholders, our senior management team is new to our Company. The new members of our management team may not work together successfully to accomplish our growth strategy and manage our operations, which could adversely effect our financial performance.

Upon the completion of the distribution of HART to our stockholders on November 1, 2013, our former President and interim CEO, David Green and Chief Financial Officer, Tom McNaughton, left our Company to work for and oversee the operations of, HART. In addition, our former Chief Executive Officer, Chane Graziano retired as of May 14, 2013. Our Company has recently hired a new Chief Executive Officer and Chief Financial Officer to fill these vacancies, and made other recent hires at the senior management level. The process of transitioning to our new management team is complex and time consuming. Our new senior management may not successfully implement our growth strategy and manage our operations, which could negatively impact our financial results.

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 short notice. The loss of the services of any member of the senior management team, including the Chief Executive Officer, Jeffrey A. Duchemin, the Chief Financial Officer, Robert E. Gagnon, the Vice President Strategic Marketing and Business Development, Yong Sun, the Vice President of Global Sales, Yoav Sibony, or any of the managerial, technical or scientific staff may significantly delay or prevent the achievement of product development, our growth strategies 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.

Failure or inadequacy of our information technology infrastructure or software could adversely affect our day-to-day operations and decision making processes and have an adverse effect on our performance.

We depend on accurate and timely information and numerical data from key software applications to aid our day-to-day business, financial reporting and decision-making and, in many cases, proprietary and custom-designed software is necessary to operate our business. We are upgrading our disaster recovery procedures for our critical systems. However, any disruption caused by the failure of these systems, the underlying equipment, or communication networks could delay or otherwise adversely impact our day-to-day business and decision making, could make it impossible for us to operate critical equipment, and could have a materially adverse effect on our performance, if our disaster recovery plans do not mitigate the disruption. Disruptions could be caused by a variety of factors, such as catastrophic events or weather, power outages, or cyber-attacks on our systems by outside parties.

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.

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 are alleged or found to have caused injury, damage or loss. 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.

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 the scaffold product and related intellectual property now owned and being developed by HART, we 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.

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 usage involving animal research and other techniques presently being explored in the life science industry. These techniques have drawn 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;
- failure to achieve our desired tax treatment of the separation and spin-off of HART;
- 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;
- 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 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 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 29,020 square foot facility in Richmond, California,
- a leased 28,000 square foot facility in Cambridge, England,
- a leased 23,000 square foot facility in Whitehall, Pennsylvania,
- a leased 22,900 square foot facility in Nordhausen, Germany,
- a leased 20,853 square foot facility in Barcelona, Spain,
- a leased17,436 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, and
- a leased 3,229 square foot facility in Kista, Sweden.

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

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

Item 3. Legal Proceedings.

From time to time, we may be involved in various claims and legal proceedings arising in the ordinary course of business. We are not currently a party to any such significant claims or proceedings.

Item 4. Mine Safety Disclosures

Not Applicable.

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, 2013	High	Low
First Quarter	$4.61	$3.25
Second Quarter	$4.32	$3.45
Third Quarter	$4.28	$3.60
Fourth Quarter	$5.07	$3.76

Fiscal Year Ended December 31, 2012	High	Low
First Quarter	$3.31	$2.88
Second Quarter	$3.14	$2.65
Third Quarter	$3.43	$2.73
Fourth Quarter	$3.41	$2.84

The table above reflects the stock price ranges as adjusted for the spin-off of HART which was effected on November 1, 2013, for all periods presented. On March 7, 2014, the closing sale price of our common stock on the NASDAQ Global Market was $4.58 per share. There were 203 holders of record of our common stock as of March 7, 2014. 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.

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, 2008 to December 31, 2013 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, 2013. The total return for the Company's common stock and the indices used assumes the reinvestment of all dividends. The table below reflects the stock prices as adjusted for the spin-off of HART which was effected on November 1, 2013, for all periods presented.

21

	12/08	12/09	12/10	12/11	12/12	12/13
Harvard Bioscience, Inc.	100.00	134.72	153.96	146.04	165.28	234.09
Russell 2000	100.00	127.17	161.32	154.59	179.86	249.69
NASDAQ Biotechnology	100.00	104.67	112.89	127.04	169.50	288.38

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

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,				
	2013	2012	2011	2010	2009
	(in thousands, except per share data)				
Statement of Operations Data:					
Revenues	$105,171	$111,171	$108,864	$108,179	$85,772
Cost of product revenues	57,475	58,831	58,672	56,400	41,843
Gross profit	47,696	52,340	50,192	51,779	43,929
Operating expenses	46,159	44,510	41,787	40,938	35,513
Operating income	1,537	7,830	8,405	10,841	8,416
Other (expense) income, net	(1,102)	(938)	(1,537)	(655)	1,757
Income from continuing operations before income taxes	435	6,892	6,868	10,186	10,173
Income tax (benefit) expense	(288)	2,398	1,579	(9,452)	2,673
Income from continuing operations	723	4,494	5,289	19,638	7,500
Discontinued operations (1):					
Loss from discontinued operations, net of tax	(2,553)	(2,124)	(1,477)	(623)	(267)
Net (loss) income	$(1,830)	$2,370	$3,812	$19,015	$7,233
Earnings (loss) per share:					
Basic earnings per common share from continuing operations	$0.02	$0.16	$0.19	$0.68	$0.25
Discontinued operations	(0.08)	(0.07)	(0.05)	(0.02)	(0.01)
Basic (loss) earnings per common share	$(0.06)	$0.09	$0.14	$0.66	$0.24
Diluted earnings per common share from continuing operations	$0.02	$0.15	$0.18	$0.67	$0.25
Discontinued operations	(0.08)	(0.07)	(0.05)	(0.02)	(0.01)
Diluted (loss) earnings per common share	$(0.06)	$0.08	$0.13	$0.65	$0.24
Weighted average common shares:					
Basic	30,384	28,799	28,451	28,967	29,649
Diluted	31,914	29,793	29,819	29,405	29,946

	As of December 31,				
	2013	2012	2011	2010	2009
	(in thousands)				
Balance Sheet Data:					
Cash and cash equivalents	$25,771	$20,681	$17,916	$19,704	$16,588
Working capital	44,665	49,071	48,004	47,270	35,941
Total assets	135,460	133,484	126,634	124,797	107,231
Long-term debt, net of current portion	19,750	12,950	16,300	18,009	13,308
Stockholders' equity	94,485	104,213	95,499	90,248	75,257

(1) Discontinued operations include:

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, 2013, 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. Discontinued operations include a gain on disposal related to the earn-out, net of tax, of $0.3 million and $0.8 million in 2013 and 2012, respectively. During 2013, UBIO Acquisition Company made payments, including interest, of $1.8 million.

On November 1, 2013, the previously announced spin-off of our RMD business from our Company was completed. Through the spin-off date the historical operations of RMD were reported as continuing operations in our consolidated statements of operations. Following the spin-off, and reported herein, the historical operations of RMD were restated and presented as discontinued operations in our consolidated statements of operations presented. Discontinued operations include the results of the RMD business except for certain corporate overhead costs and other allocations, which remain in continuing operations. The costs incurred to separate and spin-off the RMD business remain in continuing operations and have been classified and reported as transaction costs, within operating expenses, on our consolidated statements of operations. Discontinued operations include losses from operations of the RMD business, net of tax, for 2013, 2012 and 2011 of $2.8 million, $3.0 million and $1.5 million, respectively.

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 9 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.

Overview

Since 2009, our operations included two main businesses, the Life Science Research Tools business ("LSRT") and the Regenerative Medicine Device business ("RMD"). In December of 2012, we made the decision to divest our RMD business which we believed was the best path to maximizing value for our shareholders. On November 1, 2013, we completed the spin-off of Harvard Apparatus Regenerative Technology ("HART") to our shareholders, and the new company is now trading as a separate public reporting company on the NASDAQ stock market under the trading symbol HART. As a result, on November 1, 2013, we began reporting our RMD business segment as a discontinued operation for all historical periods presented.

In connection with the spin-off of HART, certain required adjustments were made to our outstanding equity compensation awards under our employee benefit plans. Each outstanding option to purchase Harvard Bioscience common stock was converted into both an adjusted Harvard Bioscience option to purchase Harvard Bioscience common stock and an option to purchase HART common stock. The share amounts and exercise prices of the adjusted Harvard Bioscience options and HART options, as well as the share amounts of the adjusted Harvard Bioscience restricted stock units and HART restricted stock units, were each adjusted and set in a manner to ensure the intrinsic value held by the holder pertaining to the existing Harvard Bioscience award was maintained immediately following the spin-off and was determined such that tax is not triggered under Section 409A of the Internal Revenue Code. As part of these required adjustments, we issued approximately 1.7 million options and approximately 0.1 million restricted stock units to holders of our outstanding equity compensation awards.

Following the spin-off of HART, our former RMD segment, we have one reportable segment. As such, segment results and consolidated results are the same. The costs we incurred to separate and spin-off HART are included in our continuing operations and have been classified and reported as transaction costs, within operating expenses, on our consolidated statements of operations.

After the HART spin-off, our business has been aligned to focus on the growth of our LSRT business. Our goal is to be a world leading life science research tools company that excels in meeting the needs of our customers by providing a wide breath of innovative products, solutions and services. Our business strategy is to have a broad range of highly specialized products that have strong positions in targeted market segments within 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
- providing strong technical and application service helps customers solve their problems and provides additional value to the customer in their research.

Our growth strategy includes global expansion of sales and marketing and distribution channels, internal new product development building on our well-established brands, and acquisitions. 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 of acquired companies.

During the fourth quarter of 2013 we restructured our global operations to increase efficiency and better position it for growth. The restructuring is expected to result in overall net annual savings of approximately $2.0 million on a pre-tax basis beginning in 2014. With a reduction of approximately $3.0 million in personnel related costs and expenditures, approximately $1.0 million is being reinvested.

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

	2013	% of Revenue		2012	% of Revenue		2011	% of Revenue	
	(in thousands)								
Total revenues	$105,171			$111,171			$108,864		
Cost of product revenues	57,475	54.6	%	58,831	52.9	%	58,672	53.9	%
Sales and marketing expenses	17,330	16.5	%	18,287	16.4	%	16,909	15.5	%
General and administrative expenses	17,887	17.0	%	18,121	16.3	%	17,630	16.2	%
Research and development expenses	4,154	3.9	%	4,344	3.9	%	3,874	3.6	%
HART transaction costs	2,048	1.9	%	696	0.6	%	161	0.1	%

Revenues. We generate revenues by selling apparatus, instruments, devices and consumables through our catalogs, our distributors, our direct sales force and our websites. Our websites and catalogs, serve as the primary sales tools for our Physiology and Fluidics related product lines. These product lines include 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 our website, enables cross-selling and facilitates the introduction of new products. We have field sales teams in the U.S., Canada, the United Kingdom, Germany, France and Spain. In those regions where we do not have a direct sales team, we use distributors. Revenues from direct sales to end users represented approximately 57% of our revenues for each of the years ended December 31, 2013 and 2012.

Products in our Molecular and Cell analysis product lines are generally sold by distributors, and 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, 2013 and 2012, approximately 43%, of our revenues were derived from sales to distributors.

For the year ended December 31, 2013, approximately 64% of our revenues were derived from products we manufacture; approximately 11% 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. For the year ended December 31, 2012, approximately 67% of our revenues were derived from products we manufacture and 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 years ended December 31, 2013 and 2012, approximately 39% and 41% of our revenues, respectively, were derived from sales made by our non-U.S. operations.

Changes in the relative proportion of our revenue sources between catalog or website 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.

HART transaction costs. HART transaction costs consist of legal, accounting and other professional fees incurred to facilitate the separation and spin-off of HART. The costs have been included as a component of operating expenses on our consolidated statements of operations.

Stock-based compensation expenses. Stock-based compensation expense for the years ended December 31, 2013, 2012 and 2011 was $2.7 million, $3.3 million and $2.9 million, respectively. The stock-based compensation expense was related to 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, research and development expenses and discontinued operations.

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.

Results of Operations

Year Ended December 31, 2013 Compared to Year Ended December 31, 2012

Backlog.

Our order backlog was approximately $5.1 million and $4.6 million as of December 31, 2013 and 2012, respectively. The increase in backlog was primarily the result of the timing of customer orders and shipments. 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.

Revenues.

Revenues decreased $6.0 million, or 5.4%, to $105.2 million for the year ended December 31, 2013 compared to $111.2 million for the same period in 2012. Currency translation had a positive 0.2% effect on revenues for 2013

compared with 2012. Our acquisitions of AHN Biotechnologie GmbH, or AHN, in February 2012, and Modular SFC, Inc., in May 2012, had a positive 0.2% effect on revenues. Excluding the effects of currency translation and acquisitions, our revenues decreased 5.8% from the previous year. Weakness in North America due to the U.S. government sequester and in several European markets (specifically Spain, Germany, and the UK) due to continued economic uncertainty and government budget constraints, as well as a decrease in revenues associated with our distributor, GE Healthcare, contributed to the year over year decrease in revenues.

Cost of product revenues.

