SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM 10-K

☒ **Annual report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**
For the fiscal year ended December 31, 2002 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 000-31923

HARVARD BIOSCIENCE, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**(508) 893-8999**	**04-3306140**
(State or Other Jurisdiction of Incorporation or Organization)	(Registrant's telephone number, including area code)	(IRS Employer Identification No.)
	84 October Hill Road, Holliston, MA	**01746**
	(Address of Principal Executive Offices)	(Zip Code)

Securities registered pursuant to Section 12(b) of the Act: **None**

Securities registered pursuant to Section 12(g) of the Act:
Common Stock, $.01 par value per share
(Title of Class)

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 ☐ 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 an accelerated filer (as defined in Exchange Act Rule 12b-2).
☒ YES ☐ NO

The aggregate market value of 17,798,954 shares of voting stock held by non-affiliates of the registrant as of June 30, 2002 was approximately $99,496,153 based on the last sale price of such stock on such date.

Common Stock Outstanding as of March 17, 2003: 30,031,266 shares.

DOCUMENTS INCORPORATED BY REFERENCE.
Portions of the Company's definitive Proxy Statement in connection with the 2003 Annual Meeting of Stockholders to be held on May 22, 2003 are incorporated by reference into Part III of this Form 10-K.

PART I

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 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 our expected research and development spending, the impact of acquisitions on future earnings, the effect of our technology on the drug development process, our intention to strengthen our market position, management's confidence or expectations, our business strategy, our positioning for revenue and other growth, our ability to reduce the risk of being dependent on a single technology, our ability to avoid competition with major instrument companies, our acquisition strategy (including our ability to accelerate the growth of acquired products through our established brands and distribution channels, our plans and intentions regarding the distribution of our catalog and supplements to our catalog and the availability of attractive acquisition candidates), our expectations regarding future costs of product revenues, the market demand and opportunity for our products, our beliefs regarding our position in comparison to our competitors, our estimates regarding our capital requirements, the timing of future product introductions,or the ability of our patent strategy to protect our current and future products, our expectations in connection with current litigation (including inferences about the finality of the arbitrator's decision in the Grindle matter and potential appeal of or other challenge to that decision), 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," "expects," "plans," "anticipates," "believes," "estimates," "projects," "predicts," "intends," "potential" and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss many of these risks in detail under the heading "Important Factors That May Affect Future Operating Results" beginning on page 30 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.

Item 1. *Business.*

Overview

Harvard Bioscience, a Delaware corporation, is a global developer, manufacturer and marketer of a broad range of specialized products, primarily scientific instruments, used to accelerate drug discovery research at pharmaceutical and biotechnology companies, universities and government laboratories worldwide. We sell our products to thousands of researchers in over 100 countries through our direct sales force, our 1,000 page catalog (and various other specialty catalogs), and through distributors, including Amersham Biosciences and PerkinElmer. We have sales and manufacturing operations in the United States, the United Kingdom, Germany, Austria and Belgium with sales facilities in Japan, France and Canada.

Our History

Our business began in 1901 and has grown over the intervening years with the development and evolution of modern drug discovery tools. Our early inventions include the mechanical syringe pump in the 1950s for drug infusion and the microprocessor controlled syringe pump in the 1980s.

In March 1996, a group of investors led by our current management team acquired a majority of the then existing business of our predecessor, Harvard Apparatus. Following this acquisition, we redirected the focus of the Company to

participate in the high growth areas (bottlenecks) within drug discovery by acquiring and licensing innovative technologies while continuing to grow the existing business through internal product development and marketing, partnerships and acquisitions. Through December 31, 2002, we have completed thirteen business acquisitions, licensed new technology for in vitro toxicology assays and drug absorption measurement, internally developed new product lines including new generation syringe pumps, ventilators, DNA/RNA/protein calculators, spectrophotometers and plate readers and improved versions of our COPAS model organism screening platform.

Our Strategy

Our mission is to profitably accelerate drug discovery.

Our goal is to become a leading provider in the tools for the drug discovery industry.

Our strategy is to have a broad range of specialized products (currently over 19,000) in strong positions in niche markets focused on the bottlenecks in drug discovery research:

- By having a broad product line we believe we reduce the risk of being dependent on a single technology in an industry characterized by very rapid technological change;
- By having specialized products in niche markets we seek to reduce head-to-head competition with the major instrument companies; and
- By focusing on the bottlenecks we believe we position ourselves for above average revenue growth and above average margins.

We grow this range of products through internal development of new products, acquisitions and strategic partnerships with both pharmaceutical companies (for new product development) and other major life science companies (for expanded distribution).

We use acquisitions to expand our product line because we believe we can use our well established brands and distribution channels to accelerate the growth of these acquired products. We also believe that our expertise in operational management frequently allows us to improve profitability at acquired companies.

Our Products

Today, our broad product range is generally targeted towards four major application areas: ADMET screening; molecular biology; high-throughput/high-content screening for model organisms; and genomics, proteomics and high-throughput screening of potential drugs.

ADMET Screening.

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

These products are primarily sold under the Harvard Apparatus, BTX, Medical Systems, Clark Electromedical, Hugo Sachs and Warner Instruments brand names. The selling price of these products are often under $5,000 but when combined into systems such as the Hugo Sachs isolated organ systems the total sales price can be over $25,000. They are typically sold through our catalogs and web site with support from technical specialists. Some of these products are described below:

Absorption - NaviCyte Diffusion Chambers

A diffusion chamber is a small plastic chamber with a membrane separating the two halves of the chamber used to measure the absorption of a drug into the bloodstream. The membrane can either be tissue such as intestinal tissue or a cultured layer of cells such as human colon cells. This creates a miniaturized model of intestinal absorption. We

entered this market with our 1999 acquisition of the assets of NaviCyte Inc., a wholly owned subsidiary of Trega Biosciences.

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

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

Metabolism and Elimination - Organ Testing Systems

Organ testing systems use glass or plastic chambers together with stimulators and recording electrodes to study organ function. Organ testing systems enable either whole organs or strips of tissue from organs such as hearts, livers and lungs to be kept functioning outside the body while researchers perform experiments with them. They are typically used in place of live animals. Studies on isolated livers are useful in determining metabolism and studies on kidneys are useful in determining elimination. We have sold basic versions of these systems for many years, but significantly expanded our product offerings through our November 1999 acquisition of Hugo Sachs Elektronik.

Toxicology - Precision Infusion Pumps

Infusion pumps, typically syringe pumps, are used to accurately infuse very small quantities of liquid, commonly drugs. Infusion pumps are generally used for long-term toxicology testing of drugs by infusion into animals, usually laboratory rats. We sell a wide range of different types of syringe pumps.