Cost of product revenues decreased $1.4 million, or 2.3%, to $57.5 million for the year ended December 31, 2013 compared with $58.8 million for the year ended December 31, 2012. The decrease in cost of product revenues was partially offset by $0.2 million, or 0.3%, attributable to our AHN acquisition and $0.1 million, or 0.2%, attributable to the effect of a weaker U.S. dollar. Adjusting for the effects of foreign currency and acquisitions, cost of product revenues decreased $1.7 million, or 2.8%. Gross profit as a percentage of revenues decreased to 45.4% for the year ended December 31, 2013 compared with 47.1% for the same period in 2012. The decline in margin was due primarily to inventory adjustments relating to discontinued and obsolete inventory and, lower sales volume and product mix.

Sales and marketing expenses.

Sales and marketing expenses decreased $1.0 million, or 5.2%, to $17.3 million for the year ended December 31, 2013 compared with $18.3 million for the year ended December 31, 2012. The decrease was primarily attributable to lower payroll related costs, lower commissions, lower travel expenses and lower advertising and promotional expenses.

General and administrative expenses.

General and administrative expenses decreased $0.2 million, or 1.3%, to $17.9 million for the year ended December 31, 2013 compared with $18.1 million for the year ended December 31, 2012. The decrease was primarily due to lower stock compensation expense, partially offset by higher legal and consulting fees.

Research and development expenses.

Research and development expenses decreased $0.2 million, or 4.4%, to $4.2 million for the year ended December 31, 2013 compared with $4.3 million for the same period in 2012. The decrease was mainly due to lower project supplies and outside services.

Amortization of intangible assets.

Amortization of intangible asset expenses was $2.6 million for the year ended December 31, 2013 compared with $2.8 million for the same period in 2012 and includes amortization expense of intangible assets related to our acquisitions.

Restructuring.

Restructuring charges increased approximately $1.8 million to $2.2 million for the year ended December 31, 2013 compared with $0.3 million for the year ended December 31, 2012. The increase was primarily due to a company-wide restructuring plan we implemented during the year ended December 31, 2013. This plan realigned global operations and included a reduction of our workforce of approximately 13%, as well as the elimination of the position of Chief Operating Officer.

HART transaction costs.

HART transaction costs, which consist of corporate transaction costs related to the separation and spin-off of HART, were $2.0 million for the year ended December 31, 2013 compared with $0.7 million for the same period in 2012.

Other (expense) income, net.

Other expense and income, net, was $1.1 million expense and $0.9 million expense for the year ended December 31, 2013 and 2012, respectively. Interest expense was $1.0 million for the year ended December 31, 2013 compared to interest expense of $0.6 million for the year ended December 31, 2012. The increase in interest expense was primarily due to both higher average debt balances and interest rates in 2013 compared to the prior year. Other expense and income, net, for the year ended December 31, 2013 and 2012, also included $0 and $0.3 million, respectively, of acquisition related expenses.

Income taxes.

Income tax (benefit) expense from continuing operations was approximately $0.3 million benefit and $2.4 million expense for the years ended December 31, 2013 and 2012, respectively. The effective income tax rate from continuing operations was 66.2% benefit for the year ended December 31, 2013, compared with 34.8% expense for the same period in 2012. The difference between our effective tax rate year to year was primarily attributable to increased research and development tax credits and pension expense benefits in 2013 versus 2012, an increase in the valuation allowance related to foreign tax credits in 2012, partially offset by non-deductible costs related to the spin-off of HART in 2013.

Discontinued Operations.

In September 2008, we completed the sale of assets of our Union Biometrica Division including our German subsidiary, Union Biometrica GmbH, representing 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 revenues generated by the acquired business as it was conducted by UBIO Acquisition Company over a five-year post-transaction period in an amount equal to (i) 5% of the revenues generated up to and including $6.0 million each year and (ii) 8% of the revenues generated above $6.0 million each year. Any earn-out amounts were evidenced by interest-bearing promissory notes due on September 30, 2013 or at an earlier date based on certain triggering events. During 2013, UBIO Acquisition Company made payments, including interest, of $1.8 million. UBIO Acquisition Company's final payment under the earn-out obligation was received in October 2013. Included in the loss from discontinued operations, net of taxes, is a gain on disposal related to the Union Biometrica earn-out of $0.3 million in 2013 compared to $0.8 million in 2012.

On November 1, 2013, the previously announced spin-off of our Regenerative Medicine Device ("RMD") business was completed. Through the spin-off date the historical operations of RMD were reported as continuing operations in our consolidated statements of operations. Following the spin-off, the historical operations of RMD were restated and presented as discontinued operations in our consolidated statements of operations. Discontinued operations include the results of the RMD business except for certain corporate overhead costs and other allocations, which remain in continuing operations. The costs we incurred to separate and spin-off the RMD business are included in our continuing operations and have been classified and reported as transaction costs, within operating expenses, on our consolidated statements of operations. Loss from discontinued operations, net of taxes, related to RMD was $2.8 million in 2013 compared to $3.0 million in 2012.

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

Backlog.

Our order backlog was approximately $4.6 million and $5.0 million as of December 31, 2012 and 2011, respectively. The decrease in backlog was primarily the result of the timing of customer orders and shipments. 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.

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 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 weaker than expected academic and government research markets in both the U.S. and international markets.

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 $58.7 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. This increase was partially offset by a

stronger U.S. dollar, which caused a $0.6 million, or 1.0%, favorable currency translation effect on cost of product revenues for the year ended December 31, 2012. The remainder of the decrease was due to favorable sales mix and lower manufacturing costs. Gross profit as a percentage of revenues increased to 47.1% for the year ended December 31, 2012 compared with 46.1% 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 and lower manufacturing costs.

Sales and marketing expenses.

Sales and marketing expenses increased $1.4 million, or 8.2%, to $18.3 million for the year ended December 31, 2012 compared with $16.9 million for the year ended December 31, 2011. The increase in sales and marketing expenses included $0.5 million, or 2.5%, attributable to our AHN and CMA acquisitions, and $1.1 million, or 6.2%, due to increased payroll and payroll related costs. The increases were partially offset by an approximately $0.2 million, or 1.0%, decrease due to the impact of a stronger U.S. dollar.

General and administrative expenses.

General and administrative expenses increased $0.5 million, or 2.8%, to $18.1 million for the year ended December 31, 2012 compared with $17.6 million for the year ended December 31, 2011. The increase in general and administrative expenses included a $0.7 million increase, or 3.9%, due to our AHN and CMA acquisitions partially offset by an approximately $0.2 million, or 0.7%, decrease due to the impact of a stronger U.S. dollar.

Research and development expenses.

Research and development expenses increased $0.5 million, or 12.1%, to $4.3 million for the year ended December 31, 2012 compared with $3.9 million for the same period in 2011. The increase in research and development expenses was primarily due to higher payroll costs, project supply costs, and outside service costs.

Amortization of intangible assets.

Amortization of intangible asset expenses was $2.8 million for the year 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.

Restructuring.

During 2012, we initiated a plan to reduce operating expenses at one of our foreign subsidiaries. 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 one of our U.S. facilities as part of a business improvement initiative. We also developed a plan to improve operating margins at another U.S. 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.

HART transaction costs.

HART transaction costs, which consist of corporate transaction costs related to the separation and spin-off of HART, were $0.7 million for the year ended December 31, 2012 compared with $0.2 million for the same period in 2011.

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. Interest expense was $0.6 million for the year ended December 31, 2012 compared to interest expense of $0.8 million for the year ended December 31, 2011. The decrease in 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 acquisition related expenses.

Income taxes.

Income tax expense from continuing operations was approximately $2.4 million and $1.6 million for the years ended December 31, 2012 and 2011, respectively. The effective income tax rate from continuing operations was 34.8% compared with 23.0% for the years ended December 31, 2012 and 2011, respectively. The difference between our effective tax rate year to year was primarily attributable to the reversal of the uncertain tax liability and the related accrued interest due to the expiration of statute of limitations in 2011, partially offset by an increase in the valuation allowance related to foreign tax credits in 2012.

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 were 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 had 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.

On November 1, 2013, the previously announced spin-off of our Regenerative Medicine Device (“RMD”) business was completed. Through the spin-off date the historical operations of RMD were reported as continuing operations in our consolidated statements of operations. Following the spin-off, the historical operations of RMD were restated and presented as discontinued operations in our consolidated statements of operations. Discontinued operations include the results of the RMD business except for certain corporate overhead costs and other allocations, which remain in continuing operations. The costs we incurred to separate and spin-off the RMD business are included in our continuing operations and have been classified and reported as transaction costs, within operating expenses, on our consolidated statements of operations. Loss from discontinued operations, net of taxes, related to RMD was $3.0 million in 2012 compared to $1.5 million in 2011.

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 arise 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 2013 with cash and cash equivalents of $25.8 million compared to $20.7 million at December 31, 2012. As of December 31, 2013 and 2012, we had $24.8 million and $13.0 million, respectively, of borrowings outstanding under our credit facility. Total cash and cash equivalents, net of debt was $1.0 million and $7.7 million at December 31, 2013 and 2012, respectively.

As of December 31, 2013 and 2012, cash and cash equivalents held by our foreign subsidiaries was $23.6 million and $19.2 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 (“AHN”), a German manufacturer, and utilized approximately $2.0 million of our foreign cash on hand. In 2013 and 2012, we used approximately $0.9 million and $0.7 million, respectively, in additional foreign cash on hand for capital improvements at AHN.

Overview of Cash Flows for the years ended December 31,

	2013	2012	2011
		(in thousands)	
Cash flows from operations:			
Net (loss) income	$(1,830)	$2,370	$3,812
Changes in assets and liabilities	1,940	256	(3,854)
Other adjustments to operating cash flows	3,950	5,436	6,690
Net cash provided by operating activities	4,060	8,062	6,648
Investing activities:			
Acquisitions, net of cash acquired	-	(2,878)	(5,465)
Other investing activities	171	(1,798)	(1,733)
Net cash provided by (used in) investing activities	171	(4,676)	(7,198)
Financing activities:			
Net proceeds from issuance of (repayments of) debt	11,800	(3,350)	(1,708)
Transfer of cash and cash equivalents to HART	(15,041)	-	-
Other financing activities	3,309	2,287	567
Net cash provided by (used in) financing activities	68	(1,063)	(1,141)
Effect of exchange rate changes on cash	791	442	(97)

Increase (decrease) in cash and cash equivalents	$5,090	$2,765	$(1,788)

Our operating activities generated cash of $4.1 million for the year ended December 31, 2013, $8.1 million for the year ended December 31, 2012 and $6.6 million for the year ended December 31, 2011. The decrease in cash flows from operations in 2013 compared to 2012 was primarily due to lower net income year over year. The increase in cash flows from operations in 2012 compared to 2011 was primarily due to changes in working capital year over year.

Our investing activities generated cash of $0.2 million in the year ended December 31, 2013, compared to $4.7 million and $7.2 million used by investing activities during the years ended December 31, 2012 and 2011, respectively. Investing activities during 2013, 2012 and 2011 included acquisitions, purchases of property, plant and equipment, expenditures for our catalogs and, unique to 2013, net cash proceeds from the sale of discontinued operations. During 2013, $1.8 million was received from UBI Acquisition Corp. pertaining to the proceeds from the sale of discontinued operations. 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. 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. All of these payments were included in “Acquisitions, net of cash acquired” under investing activities. During 2013, catalog costs were $0.1 million while capital expenditures were $1.6 million. We expect to make approximately $1.6 million of capital expenditures during 2014. During 2012, catalog costs were $0.1 million, while capital expenditures were $1.8 million. During 2011, catalog costs were $0.3 million, while capital expenditures were $1.5 million.

Our financing activities have historically consisted of borrowings and repayments under our revolving credit facility and term loans, payments of debt issuance costs, the issuance of common stock and, unique to 2013, the transfer of cash as part of the separation and spin-off of HART. During the year ended December 31, 2013, financing activities provided cash of $0.1 million, compared with $1.1 million of cash used in financing activities for the years ended December 31, 2012 and 2011. As part of the spin-off of HART, we transferred approximately $15.0 million to fund its operations. During 2013, we borrowed $14.6 million and repaid $2.8 million of debt under our credit facility and term loans, and ended the year with $24.8 million of borrowings. Net proceeds from the issuance of common stock for 2013 was $3.6 million, which related to the exercise of stock options and the employee stock purchase plan. During the year ended December 31, 2013, we paid debt issuance costs of $0.3 million. During the year ended December 31, 2012, we borrowed $0.5 million and repaid $3.9 million of debt under our credit facility, and ended the year with $13.0 million of borrowings. Net proceeds from the issuance of common stock for 2012 was $2.3 million. During the year ended December 31, 2011, we repaid $1.7 million of debt under our credit facility, and ended the year with $16.3 million of borrowings. Net proceeds from the issuance of common stock for 2011 was $0.6 million.

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.

On March 29, 2013, we entered into a Second Amended and Restated Revolving Credit Agreement (as amended, the “Credit Agreement”) with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as

lenders. The Credit Agreement converted our existing outstanding revolving advances into a term loan in the principal amount of $15.0 million (the "Term Loan"), provided a revolving credit facility in the maximum principal amount of $25.0 million ("Revolving Line") and provided a delayed draw term loan of up to $15.0 million (the "DDTL") to fund our capital contributions to HART. The maximum amount available under the Credit Agreement is $50.0 million as borrowings against the DDTL in excess of $10.0 million result in a dollar for dollar reduction in the Revolving Line capacity. The Revolving Line has a maturity date of March 29, 2016, while the Term Loan and DDTL have a maturity date of March 29, 2018.

On October 31, 2013, we amended the Credit Agreement to reduce the DDTL from up to $15.0 million to up to $10.0 million and allowed for up to $5.0 million to instead be available for drawing as advances under the Revolving Line.

Borrowings under the Term Loan and the DDTL bear interest at a rate based on either the effective London Interbank Offered Rate (LIBOR) for certain interest periods selected by us, or a daily floating rate based on the British Bankers' Association (BBA) LIBOR as published by Reuters (or other commercially available source providing quotations of BBA LIBOR), plus in either case, a margin of 3.0%. The Revolving Line bears interest at a rate based on either the effective LIBOR for certain interest periods selected by us, or a daily floating rate based on the BBA LIBOR, plus in either case, a margin of 2.5%. We were required to fix the rate of interest on at least 50% of the Term Loan and the DDTL through the purchase of interest rate swaps. The Term Loan and DDTL each have interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings, and principal payments due quarterly. The Revolving Line has interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings.

At December 31, 2013, the weighted effective interest rates on the Term Loan, DDTL and Revolving Line borrowings were 3.96%, 3.55% and 3.16%, respectively. The Credit Agreement includes covenants relating to income, debt coverage and cash flow, as well as minimum working capital requirements. The Credit Agreement 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, 2013, we were in compliance with all financial covenants contained in the Credit Agreement; we were subject to a working capital borrowing restriction and had available borrowing capacity under the Credit Agreement of $17.4 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 our 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.

Contractual Obligations

The following schedule represents our contractual obligations for our continuing operations, excluding interest, as of December 31, 2013.

	Total	2014	2015	2016	2017	2018	2019 and Beyond
				(in thousands)			
Bank credit facility and notes payable	$24,750	$5,000	$5,000	$7,500	$5,000	$2,250	$-
Operating leases	3,716	1,228	1,073	763	422	160	70
Total	$28,466	$6,228	$6,073	$8,263	$5,422	$2,410	$70

We have a liability at December 31, 2013 and 2012 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, do 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 $4.9 million and $5.9 million for the years ended December 31, 2013 and 2012, 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:

Ÿrevenue recognition;
Ÿaccounting for income taxes;
Ÿinventory;
Ÿvaluation of identifiable intangible assets in business combinations;
Ÿvaluation of long-lived and intangible assets and goodwill; and
Ÿstock-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”.

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 collectability 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. At December 31, 2013, we have a valuation allowance of $1.2 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 historical inventory usage and 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 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, distribution agreements, trade names, patents and acquired technology. Amounts assigned to such identifiable intangible assets, including customer relationships, distribution agreements and patents, 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 our distributors; 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. 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 it is necessary to perform the two-step goodwill impairment test 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 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.

For the purpose of its goodwill analysis, and following the spin-off of HART, we have one reporting unit. We conducted our annual impairment analysis in the fourth quarter of fiscal year 2013. The determination of the fair value of the reporting unit requires us to make a significant estimate on control premiums appropriate of industries in which we compete. We compared our carrying value to our overall market capitalization.

The results of our test for goodwill impairment showed that the estimated fair value of our business substantially exceeded its carrying value. We concluded that none of our goodwill was impaired. We also concluded that the fair value of the unamortized intangible assets significantly exceeds the carrying amounts.

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 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 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 ranges from one to 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, the Euro and the Swedish krona.

During 2013, the U.S dollar's weakening in relation to those currencies resulted in a favorable translation effect on our consolidated revenue and a neutral effect on our earnings growth. Changes in foreign currency exchange rates resulted in a favorable effect on revenues of $0.2 million for 2013 and negative effect on expenses of $0.2 million for 2013. During 2012, the U.S dollar's strengthening in relation to those currencies resulted in an 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 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 an 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.

The gain associated with the translation of foreign equity into U.S. dollars was approximately $1.6 million and $1.9 million for the years ended December 31, 2013 and 2012, respectively. In addition, currency fluctuations resulted in approximately $0.1 million, $0.1 million and $41,000 in foreign currency losses during the years ended December 31, 2013, 2012 and 2011, respectively.

The U.S. dollar was weaker on December 31, 2013 against the British pound, the Euro and the Swedish krona compared with the rates at December 31, 2012. 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, 2013, our Stockholders' Equity was higher by $1.6 million as compared to the value at December 31, 2012, due to the translation of foreign net assets based on a weaker dollar.

The U.S. dollar was weaker on December 31, 2012 against the British pound, the Euro and the Swedish krona compared with the rates at December 31, 2011. The weaker U.S. dollar caused our foreign net assets to translate to a higher value, stated in U.S. dollars, which had 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.

Since December 31, 2013, the U.S. dollar weakened approximately 1.2%, 0.8% and 1.5% against the British pound, the Euro and the Swedish krona, respectively. Approximately 39% of our revenues are derived from business transacted in British pounds, Euros or Swedish kronas. If the U.S. dollar strengthens against these currencies, our earnings and cash flows, stated in U.S. dollars, will be affected negatively.

Recently Issued Accounting Pronouncements

In July 2013, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2013-11, “Income Taxes (Topic 740): Presentation of an Unrecognized Tax Benefit When a Net Operating Loss Carryforward, a Similar Tax Loss, or a Tax Credit Carryforward Exists”, which requires an entity to present an unrecognized tax benefit as a reduction of a deferred tax asset for a net operating loss (NOL) carryforward, or similar tax loss or tax credit carryforward, rather than as a liability when the uncertain tax position would reduce the NOL or other carryforward under the tax law. The ASU is effective prospectively for fiscal years, and interim periods within those years, beginning after December 15, 2013. We believe the adoption of this new guidance will not have a material impact on our consolidated financial position or results of operations.

In February 2013, the FASB issued additional guidance in ASU 2013-02, “Reporting Amounts Reclassified Out of Accumulated Other Comprehensive Income.” The new guidance requires the presentation of 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 adoption of this guidance, which is related to disclosure only, did not have an impact on our consolidated financial position, results of operations or cash flows.

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.

The majority of our manufacturing and testing of products occurs in our facilities in the United States, the United Kingdom, Germany, Sweden and Spain. We sell our products globally through our direct catalog sales, our websites, 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 from time to time may affect our operating results.

We are exposed to market risk from changes in interest rates primarily through our financing activities. As of December 31, 2013, we had $24.8 million outstanding under our Credit Agreement. The purpose of the Credit Agreement was to convert our existing outstanding revolving advances into a Term Loan in the principal amount of $15.0 million, provide a Revolving Line facility in the maximum principal amount of $25 million, and provide a DDTL of up to $10.0 million, reduced from $15.0 million as discussed below, to fund capital contributions to our subsidiary, HART. The Revolving Line has a maturity date of March 29, 2016, while the Term Loan and DDTL have a maturity date of March 29, 2018. On October 31, 2013, we amended the Credit Agreement to reduce the DDTL from up to $15.0 million to up to $10.0 million and allow for up to $5.0 million to instead be available for drawing as advances under the Revolving Line.

Borrowings under the Term Loan and the DDTL shall bear interest at a rate based on either the effective London Interbank Offered Rate (LIBOR) for certain interest periods selected by us, or a daily floating rate based on the BBA LIBOR as published by Reuters (or other commercially available source providing quotations of BBA LIBOR), plus in either case, a margin of 3.0%. The Revolving Line shall bear interest at a rate based on either the effective LIBOR for certain interest periods selected by us, or a daily floating rate based on the BBA LIBOR, plus in either case, a margin of 2.5%. We were required to fix the rate of interest on at least 50% of the Term Loan and the DDTL through the purchase of an interest rate swap. The Term Loan and DDTL each have interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings, and principal payments due quarterly. The Revolving Line has interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings. Effective June 5, 2013, we entered into an interest rate swap contract with a notional amount of $15 million and a maturity date of March 29, 2018 in order to hedge the risk of changes in the effective benchmark interest rate (LIBOR) associated with our Term Loan. The swap contract converted specific variable-rate debt into fixed-rate debt and fixed LIBOR associated with the Term Loan at 0.96% plus a bank margin of 3.0%. Effective November 29, 2013, we entered into a second interest rate swap contract with a notional amount of $5.0 million and a maturity date of March 29, 2018 in order to hedge the risk of changes in LIBOR associated with a

portion of our DDTL. The swap contract converted specific variable-rate debt into fixed rate debt and fixed LIBOR associated with half of the DDTL amount at 0.93% plus a bank margin of 3.0%. These swap contracts were associated with reducing or eliminating interest rate risk and were designated as a cash flow hedge instruments in accordance with ASC 815 “Derivatives and Hedging”. We use interest-rate-related derivative instruments to manage our exposure related to changes in interest rates on our variable-rate debt instruments. We do not enter into derivative instruments for any purpose other than cash flow hedging and we do not speculate using derivative instruments.

As of December 31, 2013, the weighted effective interest rates on the Company's Term Loan , DDTL and Revolving Line borrowings were 3.96%, 3.55% and 3.16%, respectively. Assuming no other changes which would affect the margin of the interest rate under our Term Loan, DDTL and Revolving Line, the effect of interest rate fluctuations on outstanding borrowings under our Credit Agreement as of December 31, 2013 over the next twelve months is quantified and summarized as follows:

If compared to the rate as of December 31, 2013	Interest expense increase (in thousands)
Interest rates increase by 1%	$ 73
Interest rates increase by 2%	$ 145

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, 2013. 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 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 ("U.S. 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 U.S. 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, 2013 based on the criteria established in Internal Control—Integrated Framework (1992) 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, 2013.

The effectiveness of our internal control over financial reporting as of December 31, 2013 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, 2013. Based on that evaluation, management concluded that there were no changes in our internal controls over financial reporting during the quarter ended December 31, 2013 that have materially affected, or are reasonably likely to materially affect our internal controls over financial reporting.

(d) Report of Independent Registered Public Accounting Firm

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Harvard Bioscience, Inc.:

We have audited Harvard Bioscience, Inc.'s internal control over financial reporting as of December 31, 2013, based on criteria established in Internal Control – Integrated Framework (1992) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Harvard Bioscience, Inc.'s 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. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2013, based on criteria established in Internal Control – Integrated Framework (1992) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

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, 2013 and 2012, and the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the years in the three-year period ended December 31, 2013, and our report dated March 14, 2014 expressed an unqualified opinion on those consolidated financial statements.

/s/ KPMG LLP

Boston, Massachusetts
March 14, 2014

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

Incorporated by reference to our definitive Proxy Statement to be filed pursuant to Regulation 14A under the Exchange Act, in connection with our 2014 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 2014 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 2014 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 2014 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 2014 Annual Meeting of Stockholders.

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.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Harvard Bioscience, Inc.:

We have audited the accompanying consolidated balance sheets of Harvard Bioscience, Inc. as of December 31, 2013 and 2012, and the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the years in the three-year period ended December 31, 2013. 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, 2013 and 2012, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2013, 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.'s internal control over financial reporting as of December 31, 2013, based on criteria established in Internal Control – Integrated Framework (1992) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated March 14, 2014 expressed an unqualified opinion on the effectiveness of Harvard Bioscience, Inc.'s internal control over financial reporting.

/s/ KPMG LLP

Boston, Massachusetts
March 14, 2014

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS
(In thousands, except share and per share data)

	December 31, 2013	December 31, 2012
Assets		
Current assets:		
Cash and cash equivalents	$ 25,771	$ 20,681
Accounts receivable, net of allowance for doubtful accounts of $358 and $194, respectively	13,884	14,357
Inventories	15,777	17,762
Deferred income tax assets - current	1,547	1,553
Other receivables and other assets	3,771	4,619
Total current assets	60,750	58,972
Property, plant and equipment, net	4,375	4,551
Deferred income tax assets - non-current	13,116	10,770
Amortizable intangible assets, net	19,009	21,225
Goodwill	36,605	36,200
Other indefinite lived intangible assets	1,289	1,276
Other assets	316	490
Total assets	$ 135,460	$ 133,484
Liabilities and Stockholders' Equity		
Current liabilities:		
Current portion, long-term debt	$ 5,000	$ -
Accounts payable	4,682	4,680
Deferred revenue	640	482
Accrued income taxes	99	506
Accrued expenses	5,078	3,505
Other liabilities - current	586	728
Total current liabilities	16,085	9,901
Long-term debt, less current installments	19,750	12,950
Deferred income tax liabilities - non-current	160	277
Other long term liabilities	4,980	6,143
Total liabilities	40,975	29,271
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; 39,384,974 and 37,123,705 shares issued and 31,639,467 and 29,378,198 shares outstanding, respectively	390	370
Additional paid-in-capital	202,446	196,634

Accumulated deficit	(95,039)	(77,260)
Accumulated other comprehensive loss	(2,644)	(4,863)
Treasury stock at cost, 7,745,507 common shares	(10,668)	(10,668)
Total stockholders' equity	94,485	104,213
Total liabilities and stockholders' equity	$ 135,460	$ 133,484

See accompanying notes to consolidated financial statements.