Cell Injection Systems

Cell injection systems use extremely fine bore glass capillaries to penetrate and inject drugs into or around individual cells. Cell injection systems are used to study the effects of drugs on single cells. Injection is accomplished either with air pressure or, if the drug molecule is electrically charged, by applying an electric current. We entered this market with our 1998 acquisition of the research products of Medical Systems Corporation and considerably expanded our presence in this market with our acquisitions of Clark Electromedical in 1999 and Warner Instruments in 2001.

Ventilators

Ventilators use a piston driven air pump to inflate the lungs of an anesthestised animal. Ventilators are typically used in surgical procedures common in drug discovery. Our advanced Inspira ventilators have significant safety and ease of use features, such as default safety settings.

Electroporation Products

Acquired with our acquisition of the BTX division of Genetronics in January 2003, our electroporation products include systems and generators, electrodes and accessories for research applications including in-vivo, in-ovo and in-vitro gene delivery, electrocell fusion and nuclear transfer cloning. Through the application of precise pulsed electrical signals, electroporation systems open small “pores” in cell membranes allowing genes and/or drugs to pass through. The principal advantages of electroporation over other transfection techniques are speed, and the fact that electroporation does not require harsh chemicals that can interfere or change cell function.

In addition to our proprietary, manufactured products, we buy and resell through our catalog, products that are made by other manufacturers. We have negotiated supply agreements with the majority of the companies that provide our distributed products. These supply agreements specify pricing only and contain no minimum purchase commitments. None of these agreements represented more than two percent of our revenues for the year ended December 31, 2002.

Distributed products accounted for approximately 14% of our revenues for the year ended December 31, 2002. These distributed products enable us to provide our customers with a single source for their experimental needs. These complementary products consist of a large variety of devices, instruments and consumable items used in experiments involving cells, tissues, organs and animals in the fields of proteomics, physiology, pharmacology, neuroscience, cell biology, molecular biology and toxicology. We believe that our proprietary, manufactured products are often leaders in their fields however, researchers often need complementary products in order to conduct particular experiments. Most of these complementary products come from small companies that do not have our extensive distribution and marketing capabilities.

Molecular Biology.

These products are primarily sold under brand names of the distributors including Amersham Biosciences. They are mainly scientific instruments like spectrophotometers and plate readers that analyze light to detect and quantify a very wide range of molecular and cellular processes or apparatus like gel electrophoresis units. These products are typically in the $5,000 to $10,000 price range. They are typically sold through distributors.

Molecular Biology Spectrophotometers

A spectrophotometer is an instrument widely used in molecular biology and cell biology to quantify the amount of a compound in a sample by shining a beam of white light through a prism or grating to divide it into component wavelengths. Each wavelength in turn is shone through a liquid sample and the spectrophotometer measures the amount of light absorbed at each wavelength. This enables the quantification of the amount of a compound in a sample. We sell a wide range of spectrophotometers under the names UltroSpec, NovaSpec, and Biowave. These products are manufactured by our Biochrom subsidiary and sold primarily through our distribution arrangement with Amersham Biosciences.

DNA/RNA/Protein Calculators

A DNA/RNA/protein calculator is a bench top instrument dedicated to quantifying the amount of DNA, RNA or protein in a sample. It uses a process similar to that of a molecular biology spectrophotometer. These are sold under the names GeneQuant and GeneQuant Pro. Launched in 1993, we believe that it was the first such instrument sold. These products are manufactured by our Biochrom subsidiary and sold primarily through Amersham Biosciences.

Multi-Well Plate Readers

Multi-well plate readers are widely used for high throughput screening assays in the drug discovery process. The most common format is 96 wells per plate. Plate readers use light to detect chemical interactions. We introduced a range of these products in 2001 beginning with absorbance readers and followed by luminescence readers. These products are sold through Amersham Biosciences and other distributors.

Amino Acid Analysis Systems

An amino acid analysis system uses chromatography to separate the amino acids in a sample and then uses a chemical reaction to detect each one in turn as they flow out of the chromatography column. Amino acids are the building blocks of proteins. In June 2000, we acquired substantially all of the amino acid analysis systems business of the Biotronik subsidiary of Eppendorf-Netheler-Hinz GmbH and integrated it with the existing amino acid analysis systems business in our Biochrom subsidiary. These systems are sold through our Biochrom direct sales force and distributors including Amersham Biosciences.

Low Volume, High-Throughput Liquid Dispensers

A liquid dispenser dispenses low volumes of liquids into high density microtitre plates used in high throughput screening processes in drug discovery. Our unique technology enables dispensing to take place without the need for contact between the droplet and the liquid already present in the plate, thereby removing any risk of cross-contamination from the process. These products are primarily marketed by our Asys Hitech subsidiary and sold under distributor brand names. We acquired Asys Hitech in December 2001 through our Biochrom subsidiary. Asys Hitech

developed and markets both the liquid dispensers and a line of OEM plate readers. For ultra low volume dispensing we sell the Cartesian systems mentioned below.

Gel Electrophoresis Systems

Gel electrophoresis is a method for separation and purifying DNA, RNA and proteins. In gel electrophoresis an electric current is run through a thin slab of gel and the DNA, RNA or protein molecules separate out based on their charge and size. The gel is contained in a plastic tank with an associated power supply. Most of these products were acquired with our November 2001 acquisition of SciePlas Ltd and are sold through distributors.

High-Throughput/High-Content Screening for Model Organisms.

These systems are large scientific instruments that use fluid flow and lasers to analyze small model organisms like nematode worms, fruit flies and fish very rapidly and in large numbers. Model organisms are so called because they are used to model human diseases.

COPAS Systems

The COPAS™ system uses large bore flow cytometry and a novel proprietary technique to rapidly analyze and sort the model organisms *C. elegans* (worm), *D. melanogaster* (fly), and *D. rerio* (Zebra fish). Automation of the handling of these organisms through the use of the COPAS™ system provides scientists a complete integrated solution to rapidly produce and evaluate model organisms. COPAS systems are typically over $100,000 and are sold by technically specialized salespeople. In May 2001, we acquired Union Biometrica, the inventor and developer of the COPAS™ technology.

Genomics, Proteomics and High-Throughput Screening.

These products were mainly acquired with our purchase of Genomic Solutions Inc. in October of 2002 and subsequent to that, in March of 2003 with the acquisition of GeneMachines. They are mainly large scientific instruments that rapidly process and analyze samples of DNA, RNA or proteins. These systems are typically over $25,000 each and are sold by our field sales force and distributors in select countries.

Genomics Products – Arrayers, Hybridization Workstations and Scanners.