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share data)

	Year Ended December 31,		
	2013	2012	2011
Revenues	$105,171	$111,171	$108,864
Cost of product revenues (exclusive of items shown separately below)	57,475	58,831	58,672
Gross profit	47,696	52,340	50,192
Sales and marketing expenses	17,330	18,287	16,909
General and administrative expenses	17,887	18,121	17,630
Research and development expenses	4,154	4,344	3,874
Restructuring charges	2,150	310	467
Amortization of intangible assets	2,590	2,752	2,746
HART transaction costs	2,048	696	161
Total operating expenses	46,159	44,510	41,787
Operating income	1,537	7,830	8,405
Other (expense) income:			
Foreign exchange	(139)	(113)	(41)
Interest expense	(955)	(584)	(752)
Interest income	43	46	65
Other expense, net	(51)	(287)	(809)
Other (expense) income, net	(1,102)	(938)	(1,537)
Income from continuing operations before income taxes	435	6,892	6,868
Income tax (benefit) expense	(288)	2,398	1,579
Income from continuing operations	723	4,494	5,289
Discontinued operations:			
Loss from discontinued operations, net of tax	(2,553)	(2,124)	(1,477)
Net (loss) income	$(1,830)	$2,370	$3,812
Earnings (loss) per share:			
Basic earnings per common share from continuing operations	$0.02	$0.16	$0.19
Discontinued operations	(0.08)	(0.07)	(0.05)
Basic (loss) earnings per common share	$(0.06)	$0.09	$0.14
Diluted earnings per common share from continuing operations	$0.02	$0.15	$0.18
Discontinued operations	(0.08)	(0.07)	(0.05)
Diluted (loss) earnings per common share	$(0.06)	$0.08	$0.13
Weighted average common shares:			
Basic	30,384	28,799	28,451
Diluted	31,914	29,793	29,819

See accompanying notes to consolidated financial statements.

F-4

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

Net (loss) income
Other comprehensive income (loss):
Foreign currency translation adjustments
Derivatives qualifying as hedges, net of tax:
Loss on derivative instruments designated and qualifying as cash flow hedges
Amounts reclassified from accumulated other comprehensive income to net (loss) income
Derivatives qualifying as hedges, net of tax
Defined benefit pension plans, net of tax:
Amortization of net losses included in net periodic pension costs, net of tax expense of $62, $57 and $40 in 2013, 2012 and 201
Net gain (loss), net of tax expense (benefits) of $115, ($357) and ($323) in 2013, 2012 and 2011, respectively
Defined benefit pension plans, net of tax
Other comprehensive income (loss)
Comprehensive income

See accompanying notes to consolidated financial statements.

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, 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
Vesting of restricted stock units	117	-	-	-	-	-	-
Shares withheld for taxes	(41)	-	(165)	-	-	-	(165)
Stock compensation expense	-	-	2,863	-	-	-	2,863
Net income	-	-	-	3,812	-	-	3,812
Other comprehensive (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
Vesting of restricted stock units	164	-	-	-	-	-	-
Shares withheld for taxes	(37)	-	(145)	-	-	-	(145)
Stock compensation expense	-	-	3,321	-	-	-	3,321
Comprehensive income:							
Net income	-	-	-	2,370	-	-	2,370
Other comprehensive income	-	-	-	-	859	-	859
Balance at December 31, 2012	37,124	370	196,634	(77,260)	(4,863)	(10,668)	104,213
Stock option exercises	2,135	20	4,031	-	-	-	4,051
Stock purchase plan	57	-	194	-	-	-	194
Vesting of restricted stock units	282	-	-	-	-	-	-
Shares withheld for taxes	(213)	-	(1,083)	-	-	-	(1,083)
Distribution to HART	-	-	-	(15,949)	-	-	(15,949)
Stock compensation expense	-	-	2,670	-	-	-	2,670
Net (loss)	-	-	-	(1,830)	-	-	(1,830)
Other comprehensive income	-	-	-	-	2,219	-	2,219
Balance at December 31, 2013	39,385	$390	$ 202,446	$ (95,039)	$ (2,644)	$(10,668)	$ 94,485

See accompanying notes to consolidated financial statements.

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended December 31,		
	2013	2012	2011
Cash flows from operating activities:			
Net (loss) income	$(1,830)	$2,370	$3,812
Adjustments to reconcile net (loss) income to net cash provided by operating activities:			
Stock compensation expense	2,670	3,321	2,863
Depreciation	1,298	1,270	1,276
Earn-out related to discontinued operations	(440)	(1,344)	-
Gain on sales of fixed assets	-	(24)	(19)
Non-cash restructuring charge (credit)	(46)	(13)	210
Amortization of catalog costs	101	184	307
Provision (recovery) for allowance for doubtful accounts	172	(31)	67
Amortization of intangible assets	2,590	2,752	2,746
Amortization of deferred financing costs	46	52	89
Deferred income taxes	(2,441)	(731)	(849)
Changes in operating assets and liabilities:			
Decrease in accounts receivable	436	1,154	232
Decrease (increase) in inventories	1,921	1,174	(1,705)
(Increase) in other receivables and other assets	(1,020)	(925)	(73)
(Decrease) increase in trade accounts payable	(41)	(905)	69
Increase (decrease) in accrued income taxes	323	213	(544)
Increase (decrease) in accrued expenses	847	(485)	(1,368)
Increase (decrease) in deferred revenue	146	(48)	31
(Decrease) increase in other liabilities	(672)	78	(496)
Net cash provided by operating activities	4,060	8,062	6,648
Cash flows provided by (used in) investing activities:			
Additions to property, plant and equipment	(1,622)	(1,769)	(1,506)
Additions to catalog costs	(57)	(62)	(252)
Proceeds from sale of discontinued operations	1,784	-	-
Proceeds from sales of property, plant and equipment	66	33	25
Acquisitions, net of cash acquired	-	(2,878)	(5,465)
Net cash provided by (used in) investing activities	171	(4,676)	(7,198)
Cash flows provided by (used in) financing activities:			
Proceeds from issuance of debt	14,550	500	-
Repayments of debt	(2,750)	(3,850)	(1,708)
Transfer of cash and cash equivalents to HART	(15,041)	-	-
Payments of debt issuance costs	(312)	-	-
Net proceeds from issuance of common stock	3,621	2,287	567
Net cash provided by (used in) financing activities	68	(1,063)	(1,141)
Effect of exchange rate changes on cash	791	442	(97)
Increase (decrease) in cash and cash equivalents	5,090	2,765	(1,788)
Cash and cash equivalents at the beginning of period	20,681	17,916	19,704

Cash and cash equivalents at the end of period	$25,771	$20,681	$17,916
Supplemental disclosures of cash flow information:			
Cash paid for interest	$892	$577	$638
Cash paid for income taxes, net of refunds	$1,479	$1,519	$2,234

See accompanying notes to consolidated financial statements.

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Organization

Harvard Bioscience, Inc. (“Harvard Bioscience” or “the Company”) is a global developer, manufacturer and marketer of a broad range of scientific instruments, systems and lab consumables used to advance life science research for basic research, drug discovery, clinical and environmental testing. The Company’s products are sold to thousands of researchers in over 100 countries through its global sales organization, catalogs, websites, and through distributors including GE Healthcare, Thermo Fisher Scientific Inc., VWR and other specialized distributors. The Company has sales and manufacturing operations in the United States, the United Kingdom, Germany, Sweden, Spain, 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 historical inventory usage and estimated forecast of product demand.

(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.

(j) Earnings per Share

Basic earnings per share is computed by dividing 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 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. The Company has chosen to disclose comprehensive income, which encompasses net income (loss), foreign currency translation adjustments, gains and losses on derivatives, the underfunded status of its 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, 2013, 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 5 to 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, and following the spin-off of HART, the Company has one reporting unit. The Company conducted its annual impairment analysis in the fourth quarter of fiscal year 2013. The goodwill impairment test is a two-step process. The first step of the impairment analysis compares the Company’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 indefinite-lived intangible assets if the carrying amount exceeds the fair value of the asset, the Company would write down the indefinite-lived intangible asset to fair value.

At December 31, 2013, the Company compared its carrying value to its overall market capitalization, noting the fair value of the Company significantly exceeded the carrying value. 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, 2013 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, 2013 the Company concluded that none of its long-lived assets were impaired.

(o) Derivatives

The Company uses interest-rate-related derivative instruments to manage its exposure related to changes in interest rates on its variable-rate debt instruments. The Company does not enter into derivative instruments for any purpose other than cash flow hedging. The Company does not speculate using derivative instruments. The Company recognizes all derivative instruments as either assets or liabilities in the balance sheet at their respective fair values. For derivatives designated in hedging relationships, changes in the fair value are either offset through earnings against the change in fair value of the hedged item attributable to the risk being hedged or recognized in accumulated other comprehensive income ("AOCI"), to the extent the derivative is effective at offsetting the changes in cash flows being hedged until the hedged item affects earnings.

The Company only enters into derivative contracts that it intends to designate as a hedge of a forecasted transaction or the variability of cash flows to be received or paid related to a recognized asset or liability (cash flow hedge). For all hedging relationships, the Company formally documents the hedging relationship and its risk-management objective and strategy for undertaking the hedge, the hedging instrument, the hedged transaction, the nature of the risk being hedged, how the hedging instrument's effectiveness in offsetting the hedged risk will be assessed prospectively and retrospectively, and a description of the method used to measure ineffectiveness. The Company also formally assesses, both at the inception of the hedging relationship and on an ongoing basis, whether the derivatives that are used in hedging relationships are highly effective in offsetting changes in cash flows of hedged transactions. For derivative instruments that are designated and qualify as part of a cash flow hedging relationship, the effective portion of the gain or loss on the derivative is reported as a component of other comprehensive income and reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. Gains and losses on the derivative representing either hedge ineffectiveness or hedge components excluded from the assessment of effectiveness are recognized in current earnings.

The Company discontinues hedge accounting prospectively when it determines that the derivative is no longer effective in offsetting cash flows attributable to the hedged risk, the derivative expires or is sold, terminated, or exercised, the cash flow hedge is de-designated because a forecasted transaction is not probable of occurring, or management determines to remove the designation of the cash flow hedge.

In all situations in which hedge accounting is discontinued and the derivative remains outstanding, the Company continues to carry the derivative at its fair value on the balance sheet and recognizes any subsequent changes in its fair value in earnings. When it is probable that a forecasted transaction will not occur, the Company discontinues hedge accounting and recognizes immediately in earnings gains and losses that were accumulated in other comprehensive income related to the hedging relationship.

(p) Fair Value of Financial Instruments

The carrying values of the Company's 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 the Company's long-term debt approximates its carrying value and is based on the amount of future cash flows associated with the debt discounted using current borrowing rates 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 the 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 includes valuations based on inputs that are unobservable and significant to the overall fair value measurement.

(q) 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 stock options, restricted stock units and employee stock purchases ("employee stock purchases") related to the Employee Stock Purchase Plan (as amended, the "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 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 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 ranges from one to 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, 2013, 2012 and 2011 consisted of stock-based compensation expense related to 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, research and development expenses and discontinued operations.

(r) Recently Issued Accounting Pronouncements

In July 2013, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2013-11, “Income Taxes (Topic 740): Presentation of an Unrecognized Tax Benefit When a Net Operating Loss Carryforward, a Similar Tax Loss, or a Tax Credit Carryforward Exists”, which requires an entity to present an unrecognized tax benefit as a reduction of a deferred tax asset for a net operating loss (NOL) carryforward, or similar tax loss or tax credit carryforward, rather than as a liability when the uncertain tax position would reduce the NOL or other carryforward under the tax law. The ASU is effective prospectively for fiscal years, and interim periods within those years, beginning after December 15, 2013. The Company believes the adoption of this new guidance will not have a material impact on its consolidated financial position or results of operations.

In February 2013, the FASB issued additional guidance in ASU 2013-02, “Reporting Amounts Reclassified Out of Accumulated Other Comprehensive Income.” The new guidance requires the presentation of 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 adoption of this guidance, which is related to disclosure only, did not have an impact on the Company’s consolidated financial position, results of operations or cash flows.

3. Concentrations

No customer accounted for more than 10% of the revenues for the years ended December 31, 2013, 2012 and 2011. At December 31, 2013 and 2012, no customer accounted for more than 10% of net accounts receivable.

4. Inventories

Inventories consist of the following:

	December 31,	
	2013	2012
	(in thousands)	
Finished goods	$7,039	$8,023
Work in process	752	731
Raw materials	7,986	9,008
Total	$15,777	$17,762

5. Property, Plant and Equipment

Property, plant and equipment consist of the following:

	December 31,	
	2013	2012
	(in thousands)	
Land, buildings and leasehold improvements	$3,082	$2,790
Machinery and equipment	9,471	8,760
Computer equipment and software	4,927	4,917
Furniture and fixtures	1,281	1,201
Automobiles	59	194
	18,820	17,862

Less: accumulated depreciation	(14,445)	(13,311)
Property, plant and equipment, net	$4,375	$4,551

6. Acquisitions

The Company's continuing operations did not complete any acquisitions during 2013, while the Company's continuing operations completed two acquisitions during 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. AHN is a manufacturer of plastic laboratory consumables which include pipettes, pipette tips, PCR tubes and spin columns.

With the assistance of an external valuation company, the aggregate purchase price for this acquisition was allocated to tangible and intangible assets acquired 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

The results of operations for AHN have been included 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 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 value 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 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 the Company's consolidated statements of operations were $0 and $0.3 million for the years ended December 31, 2013 and 2012, respectively.

7. Discontinued Operations

Genomic Solutions

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 rate 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 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.

UBI

In September 2008, the Company completed the sale of assets of its Union Biometrica Division ("UBI") including its German subsidiary, Union Biometrica GmbH, representing 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. During 2013, UBIO Acquisition Company made payments, including interest, of $1.8 million. UBIO Acquisition Company's final payment under the earn-out obligation was received in October 2013.

HART

On November 1, 2013, the previously announced spin-off of Harvard Apparatus Regenerative Technology, Inc., or HART, from the Company was completed. Through the spin-off date the historical operations of HART were reported as continuing operations in the consolidated statements of operations. Following the spin-off, the historical operations of HART have been broken out and reported as discontinued operations for all periods presented. HART became an independent company that operates the regenerative medicine business previously owned by Harvard Bioscience. The spin-off was completed through the distribution to Harvard Bioscience's stockholders of record all of the shares of common stock of HART (the "Distribution"). In the Distribution, the Company distributed to its stockholders one share of HART common stock for every four shares of Harvard Bioscience common stock outstanding as of the close of business on October 21, 2013, the record date for the Distribution. Fractional shares of HART common stock were not included in the distribution. Instead, Registrar & Transfer Company aggregated fractional shares into whole shares,

sold the whole shares in the open market and distributed the aggregate net cash proceeds of the sales pro rata to each holder who otherwise would have been entitled to receive a fractional share in the Distribution.

Effective with the spin-off, the Company contributed $15.0 million in cash to HART to fund its operations. In addition, the Company transferred approximately $0.9 million in assets, made up primarily of property, plant and equipment, to HART as part of the spin-off.

In connection with the spin-off of HART, certain required adjustments were made to the Company's outstanding equity compensation awards under its employee benefit plans. Each outstanding option to purchase Harvard Bioscience common stock was converted on the date of the Distribution into both an adjusted Harvard Bioscience option to purchase Harvard Bioscience common stock and an option to purchase HART common stock. Black-Scholes valuation modeling was used to determine the value that each Harvard Bioscience option had lost at the time of the Distribution and to ensure the holder maintained such lost value, 80% of such lost value was provided back to the holder by making appropriate adjustments to the share amount and exercise price of the existing Harvard Bioscience option and 20% of such lost value was provided back to the holder through the issuance of an option to purchase HART common stock. Similar to the adjustment of the existing Harvard Bioscience options, with respect to each unvested Harvard Bioscience restricted stock unit outstanding at the time of the Distribution, such Harvard Bioscience restricted stock unit was converted on the date of the Distribution into both an adjusted Harvard Bioscience restricted stock unit and a HART restricted stock unit. The market prices of Harvard Bioscience and HART common stock were used to determine the value that each Harvard Bioscience restricted stock unit lost at the time of the Distribution and then to ensure the holder maintained such lost value, 80% of such lost value was provided back to the holder by making the appropriate increases of the share amount of the existing Harvard Bioscience restricted stock unit and 20% of such lost value was provided back to the holder through the issuance of a HART restricted stock unit. The share amounts and exercise prices of the adjusted Harvard Bioscience options and HART options, as well as the share amounts of the adjusted Harvard Bioscience restricted stock units and HART restricted stock units, were each adjusted and set in a manner to ensure the intrinsic value held by the holder pertaining to the existing Harvard Bioscience award was maintained immediately following the Distribution and was determined such that tax was not triggered under Section 409A of the Internal Revenue Code. As part of these required adjustments, the Company issued approximately 1.7 million options and approximately 0.1 million restricted stock units to holders of its outstanding equity compensation awards.

In connection with the spin-off, on October 31, 2013, the Company entered into various commercial agreements with HART which contain many of the key provisions related to the Distribution. These agreements include: (i) a Separation and Distribution Agreement; (ii) an Intellectual Property Matters Agreement; (iii) a Product Distribution Agreement; (iv) a Tax Sharing Agreement; (v) a Transition Services Agreement; and (vi) a Sublease.

Harvard Bioscience intends for the HART Distribution, taken together, to qualify as a reorganization pursuant to which no gain or loss is recognized by Harvard Bioscience or its stockholders for federal income tax purposes under Sections 355, 368(a)(1)(D) and related provisions of the Internal Revenue Code. On June 28, 2013, Harvard Bioscience received a Supplemental Ruling to the Private Letter Ruling dated March 22, 2013 from the IRS to the effect that, among other things, the spin-off will qualify as a transaction that is tax-free for U.S. federal income tax purposes under Section 355 and 368(a)(1)(D) of the Internal Revenue Code continuing in effect. Harvard Bioscience has also received an opinion from its outside tax advisor to such effect. In connection with the ruling and the opinion, Harvard Bioscience made certain representations regarding it and its business. The Company has agreed that it will not take or fail to take any action which prevents or could reasonably be expected to prevent the tax-free status of the spin-off. HART has agreed to certain restrictions that are intended to preserve the tax-free status of the contribution and the Distribution. HART may take certain actions otherwise prohibited by these covenants if Harvard Bioscience receives a private letter ruling from the IRS or if HART obtains, and provides to Harvard Bioscience, an opinion from a U.S. tax counsel or accountant of recognized national standing, in either case, acceptable to Harvard Bioscience in its sole and absolute discretion to the effect that such action would not jeopardize the tax-free status of the contribution and the Distribution. These covenants include restrictions on HART's:

• issuance or sale of stock or other securities (including securities convertible into HART's stock but excluding certain compensatory arrangements);

• sales of assets outside the ordinary course of business; and

• entering into any other corporate transaction which would cause HART to undergo a 50 percent or greater change in HART's stock ownership.

In addition, current U.S. federal income tax law creates a presumption that the spin-off of HART would be taxable to the Company, but not its stockholders, if such spin-off is part of a "plan or series of related transactions" pursuant to which one or more persons acquire directly or indirectly stock representing a 50% or greater interest (by vote or value) in the Company or HART. Acquisitions that occur during the four-year period that begins two years before the date of the spin-off are presumed to occur pursuant to a plan or series of related transactions, unless it is established that the acquisition is not pursuant to a plan or series of transactions that includes the spin-off. U.S. Treasury regulations currently in effect generally provide that whether an acquisition and a spin-off are part of a plan is determined based on all of the facts and circumstances, including, but not limited to, specific factors described in the U.S. Treasury regulations. In addition, the U.S. Treasury regulations provide several "safe harbors" for acquisitions that are not considered to be part of a plan. These rules will limit the Company's ability during the two-year period following the spin-off to enter into certain transactions that may be advantageous to the Company and its stockholders, particularly issuing equity securities to satisfy financing needs, repurchasing equity securities, disposing of certain assets, engaging in mergers and acquisitions, and, under certain circumstances, acquiring businesses or assets with equity securities or agreeing to be acquired.

The following table sets forth the impact discontinued operations had on the Company's consolidated statements of operations.

	Year ended December 31,		
	2013	2012	2011
	(in thousands)		
Gain on disposal of discontinued operations, UBI	$440	$1,344	$-
(Loss) from discontinued operations, HART	(4,861)	(4,664)	(2,326)
Income tax (benefit)	(1,868)	(1,196)	(849)
(Loss) from discontinued operations, net of tax	$(2,553)	$(2,124)	$(1,477)

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.

For purposes of the Company's annual goodwill impairment analysis, and following the spin-off of HART, the Company has one reporting unit. As of December 31, 2013, the Company completed its annual goodwill impairment test and concluded there was no impairment to goodwill. Intangible assets consist of the following:

	December 31,				Weighted Average Life (a)
	2013		2012		
	(in thousands)				
Amortizable intangible assets:	Gross	Accumulated Amortization	Gross	Accumulated Amortization	
Existing technology	$ 13,464	$ (11,091)	$ 13,258	$ (10,207)	4.3 Years
Tradename	6,178	(2,185)	6,167	(1,756)	11.0 Years
Distribution agreement/customer relationships	21,827	(9,447)	21,699	(7,938)	10.6 Years
Patents	271	(8)	9	(7)	5.0 Years
Total amortizable intangible assets	41,740	$ (22,731)	41,133	$ (19,908)	
Indefinite-lived intangible assets:					
Goodwill	36,605		36,200		
Other indefinite-lived intangible assets	1,289		1,276		
Total goodwill and other indefinite-lived intangible assets	37,894		37,476		
Total intangible assets	$ 79,634		$ 78,609		

(a) Weighted average life is as of December 31, 2013.

The changes in the carrying amount of goodwill for the years ended December 31, 2013 and 2012 is as follows:

	(in thousands)
Balance at December 31, 2011	$ 34,209
Goodwill arising from business combination	1,453
Effect of change in foreign currencies	538
Balance at December 31, 2012	$ 36,200

Effect of change in foreign currencies		405
Balance at December 31, 2013	$	36,605

Intangible asset amortization expense was $2.6 million, $2.8 million and $2.7 million for the years ended December 31, 2013, 2012 and 2011, respectively. Amortization expense of existing amortizable intangible assets is currently estimated to be $2.5 million for the year ending December 31, 2014, $2.2 million for the year ending December 31, 2015, $2.1 million for the year ending December 31, 2016, $1.8 million for the year ending December 31, 2017 and $1.7 million for the year ending December 31, 2018.

9. Restructuring and Other Exit Costs

2013 Restructuring Plans

During the fourth quarter of 2013, the management of Harvard Bioscience initiated a plan to realign global operations to create organizational efficiencies and reduce operating expenses throughout the Company. The plan included an approximately 13% reduction in the workforce, as well as the elimination of the position of Chief Operating Officer. The Company recorded restructuring charges of approximately $2.1 million representing severance payments. Additional charges related to this plan are expected to be incurred through the second quarter of 2014, and include, but are not limited to, contract termination costs, as well as moving and employee relocation costs. Payments related to this plan are expected to be made through the end of 2014. Activity and liability balances related to these charges were as follows:

	Severance and Related Costs (in thousands)
Restructuring charges	$ 2,100
Cash payments	(666)
Restructuring balance at December 31, 2013	$ 1,434

During the third quarter of 2013, the management of Harvard Bioscience initiated a plan to reduce operating expenses at one of its foreign subsidiaries. Activity and liability balances related to these charges were as follows:

	Severance and Related Costs (in thousands)
Restructuring charges	$ 96
Cash payments	(96)
Restructuring balance at December 31, 2013	$ -

2012 Restructuring Plan

During 2012, the management of Harvard Bioscience initiated a plan to reduce operating expenses at one of its foreign subsidiaries. The Company recorded restructuring charges of approximately $0.3 million representing severance payments. No further charges are expected to be incurred 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
Cash payments	$(84)	$(11)	$(95)
Non-cash reversal of restructuring charges	(46)	-	(46)
Restructuring balance at December 31, 2013	$3	$-	$3

2011 Restructuring Plan

During 2011, the management of Harvard Bioscience initiated a plan to relocate one if its U.S. facilities as part of a business improvement initiative. The Company also developed a plan to improve operating margins at another U.S. 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. 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	$-	$ -	$-	$-

Aggregate restructuring charges relating to the 2013 Restructuring Plans, 2012 Restructuring Plan and the 2011 Restructuring Plan were as follows:

	Years ended December 31,		
	2013	2012	2011
	(in thousands)		
Restructuring charges	$2,150	$310	$467

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.

On March 29, 2013, the Company entered into a Second Amended and Restated Revolving Credit Agreement (the “Credit Agreement”) with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The Credit Agreement converted the Company’s existing outstanding revolving advances into a term loan in the principal amount of $15.0 million (the “Term Loan”), provides a revolving credit facility in the maximum principal amount of $25.0 million (“Revolving Line”) and provides a delayed draw term loan of up to $15.0 million (the “DDTL”) to fund capital contributions to the Company’s former subsidiary, HART. The maximum amount available under the Credit Agreement is $50.0 million as borrowings against the DDTL in excess of $10.0 million results in a dollar for dollar reduction in the Revolving Line capacity. The Revolving Line has a maturity date of March 29, 2016, while the Term Loan and DDTL have a maturity date of March 29, 2018.

On October 31, 2013, the Company amended the Credit Agreement to reduce the DDTL from up to $15.0 million to up to $10.0 million and allow for up to $5.0 million to instead be available for drawing as advances under the Revolving Line.

Borrowings under the Term Loan and the DDTL shall bear interest at a rate based on either the effective London Interbank Offered Rate (LIBOR) for certain interest periods selected by the Company, or a daily floating rate based on the British Bankers' Association (BBA) LIBOR as published by Reuters (or other commercially available source providing quotations of BBA LIBOR), plus in either case, a margin of 3.0%. The Revolving Line shall bear interest at a rate based on either the effective LIBOR for certain interest periods selected by the Company, or a daily floating rate based on the BBA LIBOR, plus in either case, a margin of 2.5%. The Company was required to fix the rate of interest on at least 50% of the Term Loan and the DDTL through the purchase of interest rate swaps. The Term Loan and DDTL each have interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings, and principal payments due quarterly. The Revolving Line has interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings.