Genes contain the DNA code for making proteins. The human genome contains over three billion letters of DNA code that are organized into approximately 30,000 genes that can create approximately 100,000 proteins. Scientists have studied individual genes for decades but the modern discipline of genomics refers to studying many genes simultaneously. Genes are often studied using microarrays – 1" by 3" glass slides covered in many spots, each spot containing a unique piece of known DNA. A sample labeled with a fluorescent dye is then washed over the slide and the DNA in the sample that sticks to the DNA on the slide (by virtue of the complementary pairing of DNA bases) is identified. We make arraying instruments that can precisely spot down onto the slide tiny quantities of DNA and enable large numbers of slides to be automatically manufactured by the scientist. Our hybridization workstations carefully control the addition of reagents and the reaction conditions that enable the automated washing of the sample over the slide to create a robust attachment of the sample DNA to the test DNA. Our slide scanners use lasers to read the intensity of the fluorescent signals to accurately quantify the genes that are present in the sample. Finally, we developed the software to control the process and analyze and present the data. These products are mainly sold under our GeneMachines brand name.

Proteomics Products - 2 Dimensional Gels, Spot Picking Robots and Sample Preparation Robots .

Proteins are a key component of all living cells. Each cell may contain thousands of different proteins. Scientists have studied individual proteins for decades but the modern discipline of proteomics refers to studying many proteins simultaneously. In order to study proteins they must first be purified. We manufacture two-dimensional electrophoresis gels and related apparatus for purifying proteins. Gel electrophoresis uses electric current to separate molecules by size and amount of electric charge they carry. These gels are then processed by automated workstations that use machine vision and robotics to remove individual protein spots from the gels. These spots are further purified using proprietary sample preparation pipette tips combined with robotics to automatically spot the pure proteins onto

plates that can be analyzed by mass spectrometers. The data from all these processes can then be analyzed and presented by our powerful software. By automating these otherwise manual processes our products make proteomics approaches practical. These products are mainly sold under our Investigator brand name and also under the SciePlas and Amika brand names.

High-Throughput Screening Products – Nanolitre Liquid Handlings.

High throughput screening is the process of testing large numbers (often hundreds of thousands) of potential drug molecules on proteins that are thought to be involved in disease. We manufacture instruments that aspirate and dispense very small quantities (as small as billionths of a litre) of chemicals into test wells (usually either 96, 384 or 1536) on small plastic plates called microtitre plates. We make instruments that can very rapidly, precisely and without cross-contamination add the same compound to each well, or add a different compound to each well. These products are mainly sold under our Cartesian and Asys Hitech brand names. We have considerable intellectual property in this area. In addition, specialized versions of our COPAS systems can be used for high-throughput screening of potential drug molecules as well as high-throughput/high-content screening of model organisms.

Our Customers

Our customers are primarily end-user research scientists at pharmaceutical and biotechnology companies, universities and government laboratories, including the U.S. National Institutes of Health, or NIH. Our largest customers in the United States include Yale University, Aventis, Glaxo SmithKline, Pfizer, University of Pennsylvania, University of North Carolina, Buck Institute for Age Research, University of Texas, Emory University, Carnegie Institute of Washington, Howard Hughes Medical Institute, Rutgers State University, University of Colorado, Merck & Co., and Roche Bioscience.

We conduct direct sales in the United States, the United Kingdom, Germany, France, Belgium, Spain, the Netherlands, Japan and Canada. We also maintain distributors in other countries. Aggregate sales to our largest customer, Amersham Biosciences, a distributor with end users similar to ours, accounted for approximately 18% of our revenues for the year ended December 31, 2002 compared to approximately 30% for the year ended December 2001. We have several thousand customers worldwide and no other customer accounted for more than two percent of our revenues for such period.

Sales and Marketing

Direct Sales

We periodically produce and mail approximately 100,000 copies of our 1,000-page catalog, which contains approximately 10,000 items. We distribute the majority of our products ordered from our catalog, which can also be accessed on our website, through our worldwide subsidiaries. Our manufactured products and revenues from collaboration and research grant products accounted for approximately 86% of our revenues for the year ended December 31, 2002. Our market leadership position in many of our manufactured products create traffic to the catalog and web site and enables cross-selling and facilitates the introduction of new products. In addition to the comprehensive catalog, we create and mail abridged catalogs that focus on specific product areas along with direct mailers, which introduce or promote new products.

With the acquisition of Union Biometrica in May 2001, and continuing in 2002 with the new direct sales in the US of our Biochrom Amino Acid Analyzer, and the acquisition of Genomic Solutions, a significant portion of our revenues are now attributable to a direct sales force and support organization rather than through a catalog or through distribution. Our direct sales force is complemented in the field by our technical support and field service organizations, and together they effectively sell and service our capital equipment product lines such as Union Biometrica COPAS product line, the Biochrom Amino Acid Analyzer and the Genomic Solutions'genomics, proteomics, and high-throughput screening products. Although there are separate and unique sales forces for each of these product lines, we are able to leverage our capabilities by having more individuals be able to connect with and identify more prospective customers.

Amersham Biosciences Distributor

In August 2001, we entered into a new agreement with Amersham Biosciences. Under the terms of the agreement Amersham Biosciences serves as our exclusive distributor, marketer and seller of a majority of the product of our Biochrom subsidiary. This agreement has a five year finite life and may be terminated by either party upon 18 months prior written notice. Additionally, upon breach of certain terms of the agreement by either party, such as pricing, exclusivity, and delivery, the agreement may be terminated with a 30 day notice period.

Research and Development

Our principal research and development mission is to develop a broad portfolio of technologies, assays, products and core competencies in drug discovery tools, particularly for application in the areas of ADMET screening, molecular biology, genomics, proteomics and high-throughput screening and high-throughput/high-content screening of model organisms.

Our research and development expenditures were $4.1 million (excluding in-process research and development charges of $1.6 million), $3.2 million (excluding in-process research and development charges of $5.4 million) and $1.5 million in 2002, 2001 and 2000, respectively. We anticipate that we will continue to make significant development expenditures 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 development programs and business and technology acquisitions.

We maintain development staff in most of our manufacturing facilities to design and develop new products and also to re-engineer existing products to bring them to the next generation level. In-house development is focused on our current technologies. Our European research laboratory in Geel, Belgium is focusing on extending the use of and developing new applications for high-throughput automated microscope imaging. For new technologies, our strategy has been to license or acquire proven technology from universities and pharmaceutical companies and then develop the technology into commercially viable products.

Manufacturing

We manufacture and test the majority of our products in our principal manufacturing facilities located in the United States, the United Kingdom, Austria 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 key manufacturing know-how, technologies and resources. We seek to maintain multiple suppliers for key components that are not manufactured in-house.

Our manufacturing operations are primarily to assemble and test. Our manufacturing of syringe pumps, ventilators, cell injectors, protein purification products and electroporation products (which we acquired from BTX in January, 2003) takes place in Holliston, Massachusetts. The manufacture of our cell biology and electrophysiology products takes place in our Hamden, Connecticut facility. The COPAS™ technology instruments are manufactured in our Somerville, Massachusetts facility. Our genomics, proteomics and high throughput screening products are manufactured at our Irvine and San Carlos, California and Huntingdon, England facilities. Our manufacturing of spectrophotometers and amino acid analysis systems takes place in our Cambridge, England facility which is certified to ISO 9001. Our manufacturing of surgery and anesthesia related products and teaching products takes place in Edenbridge, England. Our manufacturing of complete organ testing systems takes place in March-Hugstetten, Germany. Our electrophoresis products are manufactured at our Warwickshire, England facility and our low volume, high throughput liquid dispensers and our plate readers are manufactured in our facility in Eugendorf, Austria.

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 drug discovery. 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, competitors may have greater name recognition than we do, and many offer discounts as a competitive tactic. These competitors and other companies may have developed or could in the future develop new technologies that compete with our products which could render our products obsolete. We cannot assure you that we will be able to make the enhancements to our technologies

necessary to compete successfully with newly emerging technologies. We are not aware of any significant products sold by us which are currently obsolete.

We believe that we offer one of the broadest selections of products to companies engaged in drug discovery. We are not aware of any competitor that offers a product line of comparable breadth across our target markets. We have numerous competitors on a product line basis. We believe that we compete favorably with our competitors on the basis of product performance, including quality, reliability and speed, technical support, price and delivery time. We compete with several companies that provide instruments for ADMET screening, molecular biology, genomics, proteomics and high throughput screening, and high-throughput/high-content screening of model organisms. In the ADMET screening area, we compete with, among others, KD Scientific, Razel Scientific Instruments, Inc., Kent Scientific Corporation, General Valve Company, Eppendorf-Netheler-Hinz GmbH, Ugo Basile and Becton Dickinson and Company. In the molecular biology products, we compete with, among others, Bio Rad Laboratories, Inc. PerkinElmer Instruments, Inc., Invitrogen, Inc., Beckman Coulter, Inc., and Molecular Devices, Inc. In the genomics, protemics and highthroughput screening area, we compete with, among others, Genetix, Inc., Bio Rad Laboratories, Inc., Amersham Biosciences, Inc., PerkinElmer, Inc., Zymark, Inc., Tecan, Inc., Beckman Coulter, Inc. Apogent , Inc., Agilent Technologies, Inc., and Innovadyne, Inc. For our high-throughput/high-content screening for model organisms area, we compete primarily against manual techniques rather than a specific tools provider.

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. Many of our new technologies arecovered by patents or patent applications. 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. We currently own 22 issued U.S. patents and have 20 pending applications.

Generally, U.S. patents have a term of 17 years from the date of issue for patents issued from applications filed with the U.S. Patent Office prior to June 8, 1995, and 20 years from the application filing date or earlier claimed priority date in the case of patents issued from applications filed on or after June 8, 1995. Our issued US patents will expire between 2011 and 2020. 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 not protect our proprietary rights to the same extent as do 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 issue from any of our patent applications or from applications licensed to us. In view 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, these type of agreements cannot be legally entered into in Europe or in California. However, 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 and third parties have made such claims. 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 acceptable to us, or 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 Harvard University and Harvard Bioscience, Inc.

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, we are not subject to regulatory approval by the United States Food and Drug Administration as none of our products are sold for use in diagnostic procedures or on human clinical patients. In addition, we believe we are in compliance with all relevant environmental laws.

Employees

As of December 31, 2002, we had 364 full-time employees and 22 part-time employees, 169 of whom resided in the United States, 169 of whom resided in the United Kingdom, 18 of whom reside in Austria, 13 of whom resided in Germany, four of whom resided in Canada, four of whom resided in Japan, four of whom resided in Belgium, three of whom resided in France, one of whom resided in the Netherlands and one who resided in Spain. None of our employees is subject to any collective bargaining agreement. We believe that our relationship with our employees is good.

Website

Our website is www.harvardbioscience.com. Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, 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. Any such materials that we file with, or furnish to, the Securities and Exchange Commission in the future will be available on our website as soon as reasonably practicable after they are electronically filed with, or furnished to, the Securities and Exchange Commission. The information on our website is not incorporated by reference into this Annual Report on Form 10-K.

Item 2. *Properties.*

Our 12 principal facilities incorporate manufacturing, development, sales and marketing, and administration functions. Our facilities consist of:

- a leased 24,500 square foot facility in Holliston, Massachusetts, which is our corporate headquarters,
- a leased 28,000 square foot facility in Cambridge, England,
- a leased 28,000 square foot facility in Ann Arbor, Michigan,
- a leased 22,000 square foot facility in San Carlos, California,

- a leased 18,000 square foot facility in Warwickshire, England,
- a leased 18,000 square foot facility in Huntingdon, England,
- an owned 15,500 square foot facility in Edenbridge, England,
- a leased 12,000 square foot facility in Irvine, California,
- a leased 7,800 square foot facility in Somerville, Massachusetts
- a leased 9,000 square foot facility in March-Hugstetten, Germany,
- a leased 7,500 square foot facility in Hamden, Connecticut, and
- a leased 4,700 square foot facility in Eugendorf, Austria,

We also lease additional facilities for development, sales and administrative support in Les Ulix, France; Montreal, Canada; Tokyo, Japan; and Geel, Belgium. We lease facilities in Lansing, Michigan; San Diego, California; and Somerville, Massachusetts each of which are currently vacant. We are in the process of either negotiating lease terminations with the landlords or finding suitable tenants for subleasing some of the vacant space.

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

On December 26, 2000, Harvard University filed a lawsuit in U.S. District Court, District of Massachusetts alleging that our use of the "Harvard Bioscience" and "Harvard Apparatus" names infringes on Harvard University's trademarks. Harvard University was seeking both injunctive relief and monetary damages. On April 10, 2001, the U.S. District Court, District of Massachusetts denied Harvard University's request for a preliminary injunction prohibiting the Company from using the name "Harvard Bioscience" and "Harvard Apparatus". The Court did issue an order directing the Company not to use the "Harvard" name in the color crimson or in a font similar to the font used by Harvard University. On May 6, 2002, the U.S. District Court, District of Massachusetts issued a partial summary judgment order against Harvard University regarding the Company's use of the name "Harvard Apparatus". In December 2002, we settled our dispute with Harvard University and entered into a royalty-free license agreement that allows us to continue using the names Harvard Apparatus, Harvard Bioscience and various Harvard related product names. This license agreement is subject to termination in certain limited circumstances. Harvard Bioscience will continue to be used as the Company's name and Harvard Apparatus and various Harvard related product names will continue to be used as brand names on products and catalogs. The names will be used subject to various stylistic restrictions, primarily avoiding the use of the color crimson and fonts that are similar to those regularly used by Harvard University.