The Loans are guaranteed by all of the Company's direct and indirect domestic subsidiaries, and secured by substantially all of the assets of the Company and the guarantors. The Loans are subject to restrictive covenants under the Credit Agreement, and financial covenants that require the Company and its subsidiaries to maintain certain financial ratios on a consolidated basis, including a maximum leverage, minimum fixed charge coverage and minimum working capital. Prepayment of the Loans is allowed by the Credit Agreement at any time during the terms of the Loans. The Loans also contain 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, 2013 and 2012, the Company had borrowings of $24.8 million and $13.0 million, respectively, outstanding under its Credit Agreement. As of December 31, 2013, the Company was in compliance with all financial covenants contained in the Credit Agreement; the Company was subject to a working capital borrowing restriction and had available borrowing capacity under its Credit Agreement of $17.4 million. During the year ended December 31, 2013, the Company incurred $0.3 million of debt issuance costs associated with the Credit Agreement. The costs were capitalized, reflected in the balance sheet as an asset, and will be amortized over the finite life of the underlying Credit Agreement.

As of December 31, 2013, the weighted effective interest rates on the Company's Term Loan, DDTL and Revolving Line borrowings were 3.96%, 3.55% and 3.16%, respectively.

As of December 31, 2013 and 2012, the Company's borrowings were comprised of:

	December 31,	
	2013	2012
	(in thousands)	
Long-term debt:		
Term loan	$12,750	$-
DDTL	9,500	-
Revolving line	2,500	12,950
Total debt	24,750	12,950
Less: current installments	(5,000)	-
Long-term debt	$19,750	$12,950

The aggregate amounts of debt maturing during the next five years are as follows:

	(in thousands)
2014	$ 5,000
2015	5,000
2016	7,500
2017	5,000
2018	2,250
Total	$ 24,750

11. Derivatives

The Company uses interest-rate-related derivative instruments to manage its exposure related to changes in interest rates on its variable-rate debt instruments. The Company does not enter into derivative instruments for any purpose other than cash flow hedging. The Company does not speculate using derivative instruments.

By using derivative financial instruments to hedge exposures to changes in interest rates, the Company exposes itself to credit risk and market risk. Credit risk is the failure of the counterparty to perform under the terms of the derivative contract. When the fair value of a derivative contract is positive, the counterparty owes the Company, which creates credit risk for the Company. When the fair value of a derivative contract is negative, the Company owes the counterparty and, therefore, the Company is not exposed to the counterparty's credit risk in those circumstances. The Company minimizes counterparty credit risk in derivative instruments by entering into transactions with carefully selected major financial institutions based upon their credit profile.

Market risk is the adverse effect on the value of a derivative instrument that results from a change in interest rates. The market risk associated with interest-rate contracts is managed by establishing and monitoring parameters that limit the types and degree of market risk that may be undertaken.

The Company assesses interest rate risk by continually identifying and monitoring changes in interest rate exposures that may adversely impact expected future cash flows and by evaluating hedging opportunities. The Company maintains risk management control systems to monitor interest rate risk attributable to both the Company's outstanding or forecasted debt obligations as well as the Company's offsetting hedge positions. The risk management control systems involve the use of analytical techniques, including cash flow sensitivity analysis, to estimate the expected impact of changes in interest rates on the Company's future cash flows.

The Company uses variable-rate London Interbank Offered Rate (LIBOR) debt to finance its operations. The debt obligations expose the Company to variability in interest payments due to changes in interest rates. Management believes that it is prudent to limit the variability of a portion of its interest payments. To meet this objective, management enters into LIBOR based interest rate swap agreements to manage fluctuations in cash flows resulting from changes in the benchmark interest rate of LIBOR. These swaps change the variable-rate cash flow exposure on the debt obligations to fixed cash flows. Under the terms of the interest rate swaps, the Company receives LIBOR based variable interest rate payments and makes fixed interest rate payments, thereby creating the equivalent of fixed-rate debt for the notional amount of its debt hedged. In accordance with its Credit Agreement, the Company was required to fix the rate of interest on at least 50% of its Term Loan and the DDTL through the purchase of interest rate swaps. On June 5, 2013, the Company entered into an interest rate swap contract with an original notional amount of $15.0 million and a maturity date of March 29, 2018 in order to hedge the risk of changes in the effective benchmark interest rate (LIBOR) associated with the Company's Term Loan. On November 29, 2013, the Company entered into a second interest rate swap contract with an original notional amount of $5.0 million and a maturity date of March 29, 2018 in order to hedge the risk of changes in the effective benchmark interest rate (LIBOR) associated with the DDTL. The Term Loan swap contract converted specific variable-rate debt into fixed-rate debt and fixed the LIBOR rate associated with the Term Loan at 0.96% plus a bank margin of 3.0%. The DDTL swap contract converted specific variable-rate debt into fixed-rate debt and fixed the LIBOR rate associated with the Term Loan at 0.93% plus a bank margin of 3.0%.The interest rate swaps were designated as cash flow hedges in accordance with ASC 815 "Derivatives and Hedging".

The following table presents the notional amount and fair value of the Company's derivative instruments as of December 31, 2013. As of December 31, 2012 the Company did not have any derivative instruments outstanding.

		December 31, 2013 Notional Amount	December 31, 2013 Fair Value (a)
Derivatives designated as hedging instruments under ASC 815	Balance sheet classification	(in thousands)	
Interest rate swap	Other liabilities-non current	$17,500	$ (49)

(a) See note 12 for the fair value measurements related to these financial instruments.

All of the Company's derivative instruments are designated as hedging instruments.

The Company has structured its interest rate swap agreements to be 100% effective and as a result, there was no impact to earnings resulting from hedge ineffectiveness. Changes in the fair value of interest rate swaps designated as hedging instruments that effectively offset the variability of cash flows associated with variable-rate, long-term debt

obligations are reported in accumulated other comprehensive income ("AOCI"). These amounts subsequently are reclassified into interest expense as a yield adjustment of the hedged interest payments in the same period in which the related interest affects earnings. The Company's interest rate swap agreement was deemed to be fully effective in accordance with ASC 815, and, as such, unrealized gains and losses related to these derivatives were recorded as AOCI.

The following table summarizes the effect of derivatives designated as cash flow hedging instruments on the Company's consolidated statements of operations:

	For the Year ended December 31, 2013		
(In thousands)	Amount of gain or (loss) recognized in OCI on derivative (effective portion)	Location of gain or (loss) reclassified from AOCI into income (effective portion)	Amount of gain or (loss) reclassified from AOCI into income (effective portion)
Interest rate swaps	$ (49)	Interest expense	$ (67)

As of December 31, 2013, $0.1 million of deferred losses on derivative instruments accumulated in AOCI are expected to be reclassified to earnings during the next 12 months. Transactions and events expected to occur over the next twelve months that will necessitate reclassifying these derivatives' losses to earnings include the repricing of variable-rate debt. There were no cash flow hedges discontinued during 2013 or 2012.

12. Fair Value Measurements

Fair value measurement is defined as the price that would be received to sell an asset or paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. A fair value hierarchy is established, which prioritizes the inputs used in measuring fair value into three broad levels as follows:

Level 1—Quoted prices in active markets for identical assets or liabilities.
Level 2—Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly.
Level 3—Unobservable inputs based on the Company's own assumptions.

The following table presents the fair value hierarchy for those liabilities measured at fair value on a recurring basis:

	Fair Value as of December 31, 2013			
(In thousands)	Level 1	Level 2	Level 3	Total
Liabilities:				
Interest rate swap agreements	$-	$49	$-	$49

The Company uses the market approach technique to value its financial liabilities. The Company's financial liabilities carried at fair value include derivative instruments used to hedge the Company's interest rate risks. The fair value of the Company's interest rate swap agreements was based on LIBOR yield curves at the reporting date.

13. Leases

As part of the spin-off of HART, the Company entered into a Sublease with HART for approximately 17,000 square feet of space for the next 18 months, with extended terms through May 31, 2017. The Company charges HART for sublease rent, applicable taxes and utilities. For the year ended December 31, 2013, the Company charged HART $26,000, which was recorded as a reduction to rent expense.

The Company has noncancelable operating leases for office and warehouse space expiring at various dates through 2018 and thereafter. Rent expense, which is recorded on a straight-line basis, was approximately $1.3 million, $1.3 million and $1.5 million for the years ended December 31, 2013, 2012 and 2011, respectively.

Future minimum lease payments for operating leases, with initial or remaining terms in excess of one year at December 31, 2013, for its continuing operations are as follows:

	Operating Leases (in thousands)
2014	$ 1,228
2015	1,073
2016	763
2017	422
2018	160
Thereafter	70
Net minimum lease payments	$ 3,716

14. Accrued Expenses

Accrued expenses consist of:

	December 31,	
	2013	2012
	(in thousands)	
Accrued compensation and payroll	$1,349	$1,389
Accrued legal and professional fees	927	869
Accrued severance	1,434	133
Warranty costs	305	222
Other	1,063	892
Total	$5,078	$3,505

15. Income Tax

Income tax (benefit) expense attributable to income from continuing operations for the years ended December 31, 2013, 2012 and 2011 consisted of:

	Year ended December 31,		
	2013	2012	2011
	(in thousands)		
Current income tax expense:			
Federal and state	$47	$70	$111
Foreign	413	1,705	1,156
	460	1,775	1,267
Deferred income tax (benefit) expense:			
Federal and state	(594)	931	478
Foreign	(154)	(308)	(166)
	(748)	623	312
Total income tax (benefit) expense	$(288)	$2,398	$1,579

Income tax (benefit) expense for the periods ended December 31, 2013, 2012 and 2011 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,		
	2013	2012	2011
	(in thousands)		
Computed "expected" income tax expense	$147	$2,343	$2,335
Increase (decrease) in income taxes resulting from:			
Permanent differences, net	482	(25)	109
Foreign tax rate differential	(64)	(435)	(333)
State income taxes, net of federal income tax benefit	31	135	113
Non-deductible stock compensation expense	1	254	345
Impact of prior year pension deductions	(294)	-	-
Tax credits	(615)	(127)	(558)
Release of uncertain tax position liability due to expiration of statute of limitations	-	-	(528)
Change in valuation allowance allocated to income			

tax expense (benefit)	31	281	63
Other	(7)	(28)	33
Total income tax (benefit) expense	$(288)	$2,398	$1,579

Income tax (benefit) expense is based on the following pre-tax continuing operations (loss) income for the years ended December 31, 2013, 2012 and 2011:

	Years ended December 31,		
	2013	2012	2011
	(in thousands)		
Domestic	$(2,549)	$681	$339
Foreign	2,984	6,211	6,529
Total	$435	$6,892	$6,868

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, 2013 and 2012 are as follows:

	2013	2012
	(in thousands)	
Deferred tax assets:		
Accounts receivable	$65	$62
Inventory	1,405	1,251
Operating loss and credit carryforwards	12,978	8,829
Accrued expenses	409	107
Pension liabilities	985	1,366
Contingent consideration	2,593	2,413
Other accrued liabilities	1,867	3,761
Total gross deferred assets	20,302	17,789
Less: valuation allowance	(1,249)	(1,307)
Deferred tax assets	$19,053	$16,482
Deferred tax liabilities:		
Intangible assets	$4,242	$4,057
Property, plant and equipment	70	115
Other accrued liabilities	238	264
Total deferred tax liabilities	4,550	4,436
Net deferred tax assets	$14,503	$12,046

The amounts recorded as deferred tax assets as of December 31, 2013 and 2012 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. The Company provides valuation allowances for net deferred tax assets in several foreign jurisdictions.

At December 31, 2013, the Company had federal and state net operating loss carryforwards available to offset future taxable income of approximately $26.6 million. The operating loss carryforwards will begin to expire in 2014. Furthermore, the Company had foreign operating loss carryforwards to offset future taxable income of approximately $3.9 million, which can be carried forward indefinitely. 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 $5.1 million, which begin to expire in 2020. 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.

F-23

Undistributed earnings of the Company's foreign subsidiaries amounted to approximately $49.2 million, $46.0 million and $40.9 million at December 31, 2013, 2012 and 2011, respectively. 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.

At December 31, 2013 and 2012, cash and cash equivalents held by the Company's foreign subsidiaries was $23.6 million and $19.2 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. The Company currently has no plans and does not intend to repatriate any of its undistributed foreign earnings. The foreign earnings are considered permanently reinvested and will be used for foreign acquisitions, capital investments and operations. In July 2011, the Company acquired the assets of CMA, a Swedish manufacturer, and utilized approximately $4.4 million of 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 foreign cash on hand. In 2013, the Company also used $0.9 million of foreign cash on hand for capital improvements at AHN.

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 the Company determines 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, 2011	$ 191
Additions based on tax positions of prior years	-
Balance at December 31, 2012	191
Additions based on tax positions of prior years	-
Balance at December 31, 2013	$ 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 2009. During 2013, The Company closed its IRS audit for the 2009 and 2010 tax years. There were no material adjustments. 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.

During 2013, the Company spun off its HART subsidiary. All related carryforward tax attributes remained with Harvard Bioscience.

16. 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) Plans"). 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 years ended December 31, 2013, 2012 and 2011, the Company contributed approximately $0.6 million, $0.5 million and $0.6 million, respectively, to the 401(k) Plans.

Certain of the Company's 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 the Company's pension plans be recognized in its balance sheet. FASB ASC 715-20 does not change the measurement or income statement recognition of these plans, although it does require that plan assets and benefit obligations be measured as of the balance sheet date. The Company has historically measured the plan assets and benefit obligations as of the balance sheet date.