On February 4, 2002, Paul D. Grindle, the former owner of Harvard Apparatus, Inc., initiated an arbitration proceeding against us and certain directors before JAMS in Boston, Massachusetts. Mr. Grindle's claims arise out of post-closing purchase price adjustments related to our purchase of the assets and business of Harvard Apparatus by virtue of an Asset Purchase Agreement dated March 15, 1996 and certain related agreements. In the arbitration demand, Mr. Grindle sought the return of 1,563,851 shares of stock in Harvard Bioscience, or the disgorgement of the profits of our sale of the stock, as well as compensatory damages and multiple damages and attorney's fees under Mass. Gen. Laws, chapter 93A. In a demand letter that was attached to the arbitration demand, Mr. Grindle asserted losses in the amount of $15 million, representing the value of the 1,563,851 shares of Harvard Bioscience's stock as of January 2, 2002. On October 30, 2002, we received a decision from the arbitrator that we have prevailed on all claims asserted against us and certain of our directors in the arbitration action. Specifically, we received a written decision from the arbitrator granting our motion for summary disposition with respect to all claims brought against all parties in the action. We have filed a complaint in the Massachusetts Superior Court seeking to confirm the arbitrator's decision. Mr. Grindle filed a complaint in the Massachusetts Superior Court seeking to vacate the arbitrator's decision. These two matters have been consolidated and are currently pending.

In September, 2002, our Genomic Solutions subsidiary filed suit against Affymetrix, Inc. in the State of Michigan Circuit Court for the County of Washtenaw for breach of contract, negligent/innocent misrepresentation, tortuous interference with prospective economic advantage and declaratory relief. The action arises out of a License Agreement that Genomic Solutions entered into with Affymetrix with respect to certain Affymetrix patent rights. Genomic Solutions is seeking monetary damages including a return of license and royalty fees previously paid to Affymetrix and declaratory relief providing that no further fees are owing to Affymetrix. In November, 2002, Affymetrix filed a counter-claim against Genomic Solutions alleging breach of contract and requesting approximately $1.45 million in damages for license and other fees and interest allegedly owed. Discovery in the case is on-going. Management believes the counter-claim is without merit and intends to vigorously defend it. The $1.45 million in damages for license and other fees is fully reserved for in the Company's consolidated financial statements.

In December, 2002, Oxford Gene Technology Ltd. filed suit against our Genomic Solutions subsidiary, Mergen Ltd., Clontech Laboratories, Inc., PerkinElmer Life Sciences, Inc., Axon Instruments, Inc. and BioDiscovery, Inc. in the United States District Court for the District of Delaware seeking unspecified damages as a result of alleged infringement by each of the defendants of a United States Patent issued to Oxford Gene Technology. In March, 2003, Genomic Solutions filed an answer denying the allegations and asserted counter-claims seeking a declaratory judgment of non-infringement and a declaratory judgment of invalidity. Management denies the allegations and will vigorously defend the lawsuit.

From time to time, we may be involved in routine legal matters that arise in the ordinary course of our business. We are not currently a party to any other claims or proceedings which, we believe, would have, individually or in the aggregate, a material adverse effect on our business, financial condition or results of operations.

Item 4. ***Submission of Matters to a Vote of Security Holders.***

None.

Item 4.A. ***Executive Officers of the Registrant.***

The following table shows information about our executive officers as of December 31, 2002.

Name	Age	Position
Chane Graziano	64	Chief Executive Officer and Director
David Green	38	President and Director
Susan Luscinski	46	Chief Financial Officer
Mark Norige	48	Chief Operating Officer
Jeffrey S. Williams	36	President of Genomic Solutions Inc and Director

Chane Graziano has served as our Chief Executive Officer and as a member of our board of directors since March 1996. Prior to joining Harvard Bioscience, Mr. Graziano served as the President of Analytical Technology Inc., an analytical electrochemistry instruments company, from 1993 to 1996 and as the President and Chief Executive Officer of its predecessor, Analytical Technology Inc.-Orion, an electrochemistry instruments and laboratory products company, from 1990 until 1993. Mr. Graziano served as the President of Waters Corporation, an analytical instrument manufacturer, from 1985 until 1989. Mr. Graziano has over 39 years experience in the laboratory products and analytical instruments industry.

David Green has served as our President and as a member of our board of directors since March 1996. Prior to joining Harvard Bioscience, Mr. Green was a strategy consultant with Monitor Company, a strategy consulting company, in Cambridge, Massachusetts and Johannesburg, South Africa from June 1991 until September 1995 and a brand manager for household products with Unilever PLC, a packaged consumer goods company, in London from September 1985 to February 1989. Mr. Green graduated from Oxford University with a B.A. Honors degree in physics and holds a M.B.A. degree with distinction from Harvard Business School.

Susan Luscinski has served as our Chief Financial Officer since August 2001. Ms. Luscinski served as our Vice President of Finance and Administration from May 1999 until August 2001. Ms. Luscinski served as our Corporate Controller from May 1988 until May 1999 and has served in various other positions at our company and its predecessor since January 1985.

Mark Norige has served as our Chief Operating Officer since January 2000 and in various other positions with us since September 1996. Prior to joining Harvard Bioscience, Mr. Norige served as a Business Unit Manager at QuadTech, Inc., an impedance measuring instrument manufacturer, from May 1995 until September 1996. Mr. Norige worked at Waters Corporation from 1977 until May 1995.

Jeffrey S. Williams has served as the President of our Genomic Solutions subsidiary and as a member of our board of directors since the acquisition of Genomic Solutions, Inc. by Harvard Bioscience in October 2002. From 1997 to the date of the acquisition of Genomic Solutions by Harvard Bioscience, Mr. Williams served as the President and Chief Executive Officer and as a Director of Genomic Solutions and its predecessor. From 1995 until joining Genomic Solutions' predecessor, Mr. Williams served as the Executive Vice President and Chief Operating Officer of International Remote Imaging Systems, Inc., a publicly traded company specializing in digital imaging products for the clinical diagnostics and research marketplaces. Mr. Williams' prior employment included various positions at Boehringer Mannheim GmbH, a global healthcare company, most recently as Vice President and Global Business Manager.

PART II

Item 5. ***Market for Registrant's Common Equity and Related Stockholder Matters.***

Price Range of Common Stock.

Our common stock has been quoted on the Nasdaq National 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 National Market for the quarterly periods indicated.

Year Ended December 31, 2002	High	Low
First Quarter	$ 10.15	$ 6.75
Second Quarter	$ 9.10	$ 4.07
Third Quarter	$ 6.73	$ 2.11
Fourth Quarter	$ 3.83	$ 2.50

Year Ended December 31, 2001	High	Low
First Quarter	$ 7.12	$ 5.88
Second Quarter	$ 11.60	$ 7.90
Third Quarter	$ 14.50	$ 7.81
Fourth Quarter	$ 13.25	$ 7.35

On March 17, 2003, the closing sale price of our common stock on the Nasdaq National Market was $3.75 per share. The number of record holders of our common stock as of March 17, 2003 was approximately 200. 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 dividends on our common stock in the past and do not intend to pay dividends in the foreseeable future. Any future determination to pay 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 the board of directors deems relevant.