The components of pension expense follows:

	Year ended December 31,		
	2013	2012	2011
	(in thousands)		
Components of net periodic benefit cost:			
Service cost	$288	$314	$298
Interest cost	797	819	836
Expected return on plan assets	(524)	(570)	(608)
Net amortization loss	305	248	159
Curtailment gain	(197)	-	-
Net periodic benefit cost	$669	$811	$685

The measurement date is December 31 for these plans. The funded status of the Company’s defined benefit pension plans and the amount recognized in the consolidated balance sheets at December 31, 2013 and 2012 is as follows:

	December 31,	
	2013	2012
	(in thousands)	
Change in benefit obligation:		
Balance at beginning of year	$19,643	$16,866
Service cost	272	303
Interest cost	797	819
Participants' contributions	56	60
Actuarial (gain) loss	(329)	1,547
Benefits paid	(431)	(663)
Currency translation adjustment	395	711
Balance at end of year	$20,403	$19,643

	December 31,	
	2013	2012
	(in thousands)	
Change in fair value of plan assets:		
Balance at beginning of year	$13,704	$12,006
Actual return on plan assets	1,125	944
Participants' contributions	56	60
Employer contributions	801	873
Benefits paid	(431)	(663)
Currency translation adjustment	285	484
Balance at end of year	$15,540	$13,704

	December 31,	
	2013	2012
	(in thousands)	
Change in benefit obligation:		
Funded status	$(4,863)	$(5,939)
Unrecognized net loss	N/A	N/A
Net amount recognized	$(4,863)	$(5,939)

The accumulated benefit obligation for all defined benefit pension plans was $19.5 million and $18.1 million at December 31, 2013 and 2012, respectively.

The amounts recognized in the consolidated balance sheets consist of:

	December 31,	
	2013	2012
	(in thousands)	
Deferred income tax assets	$985	$1,366
Other long term liabilities	(4,863)	(5,939)
Net amount recognized	$(3,878)	$(4,573)

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

	December 31,	
	2013	2012
	(in thousands)	
Underfunded status of pension plans	$(3,878)	$(4,573)
Net amount recognized	$(3,878)	$(4,573)

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

	Year ended December 31,		
	2013	2012	2011
Discount rate	4.43 %	4.09 %	4.70 %
Expected return on assets	3.79 %	4.02 %	4.40 %
Rate of compensation increase	2.99 %	3.51 %	3.50 %

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 the Company's defined benefit pension plan obligations. The Company uses the iBoxx AA 15yr+ index, which matches the average duration of its pension plan liability of approximately 15 years. With the current base of assets in the pension plans, a 0.1% increase/decrease in the discount rate assumption would decrease/increase annual pension expense by approximately $157,000.

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, 2013, 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 15 years, of active plan participants. With the current base of assets, a 0.1% increase/decrease in the asset return assumption would decrease/increase annual pension expense by approximately $94,000.

The fair value and asset allocations of the Company's pension benefits as of December 31, 2013 and 2012 measurement dates were as follows:

	December 31,	
	2013	2012
	(in thousands)	
Asset category:		

Equity securities	$7,404	48	%	$6,918	50	%
Debt securities	6,061	39	%	5,049	37	%
Cash and cash equivalents	1,488	9	%	969	7	%
Other	587	4	%	768	6	%
Total	$15,540	100	%	$13,704	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, 2013 and 2012 is as follows:

	December 31,	
	2013	2012
	(in thousands)	
Quoted Prices in Active Markets for Identical Assets (Level 1)	$1,488	$969
Significant Other Observable Inputs (Level 2)	13,465	11,967
Significant Other Unobservable Inputs (Level 3)	587	768
Total	$15,540	$13,704

Level 1 assets consist of cash and cash equivalents held in the pension plans at December 31, 2013. 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 an investment 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 $0.2 million. This is due, in part, to the illiquidity and inactivity of the fund, however, 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 the Company's Level 3 investments measured at fair value on a recurring basis:

	December 31,	
	2013	2012
	(in thousands)	
Balance at beginning of year	$768	$1,042
Purchases during the year	-	-
Unrealized loss	(181)	(274)
Balance at end of year	$587	$768

The Company expects to contribute approximately $0.8 million to its pension plans during 2014.

The benefits expected to be paid from the pension plans are $0.5 million in 2014, $0.6 million in 2015, $0.9 million in 2016, $0.7 million in 2017 and $0.9 million in 2018. The expected benefits to be paid in the five years from 2019—2023 are $4.6 million. The expected benefits are based on the same assumptions used to measure the Company's benefit obligation at December 31, 2013 and include estimated future employee service.

17. 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 material claims or proceedings.

18. Accumulated Other Comprehensive (Loss) Income

Changes in each component of accumulated other comprehensive (loss) income, net of tax are as follows:

	Derivatives

(in thousands)	Foreign currency translation adjustments	qualifying as hedges	Defined benefit pension plans	Total
Balance at December 31, 2012	$ (290)	$ -	$ (4,573)	$(4,863)
Other comprehensive income (loss) before reclassifications	1,573	(116)	452	1,909
Amounts reclassified from AOCI	-	67	243	310
Net other comprehensive income (loss)	1,573	(49)	695	2,219
Balance at December 31, 2013	$ 1,283	$ (49)	$ (3,878)	$(2,644)

The amounts reclassified out of accumulated other comprehensive (loss) income are as follows:

(in thousands)	Affected line item in the Statements of Operations	Year Ended December 31, 2013	2012	2011
Amounts Reclassified From AOCI				
Derivatives qualifying as hedges				
Realized loss on derivatives qualifying as hedges	Interest expense	$ 67	$ -	$ -
Income tax	Income tax (benefit) expense	-	-	-
		67	-	-
Defined benefit pension plans				
Amortization of net losses included in net periodic pension costs	General and administrative expenses	305	248	159
Income tax	Income tax (benefit) expense	(62)	(57)	(40)
		243	191	119
Total reclassifications		$ 310	$ 191	$ 119

19. 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.

Preferred Stock

The Company's Board of Directors has the authority to issue up to 5.0 million shares of preferred stock and to determine the price privileges and other terms of the shares. The Board of Directors may exercise this authority without any further approval of stockholders. As of December 31, 2013, the Company had no preferred stock issued or outstanding.

Employee Stock Purchase Plan

In 2000, the Company approved the ESPP. Under this ESPP, 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 ESPP for the six-month periods ending June 30 and

December 31. Under this plan, 750,000 shares of common stock are authorized for issuance of which 527,340 shares were issued as of December 31, 2013. During the years ended December 31, 2013 and 2012, the Company issued 56,938 shares and 60,028 shares, respectively, under the ESPP.

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 stock options, restricted stock units, and employee stock purchases related to the ESPP ("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 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.

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, 2013, 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 (as amended, 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 the Company's 2000 Plan for deferred stock awards of restricted stock units, restricted stock awards, unrestricted stock awards, performance share awards or other awards under the Company's 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, 2013, there were options to purchase 6,690,845 shares, and 463,973 restricted stock

units outstanding.

Through December 31, 2013 and 2012, incentive stock options to purchase 10,218,057 and 8,990,395 shares and non-qualified stock options to purchase 11,028,074 and 8,906,684 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 a range of one to four-year periods.

During the years ended December 31, 2013, 2012 and 2011, 3,349,052, 1,220,934 and 1,030,500 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 2013, 2012 and 2011, 259,931, 349,295 and 188,750 restricted stock units, respectively, were granted to certain employees and directors 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:

	Year ended December 31,		
	2013	2012	2011
Basic	30,384,010	28,799,377	28,451,386
Effect of assumed conversion of employee and director stock options and restricted stock units	1,529,789	992,730	1,367,348
Diluted	31,913,799	29,792,107	29,818,734

Excluded from the shares used in calculating the diluted earnings per common share in the above table are options to purchase approximately 2,547,580 shares, 4,700,033 shares and 3,653,317 shares of common stock for the years ended December 31, 2013, 2012 and 2011, 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	
	Stock Options Outstanding	Weighted Average Exercise Price	Restricted Stock Units Outstanding	Grant Date Fair Value
Balance at December 31, 2010	7,826,200	$4.38	467,600	$ 3.61
Granted	1,030,500	5.64	188,750	5.64
Exercised	(105,625)	3.79	-	-
Vested (RSU's)	-	-	(116,900)	-
Cancelled / forfeited	(231,500)	5.27	-	-
Balance at December 31, 2011	8,519,575	4.52	539,450	4.32
Granted	1,220,934	3.60	349,295	3.57
Exercised	(648,000)	3.94	-	-
Vested (RSU's)	-	-	(164,090)	-
Cancelled / forfeited	(1,014,000)	6.36	(47,462)	4.21
Balance at December 31, 2012	8,078,509	4.25	677,193	3.97
Granted	3,349,052	4.44	259,931	4.62
Exercised	(3,410,483)	3.20	-	-
Vested (RSU's)	-	-	(281,650)	-
Cancelled / forfeited	(1,326,233)	5.26	(191,501)	4.07
Balance at December 31, 2013	6,690,845	$3.42	463,973	$ 4.32

For 2013 and included in the table above are grants of 1,715,164 options and 135,650 restricted stock units related to the spin-off of HART. Pursuant to the spin-off, share amounts and exercise prices of Harvard Bioscience options, as well as share amounts of Harvard Bioscience restricted stock units were adjusted so that the intrinsic value held by the holder pertaining to the existing option or award was maintained immediately following the spin-off.

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.

The following table summarizes information concerning currently outstanding and exercisable options as of December 31, 2013 (Aggregate Intrinsic Value, in thousands):

	Options Outstanding				Options Exercisable			
Range of Exercise Price	Shares Outstanding at Dec. 31, 2013	Weighted Average Remaining Contractual Life in Years	Weighted Average Exercise Price	Aggregate Intrinsic Value	Shares Exercisable at Dec. 31, 2013	Weighted Average Remaining Contractual Life in Years	Weighted Average Exercise Price	Aggregate Intrinsic Value
$1.43-2.15	306,358	4.03	$ 1.86	$ 870	306,358	4.03	$ 1.86	$ 870
2.28-2.28	981,082	5.37	2.28	2,372	981,082	5.37	2.28	2,372
2.45-2.45	13,172	1.43	2.45	30	13,172	1.43	2.45	30
2.56-2.56	994,618	7.82	2.56	2,128	198,402	7.82	2.56	425
2.59-3.54	836,338	4.66	3.03	1,397	723,635	4.66	3.10	1,158
3.64-3.64	935,371	8.89	3.64	991	-	-	-	-
3.68-3.99	486,706	3.30	3.87	404	486,706	3.30	3.87	404
4.04-4.04	865,617	7.20	4.04	571	444,865	7.20	4.04	294
4.21-4.31	807,500	9.88	4.31	315	-	-	-	-
5.73-6.57	464,083	0.22	5.75	-	464,083	0.22	5.75	-
$1.43-6.57	6,690,845	6.34	$ 3.42	$ 9,078	3,618,303	4.56	$ 3.30	$ 5,553

The aggregate intrinsic value in the preceding table represents the total pre-tax intrinsic value, based on the Company's closing stock price of $4.70 as of December 31, 2013, which would have been received by the option holders had all option holders exercised their options as of that date. The weighted average exercise prices above were adjusted to reflect the effect of the spin-off of HART on the Company's outstanding options. Pursuant to the spin-off, share amounts and exercise prices of Harvard Bioscience options were adjusted so that the intrinsic value held by the holder pertaining to the existing option was maintained immediately following the spin-off. The aggregate intrinsic value of options exercised for the years ended December 31, 2013, 2012 and 2011 was approximately $5.1 million, $0.3 million and $8,450, respectively. The total number of in-the-money options that were exercisable as of December 31, 2013 was 3,154,220.

For the year ended December 31, 2013, the total compensation costs related to unvested awards not yet recognized is $3.4 million and the weighted average period over which it is expected to be recognized is 2.31 years.

Valuation and Expense Information under Stock-Based-Payment Accounting

Stock-based compensation expense related to stock options, restricted stock units and the employee stock purchase plan for the years ended December 31, 2013, 2012 and 2011 was allocated as follows:

	Year Ended December 31,		
	2013	2012	2011
	(in thousands)		
Cost of product revenues	$131	$87	$76

Sales and marketing	223	154	152
General and administrative	2,200	2,990	2,570
Research and development	45	25	21
Discontinued operations	71	65	44
Total stock-based compensation	$2,670	$3,321	$2,863

The Company did not capitalize any stock-based compensation.

The weighted-average estimated fair value per share of stock options granted during 2013, 2012 and 2011 was $2.41, $1.84 and $2.94, respectively, using the Black Scholes option-pricing model with the following weighted-average assumptions:

	Years Ended December 31,					
	2013		2012		2011	
Volatility	57.18	%	55.09	%	54.24	%
Risk-free interest rate	1.42	%	0.80	%	2.01	%
Expected holding period	5.67	years	5.98	years	5.94	years
Dividend Yield	0.00	%	0.00	%	0.00	%

The Company used historical volatility to calculate the expected volatility as of December 31, 2013. 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 stock options. The expected life of stock options represents the period of time options are expected to be outstanding and were based on historical experience. The vesting period ranges from one to 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, 2013, 2012 and 2011 is based on awards ultimately expected to vest and has been reduced for annualized estimated forfeitures of 6.54%, 5.38% and 5.04%, 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.