Recent Sales of Unregistered Securities.

None.

Use of Proceeds from Registered Securities.

On December 7, 2000, the Company sold, pursuant to an underwritten initial public offering, 6,250,000 shares of common stock at a price of $8 per share. Following the offering, proceeds were used to repay substantially all of the Company's debt as well as redeem its redeemable preferred stock. On January 9, 2001, the underwriters exercised their allotment option whereby the Company sold an additional 937,500 shares of its common stock at a price of $8 per share. The net proceeds to the Company for the initial public offering and the underwriters exercise of their allotment was $51.8 million.

The effective date of the Securities Act registration statement for which the use of proceeds information is being disclosed was December 6, 2000, and the Commission file number assigned to the registration statement is 333-45996. From April 1, 2002 (the date of the filing of our 2001 Annual Report on Form 10-K) to the date hereof, we used the net proceeds as follows: (i) approximately $1.1 million was used to fund the acquisition of Walden Precision Apparatus (ii) approximately $1.6 million was used to fund working capital needs of Union Biometrica, Inc. (iii) approximately $10.1 million was used to fund the acquisition of Genomic Solutions and the associated costs, (iv) approximately $3.4 million was used to fund working capital needs of Genomic Solutions, primarily due to liabilities assumed with the acquisition of Genomic Solutions in October, 2002, and (v) the remaining $1.9 million in proceeds from our initial public offering in December 2000 was used to partially fund the acquisition of BTX in January 2003.

The use of proceeds from our initial public offering described above does not represent a material change in the use of proceeds described in our prospectus and in our Annual Report on Form 10-K for the year ended December 31, 2001.

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

	Years Ended December 31,				
	2002	2001	2000	1999	1998
Statement of Operations Data:	**(in thousands, except share and per share data)**				
Revenues	$ 57,380	$ 40,868	$ 30,575	$ 26,178	$ 12,154
Costs and Expenses					
Cost of product revenues	28,824	20,179	15,833	13,547	5,351
General and administrative expense	9,187	7,001	5,181	4,147	2,317
Restructuring and severance related expense	784	460	—	—	—
Sales and marketing expense	8,435	4,840	3,186	2,448	1,722
Research and development expense	4,146	3,179	1,533	1,188	325
Stock compensation expense	1,269	2,679	14,676	3,284	—
In-process research and development expense	1,551	5,447	—	—	—
Amortization of goodwill and other intangibles	1,543	1,744	604	368	27
Operating income (loss)	1,641	(4,661)	(10,438)	1,196	2,412
Other income (expense):					
Foreign currency gain (loss)	402	(99)	(324)	(48)	21
Common stock warrant interest expense	—	—	(36,885)	(29,694)	(1,379)
Interest income (expense), net	341	1,352	(756)	(657)	(210)
Amortization of deferred financing costs	—	—	(153)	(63)	—
Other	(36)	(10)	45	(17)	10
Other income (expense), net	707	1,243	(38,073)	(30,479)	(1,558)
Income (Loss) before income taxes	2,348	(3,418)	(48,511)	(29,283)	854
Income taxes	(1,611)	1,790	1,359	137	783
Net income (loss)	737	(5,208)	(49,870)	(29,420)	71
Preferred stock dividends	—	—	(136)	(157)	(122)
Net income (loss) available to common shareholders	$ 737	$ (5,208)	$ (50,006)	$ (29,577)	$ (51)
Income (loss) per share:					
Basic	$ 0.03	$ (0.20)	$ (6.25)	$ (5.28)	$ (0.01)
Diluted	$ 0.03	$ (0.20)	$ (6.25)	$ (5.28)	$ (0.01)
Weighted average common shares:					
Basic	27,090,054	25,784,852	8,005,386	5,598,626	5,598,626
Diluted	27,597,564	25,784,852	8,005,386	5,598,626	5,598,626

	As of December 31,				
	2002	2001	2000	1999	1998
Balance Sheet Data:	(in thousands)				
Cash and cash equivalents	$ 15,313	$ 29,385	$ 35,817	$ 2,396	$ 957
Working capital	31,816	32,597	40,552	3,783	2,205
Total assets	107,584	82,362	58,809	20,610	7,220
Long-term debt , net of current portion	400	637	1	5,073	638
Preferred stock	—	—	—	2,500	1,500
Common stock warrants	—	—	—	31,194	1,500
Stockholders' equity (deficit)	88,381	66,812	52,335	(25,711)	678

Please see Note 3 to our Consolidated Financial Statements for more information on businesses acquired, which may effect the comparability of the amounts above.

Please see Note 4 to our Consolidated Financial Statements for information related to the effects of adopting SFAS No. 142.

Quarterly Financial Information (Unaudited)

Statement of Operations Data:	(in thousands, except per share data)				
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Fiscal Year
2002:					
Revenues	$ 11,963	$ 13,729	$ 12,797	$ 18,891	$ 57,380
Operating expenses	10,781	12,244	12,549	20,165	55,739
Net Income (loss) available to common shareholders	773	1,018	(82)	(972)	737
Income (loss) per share:					
Basic	$ 0.03	$ 0.04	$ 0.00	$ (0.03)	$ 0.03
Diluted	$ 0.03	$ 0.04	$ 0.00	$ (0.03)	$ 0.03
2001:					
Revenues	$ 8,607	$ 9,711	$ 10,643	$ 11,907	$ 40,868
Operating expenses	8,089	15,032	10,619	11,789	45,529
Net Income (loss) available to common shareholders	272	(5,365)	319	(434)	(5,208)
Income (loss) per share:					
Basic	$ 0.01	$ (0.21)	$ 0.01	$ (0.02)	$ (0.20)
Diluted	$ 0.01	$ (0.21)	$ 0.01	$ (0.02)	$ (0.20)

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. We discuss many of these risks in detail under the heading "Important Factors That May Affect Future Operating Results" beginning on page 30. You should carefully review all of these factors, as well as the comprehensive discussion of forward-looking statements on page 2 of this Annual Report on Form 10-K.

Overview

We are a global developer, manufacturer and marketer of a broad range of specialized products, primarily scientific instruments, used to accelerate drug discovery research at pharmaceutical and biotechnology companies, universities and government laboratories worldwide. We sell our products to thousands of researchers in 100 countries though our direct sales force, our 1,000 page catalog and several other specialty catalogs, and through our distributors, including Amersham Biosciences and PerkinElmer. We have sales and manufacturing operations in the United States, the United Kingdom, Germany, Austria and Belgium with sales facilities in Japan, France and Canada.

Our strategy is to have a broad range of specialized products, primarily scientific instruments, in niche markets focused on the bottlenecks in drug discovery research.

- By having a broad product line we seek to reduce the risk of being dependent on a single technology in an industry characterized by very rapid technological change and
- By having specialized products in niche markets we seek to avoid head-to-head competition with the major instrument companies.

New products are an important element in driving our growth. Our new products are either invented by us or acquired from other companies. Acquisitions are thus a core part of our growth strategy. We use acquisitions to expand our product line because we believe we can use our well-established brands and distribution channels to accelerate the growth of acquired products.

These products are marketed and sold through one of our three well-established global distribution channels. These are:

- For products primarily priced under $10,000: the Harvard Apparatus catalog, a name respected for innovation and quality for over 100 years;
- For well-established products primarily priced in the $5,000 to $35,000 range: distribution relationships with major life science companies such as Amersham Biosciences and PerkinElmer; and
- For innovative products primarily priced over $25,000: our own global field sales force.

In providing tools for drug discovery, we have established a significant base business and have achieved strong brand recognition. Since 1996, we have built upon our base business and brand recognition by adding new technologies in the areas of ADMET screening; genomics, proteomics and high-throughput screening; molecular biology; and high-throughput/high-content screening for model organisms.

- In June 1998, we acquired products for cell injection systems from Medical Systems Corporation for $1.0 million in cash,

- In February 1999, we acquired Biochrom Ltd., which develops and manufactures DNA/RNA/protein calculators, spectrophotometers, amino acid analyzers and related consumables in the United Kingdom, from Pharmacia Biotech (Biochrom) Ltd for $7.0 million in cash,

- In March 1999, we entered into an exclusive license for the technology underlying our ScanTox™ in-vitro toxicology testing product for $25,000 in cash and ongoing royalties and licensing fee payments,

- In September 1999, we acquired products for intracellular research from Clark Electromedical Instruments for $349,000 in cash,

- In November 1999, we acquired our NaviCyte™ diffusion chamber systems product for drug absorption testing from a subsidiary of Trega Biosciences for $390,000 in cash and future royalties,

- In November 1999, we acquired substantially all the assets and certain liabilities of Hugo Sachs Elektronik, consisting primarily of products for organ testing, for $730,000 in cash,

- In May 2000, we acquired certain assets of Biotronik, consisting primarily of products for amino acid analysis, for $469,000 in cash,

- In July 2000, we acquired substantially all the assets of AmiKa Corporation consisting of purification tips, spin columns, a 96 well drug binding assay and related technology and intellectual property for $3.1 million in cash,

- In December 2000, we acquired substantially all the assets and certain liabilities of MitoScan Corporation, a company that produces tools for toxicity testing for $383,000 in cash and future milestone payments and royalties,

- In May 2001, we acquired substantially all the assets of Warner Instruments Corporation, a company that designs, produces and markets electro-physiology products for approximately $2.7 million in cash,

- In May 2001, we acquired all the outstanding stock of Union Biometrica, Inc. for a combination of cash and stock of approximately $17.5 million. Union Biometrica invented, developed and initiated marketing of COPAS^{TM}, high-throughput/ high-content model organism screening systems,

- In June 2001, for cash of approximately $1.6 million, we acquired substantially all the assets of International Market Supply Ltd, a company that produces and markets anesthesiology products,

- In November 2001, for cash of approximately $4.1 million, we acquired Scie-Plas Ltd. for its electrophoresis based sample preparation products,

- In December 2001, for cash of approximately $2.0 million, we acquired Asys Hitech GmbH for its plate readers and low volume liquid dispensers,

- In July 2002, we acquired all the outstanding stock of Walden Precision Apparatus ("WPA") for cash of approximately $1.4 million. WPA designs, manufactures and markets low cost diode-array spectrophotometers.

- In October 2002, we acquired all the outstanding stock of Genomic Solutions, Inc. for a combination of cash and stock of approximately $26.3 million. Genomic Solutions develops, manufactures and sells products in the fields of proteomics, high-throughput screening and DNA microarray systems including products for protein sample preparation and analysis in conjunction with mass spectrometry; high-speed, noncontact assay preparation for high-throughput screening and high-fidelity microarray processing and analysis.

- In January 2003, we acquired substantially all the assets of the BTX division of Genetronics Biomedical Corporation for $3.7 million in cash. BTX designs, develops, manufactures and distributes electroporation products.

- In March 2003, we acquired substantially all of the assets of Genomic Instrumentation Services, d/b/a/ GeneMachines for approximately $8.1 million in cash. GeneMachines designs, develops, manufactures and distributes high-throughput instrumentation for DNA and protein microarray production, nucleic acid sample preparation and DNA synthesis.

Revenues. We generate revenues by selling instruments, devices and consumables through our catalog, our direct sales force, our distributors and our website. For products primarily under $10,000, every one to three years, we intend to distribute a new, comprehensive catalog initially in a series of bulk mailings, first to our existing customers, followed by mailings to targeted markets of potential customers. Over the life of the catalog, distribution will also be made periodically to potential and existing customers through direct mail and trade shows and in response to telephone inquiries. From time to time, we also intend to distribute catalog supplements that promote selected areas of our catalog or new products to targeted subsets of our customer base. Future distributions of our comprehensive catalog and our catalog supplements will be determined primarily by the incidence of new product introductions, which cannot be predicted. Our customers are end user research scientists at pharmaceutical and biotechnology companies, universities and government laboratories. Revenue from catalog sales in any period is a function of time elapsed since the last mailing of the catalog, the number of catalogs mailed and the number of new items included in the catalog.

For our higher priced products, generally those priced over $25,000, we have direct sales organizations which consist of sales and marketing personnel, customer support, technical support and field application service support. These organizations have been structured to attend to the specific needs associated with the promotion and support of higher priced capital equipment customers. The combined expertise of both our sales and technical support staff provide a balanced skill set when promoting the relevant products at seminars, on site demonstrations and exhibitions which are done routinely. The expertise of our field service personnel provides complete post sale customer support for both instrument specific diagnostics, repair and maintenance, and applications support.

For the year ended December 31, 2002, approximately 86% of our revenues were derived from products we manufacture or from collaboration and research grant projects. The remaining 14% of our revenues 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. For the year ended December 31, 2002, approximately 45% of our revenues were derived through catalog sales and through reference to our website, which is an electronic version of our catalog. We do not currently have the capability to accept purchase orders through our website. For the year ended December 31, 2002, approximately 59% of our revenues were derived from sales made by our non-U.S. operations. A large portion of our international sales during this period consisted of sales to Amersham Biosciences, the distributor for our spectrophotometers and plate readers. Amersham Biosciences distributes these products to customers around the world from its distribution center in Upsalla, Sweden, including to many customers located in the United States. As a result, we believe our international sales would have been less as a percentage of our revenues for the year ended December 31, 2002 if we had shipped our products directly to our end users.

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 costs 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 higher cost of goods sold because the profit is effectively shared with the original manufacturer. We anticipate that our manufactured products will continue to have a lower cost of goods sold as a percentage of revenues as compared with the cost of non-manufactured products for the foreseeable future.