20. Related Party Transactions

In connection with the HART spin-off, the Company entered into various commercial agreements with HART. These agreements include: (i) a Separation and Distribution Agreement to effect the separation and spin-off distribution and provide other agreements to govern the Company's relationship with HART after the spin-off; (ii) an Intellectual Property Matters Agreement, which governs various intellectual property related arrangements between the Company and HART, including the separation of intellectual property rights between the Company and HART, as well as certain related cross-licenses between the two companies; (iii) a Product Distribution Agreement, which provides that each company will become the exclusive distributor for the other party for products such other party develops for sale in the markets served by the other; (iv) a Tax Sharing Agreement, which governs the Company's and HART's respective rights, responsibilities and obligations with respect to tax liabilities and benefits, tax attributes, the preparation and filing of tax returns, the control of audits and other tax proceedings and other matters regarding taxes for periods before, during and after the spin-off; and (v) a Transition Services Agreement, which provides for certain services to be performed on a transitional basis by the Company to facilitate HART's transition into a separate public reporting company. As part of the Transition Services Agreement, and for one year following the spin-off date, the Company will provide certain support services to HART, including, among others, accounting, payroll, human resources and information technology services, with the charges for the transition services generally intended to allow the Company to fully recover the costs directly associated with providing the services, plus all out-of-pocket costs and expenses.

The Company's operating expenses were reduced by $0.1 million for the year ended December 31, 2013, as a result of the fees the Company charged to HART for services provided pursuant to the Transition Services Agreement. In addition, the Company's rent expense was reduced by $26,000 for the year ended December 31, 2013, as a result of sublease rent charged to HART pursuant to a sublease between the two companies. Refer to Note 13 for further details on the sublease.

David Green, who is currently a Director of the Company and was also formerly the Company's President and interim CEO, is currently the Chairman and CEO of HART.

21. Segment and Related Information

Operating segments are determined by products and services provided by each segment, internal organization structure, the manner in which operations are managed, criteria used by the Chief Operating Decision Maker ("CODM") to assess the segment performance, as well as resource allocation and the availability of discrete financial information. Following the spin-off of HART, the Company's former Regenerative Medicine Device ("RMD") segment, the Company has one operating segment. As such, segment results and consolidated results are the same.

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

Revenues originating from the following geographic areas consist of:

	Year ended December 31,		
	2013	2012	2011
	(in thousands)		
United States	$63,810	$65,190	$64,185
United Kingdom	23,123	27,137	26,160
Rest of the world	18,238	18,844	18,519
Total revenues	$105,171	$111,171	$108,864

Long-lived assets by geographic area consist of the following:

	December 31,	
	2013	2012
	(in thousands)	
United States	$14,128	$16,744
United Kingdom	2,343	2,441
Rest of the world	6,913	6,591
Total long-lived assets (1)	$23,384	$25,776

(1) Total long-lived assets includes property, plant and equipment, net and amortizable intangible assets, net.

Net assets by geographic area consist of the following:

	December 31,	
	2013	2012
	(in thousands)	
United States	$37,497	$51,218
United Kingdom	32,214	29,741
Rest of the world	24,774	23,254
Total net assets	$94,485	$104,213

22. Allowance for Doubtful Accounts

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

	Beginning Balance	Charged (credited) to Bad Debt Expense	Charged to Allowance (1)	Ending Balance
		(in thousands)		
Year ended December 31, 2011	$273	67	(38)	$302
Year ended December 31, 2012	302	(31)	(77)	194
Year ended December 31, 2013	$194	172	(8)	$358

(1) Consists of accounts written off, net of recoveries.

23. Warranties

A rollforward of product warranties is as follows:

	Beginning Balance	Payments	Additions	Ending Balance
		(in thousands)		
Year ended December 31, 2011	$158	(58)	44	$144
Year ended December 31, 2012	144	(136)	214	222
Year ended December 31, 2013	$222	(179)	262	$305

24. Quarterly Financial Information (unaudited)

The following quarterly 2013 and 2012 financial information has been restated to reflect HART's operations as discontinued operations for all periods presented. The operations of HART have been combined with the Company's other discontinued operations.

Statement of Operations Data:

2013	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Fiscal Year
	(in thousands, except per share data)				
Revenues	$26,086	$26,094	$25,137	$27,854	$105,171
Cost of product revenues	13,826	14,005	13,838	15,806	57,475
Gross profit	12,260	12,089	11,299	12,048	47,696
Total operating expenses	10,934	11,343	10,885	12,997	46,159
Operating income (loss)	1,326	746	414	(949)	1,537
Other (expense) income, net	(95)	(330)	(358)	(319)	(1,102)
Income (loss) from continuing operations before income taxes	1,231	416	56	(1,268)	435
Income tax expense (benefit)	299	321	105	(1,013)	(288)
Income (loss) from continuing operations	932	95	(49)	(255)	723
Loss from discontinued operations, net of tax	(836)	(281)	(935)	(501)	(2,553)
Net income (loss)	$96	$(186)	$(984)	$(756)	$(1,830)
Earnings (loss) per share:					
Basic earnings (loss) per common share from continuing operations	$0.03	$0.00	$(0.00)	$(0.01)	$0.02
Discontinued operations	(0.03)	(0.01)	(0.03)	(0.01)	(0.08)
Basic earnings (loss) per common share	$0.00	$(0.01)	$(0.03)	$(0.02)	$(0.06)
Diluted earnings (loss) per common share from continuing operations	$0.03	$0.00	$(0.00)	$(0.01)	$0.02
Discontinued operations	(0.03)	(0.01)	(0.03)	(0.01)	(0.08)
Diluted earnings (loss) per common share	$0.00	$(0.01)	$(0.03)	$(0.02)	$(0.06)

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	14,939	14,901	14,135	14,856	58,831
Gross profit	13,383	13,595	11,969	13,393	52,340
Total operating expenses	11,321	11,121	10,813	11,255	44,510
Operating income	2,062	2,474	1,156	2,138	7,830
Other (expense) income, net	(385)	(226)	(178)	(149)	(938)
Income from continuing operations before income taxes	1,677	2,248	978	1,989	6,892
Income tax expense	605	698	278	817	2,398
Income from continuing operations	1,072	1,550	700	1,172	4,494
(Loss) income from discontinued operations, net of tax	(543)	(776)	(833)	28	(2,124)
Net income (loss)	$529	$774	$(133)	$1,200	$2,370
Earnings per share:					
Basic earnings per common share from continuing operations	$0.04	$0.05	$0.02	$0.04	$0.16
Discontinued operations	(0.02)	(0.03)	(0.03)	0.00	(0.07)
Basic earnings (loss) per common share	$0.02	$0.02	$(0.01)	$0.04	$0.09
Diluted earnings per common share from continuing operations	$0.04	$0.05	$0.02	$0.04	$0.15
Discontinued operations	(0.02)	(0.03)	(0.03)	0.00	(0.07)
Diluted earnings (loss) per common share	$0.02	$0.02	$(0.01)	$0.04	$0.08

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 14, 2014 By: /s/ JEFFREY A. DUCHEMIN
Jeffrey A. Duchemin
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/ JEFFREY A. DUCHEMIN Jeffrey A. Duchemin	Chief Executive Officer and Director (Principal Executive Officer)	March 14, 2014
/s/ ROBERT E. GAGNON Robert E. Gagnon	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	March 14, 2014
/s/ ROBERT DISHMAN Robert Dishman	Director	March 14, 2014
/s/ DAVID GREEN David Green	Director	March 14, 2014
/s/ NEAL J. HARTE Neal J. Harte	Director	March 14, 2014
/s/ JOHN F. KENNEDY John F. Kennedy	Director	March 14, 2014
/s/ EARL R. LEWIS Earl R. Lewis	Director	March 14, 2014
/s/ GEORGE UVEGES George Uveges	Director	March 14, 2014

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.
(12)2.2	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.
(22)2.3	Separation and Distribution Agreement between Harvard Bioscience, Inc. and Harvard Apparatus Regenerative Technology, Inc. dated as of October 31, 2013.
(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.
(6/7)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.
(17)10.2	Harvard Bioscience, Inc. Third Amended and Restated 2000 Stock Option and Incentive Plan.
(1a)10.3	Harvard Bioscience, Inc. Employee Stock Purchase Plan.
# (14)10.4	Amended and Restated Employment Agreement between Harvard Bioscience, Inc. and Chane Graziano, dated December 18, 2008.
# (14)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.
(14)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.

#(14)10.8	Amended and Restated Employment Agreement between Harvard Bioscience, Inc. and Susan Luscinski dated December 18, 2008.
+(4)10.9	Strategic Supplier Alliance Agreement, dated April 10, 2008, by and between Biochrom Limited and GE Healthcare Biosciences, Corp.
(11)10.10	Lease, dated February 23, 2004, by and between William Cash Forman and Hoefer, Inc.
+(8)10.11	Trademark License Agreement, dated December 9, 2002, by and between Harvard Bioscience, Inc. and President and Fellows of Harvard College.
(9)10.12	Lease Agreement Between Seven October Hill, LLC and Harvard Bioscience, Inc. dated December 30, 2005.
(10)10.13	Form of Incentive Stock Option Agreement (Executive Officers).
(10)10.14	Form of Non-Qualified Stock Option Agreement (Executive Officers).
(10)10.15	Form of Non-Qualified Stock Option Agreement (Non-Employee Directors).

# (3)10.16	Employment Agreement Between Harvard Bioscience, Inc. and Thomas McNaughton, dated November 14, 2008.
(13)10.17	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.
(15) 10.18	Amendment No. 2, dated as of May 22, 2010, to Lease Agreement, as subsequently amended, between Seven October Hill LLC and Harvard Bioscience, Inc.
(16) 10.19	Form of Deferred Stock Award Agreement under the Harvard Bioscience, Inc.
10.20*	Director Compensation Arrangements.
10.21*	Amendment No. 1 to the Harvard Bioscience, Inc. Employee Stock Purchase Plan, effective as of January 1, 2012.
10.22*	First Amendment to Harvard Bioscience, Inc. Third Amended and Restated 2000 Stock Option and Incentive Plan, effective as of March 9, 2013.
(18) 10.23	Second Amended and Restated Revolving Credit Agreement, dated as of March 29, 2013, by and among Harvard Bioscience, Inc. and the Lenders from time to time party thereto, including Bank of America, N.A. and Brown Brothers Harriman & Co.
10.24*	Amendment No. 2 to the Harvard Bioscience, Inc. Employee Stock Purchase Plan, effective as of May 23, 2013.
10.25*	First Amendment to Second Amended and Restated Credit Agreement dated as of May 30, 2013, with an effective date as of April 30, 2013, by and among Harvard Bioscience, Inc. Bank of America, N.A. and Brown Brothers Harriman & Co.
(19) 10.26	Employment Agreement, dated August 26, 2013, between Harvard Bioscience, Inc. and Jeffrey A. Duchemin.
(20) 10.27	Offer letter dated September 30, 2013 between Harvard Bioscience, Inc. and Yoav Sibony.
(20) 10.28	Offer letter dated September 30, 2013 between Harvard Bioscience, Inc. and Yong Sun.
(21) 10.29	Employment Agreement, dated October 2, 2013, between Harvard Bioscience, Inc. and Robert E. Gagnon.
10.30*	Second Amendment to Second Amended and Restated Credit Agreement and Waiver dated as of October 31, 2013, by and among Harvard Bioscience, Inc. Bank of America, N.A. and Brown Brothers Harriman & Co.
(22) 10.31	Intellectual Property Matters Agreement between Harvard Bioscience, Inc. and Harvard Apparatus Regenerative Technology, Inc. dated as of October 31, 2013.

(22) 10.32	Product Distribution Agreement between Harvard Bioscience, Inc. and Harvard Apparatus Regenerative Technology, Inc. dated as of October 31, 2013.
(22) 10.33	Tax Sharing Agreement between Harvard Bioscience, Inc. and Harvard Apparatus Regenerative Technology, Inc. dated as of October 31, 2013.
(22) 10.34	Transition Services Agreement between Harvard Bioscience, Inc. and Harvard Apparatus Regenerative Technology, Inc. dated as of October 31, 2013.
(22) 10.35	Waiver Relating to the Employment Agreement between Harvard Bioscience, Inc. and David Green dated as of October, 31, 2013 between Harvard Bioscience, Inc. and David Green.
(22) 10.36	Waiver Relating to the Employment Agreement between Harvard Bioscience, Inc. and Thomas McNaughton dated as of October, 31, 2013 between Harvard Bioscience, Inc. and Thomas McNaughton.
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.

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

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

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

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

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

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

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

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

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

(18) Previously filed as an exhibit to the Company's Current Report on Form 8-K (filed April 3, 2013) and incorporated by reference thereto.

(19) Previously filed as an exhibit to the Company's Current Report on Form 8-K (filed August 29, 2013) and incorporated by reference thereto.

(20) Previously filed as an exhibit to the Company's Current Report on Form 8-K (filed February 19, 2014) and incorporated by reference thereto.

(21) Previously filed as an exhibit to the Company's Current Report on Form 8-K (filed October 16, 2013) and incorporated by reference thereto.

(22) Previously filed as an exhibit to the Company's Current Report on Form 8-K (filed November 6, 2013) 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.

** 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 schedules and exhibits to the Separation and Distribution Agreement have been omitted. A copy of any omitted schedule or exhibit will be furnished to the SEC supplementally upon request.

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