General and administrative expense. 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 facility costs, professional fees for legal and accounting services, insurances and provision for doubtful accounts.

Sales and marketing expense. 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 1,000 page catalog, supplements and various other specialty catalogs, and the maintenance of our web sites. 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 increase and or support sales of our higher priced capital equipment instruments.

Research and development expense. Research and development expense consists primarily of salaries and related expenses for personnel and capital resources used to develop and enhance our products and to support collaboration agreements. Other research and development expense includes fees paid to consultants and outside service providers, and material costs for prototype and test units. We expense research and development costs as incurred. We believe that significant 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.

Stock compensation expense. Stock compensation expense resulting from stock option grants to our employees represents the difference between the fair market value and the exercise price of the stock options on the grant date for those options considered fixed awards. Stock compensation expense is also recorded for stock option grants that were considered variable awards because the number of shares to be acquired by employees was indeterminable at the date of grant. Stock compensation on fixed and variable awards is amortized as a charge to operations over the vesting period of the options.

Common stock warrant interest expense. On March 15, 1996, in connection with the issuance of redeemable preferred stock and subordinated debentures, 8,509,905 common stock warrants were issued. The related common stock warrant interest expense represented an accrual of a liability to warrant holders that would have required us to pay cash equal to the fair market value of the warrants in exchange for the warrants, or any common stock from the exercise of the warrants, beginning March 15, 2002. Effective with our initial public offering of common stock in December 2000, the warrants were exercised for common stock and, as a result, the right to be paid cash terminated.

Our business has historically been affected by a number of factors that cause revenue and earnings to vary from quarter to quarter, including catalog mailings, new product introductions, and our substantial European business, which in summer months defers purchases and acquisitions. As a result, we believe that revenue and earnings in one quarter of the year may not be indicative of revenue and earnings in a subsequent quarter.

Critical Accounting Policies

Our critical accounting policies are as follows:

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

Valuation of identifiable intangible assets in business combinations. Identifiable intangible assets consist primarily of trademarks and acquired technology. Such intangible assets arise from the allocation of the purchase price of businesses acquired to identifiable intangible assets based on their respective fair market value. Amounts assigned to such identifiable intangible assets are primarily based on independent appraisals using established valuation techniques and management estimates. The value assigned to trademarks was determined by estimating the royalty income that would be negotiated at an arm's-length transaction if the asset were licensed from a third party. A discount factor, ranging from 25% to 31.5%, 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 25% to 36%, reflects the business and financial risks of an investment in technologies. Forecasts of future cash flows are based on managements' judgment of expected conditions and expected courses of action.

Valuation of in-process research and development in business combinations. Purchase price allocation to in-process research and development represents the estimated fair value of research and development projects that are reasonably believed to have no alternative future use. The value assigned to in-process research and development was determined by independent appraisals by estimating the cost to develop the purchased in-process research and development into commercially feasible products, estimating the percentage of completion at the acquisition date, estimating the resulting net risk-adjusted cash flows from the projects and discounting the net cash flows to their present value. The discount rates used in determining the in-process research and development expenditures reflects a higher risk of investment because of the higher level of uncertainty due in part to the nature of the Company and the industry to constantly develop new technology for future product releases and ranged from 25% to 43.5%. The forecasts used by the Company in valuing in-process research and development were based on assumptions the Company believes to be reasonable, but which are inherently uncertain and unpredictable. Given the uncertainties of the development process, no assurance can be given that deviations from the Company's estimates will occur and no assurance can be given that the in-process research and development projects identified will ever reach either technological or commercial success. The amounts allocated to in-process research and development in 2002 and 2001 of $1,551,000 and $5,447,000, respectively, were expensed as of the acquisition dates.

Valuation of long-lived and intangible assets and goodwill. In accordance with the provisions of Statement of Financial Accounting Standards (SFAS) No. 144, "*Accounting for the Impairment or Disposal of Long-Lived Assets"*, we assess the impairment of identifiable intangibles with finite lives and long-lived assets 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 Amersham Biosciences; 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 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. Assets to be disposed of are reported at the lower of the carrying amount or fair value less costs to dispose.

In June 2001, SFAS No. 142, *"Goodwill and Other Intangible Assets"* was issued. SFAS No. 142 addresses financial accounting and reporting for acquired goodwill and other intangible assets. Among other things, SFAS No. 142 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 an impairment. The impairment test consists of a comparison of the fair value of the Company's reporting units with their carrying amount. If the carrying amount exceeds its fair value, the Company is 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. In accordance with SFAS 142, we were required to perform an initial impairment review of our goodwill effective January 1, 2002. During the second quarter of 2002, the Company completed the implementation impairment review. The review concluded there was no impairment of goodwill at the time of implementation. On December 31, 2002, the Company performed its annual impairment test, which did not indicate any impairment.

Accounting for income taxes. We are required to 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 as well as 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 sheet. We must 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 SFAS 109, *Accounting for Income Taxes*, we must establish a valuation allowance. If a valuation allowance is established or increased in a period, we must allocate the related income tax expense to income from continuing operations in the consolidated statement of operations to the extent those deferred tax assets originated from continuing operations. To the extent income tax benefits are allocated to stockholders' equity, the related valuation allowance also must be allocated to stockholders' equity.

Management judgment is required in determining our income tax provision, deferred tax assets and liabilities and any valuation allowance recorded against net deferred tax assets. At December 31, 2002, we have established a valuation allowance attributable to certain acquisition-related temporary differences as we believe that a portion of the deferred tax assets at December 31, 2002 will not meet the "more likely than not" standard for realization in the carryback and carryforward periods based on the criteria set forth in SFAS 109, *Accounting for Income Taxes.* We review the recoverability of deferred tax assets during each reporting period. For a further discussion of income taxes see note 13 to the consolidated financial statements.

Revenue recognition. The Company recognizes revenue from product sales generally upon shipment or installation, if applicable, provided that persuasive evidence of an arrangement exists, the sales price is fixed or determinable, collectability is reasonably assured and title and risk of loss have passed to the customer. The Company has no obligations to customers after the date products are shipped or installed, if applicable, other than pursuant to warranty obligations. The Company provides for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. The Company provides for the estimated amount of future returns upon shipment of products or installation, if applicable, based on historical experience. While product returns and warranty costs have historically not been significant, 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. The Company makes estimates evaluating its allowance for doubtful accounts. On an ongoing basis, the Company monitors collections and payments from its customers and maintains a provision for estimated credit losses based upon our historical experience and any specific customer collection issues that we have identified. While such credit losses have historically not been significant, 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.

Inventory. The Company values its 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. The Company regularly reviews inventory quantities on hand and records a provision to write down excess and obsolete inventory to its estimated net realizable value if less than cost, based primarily on its estimated forecast of product demand. Since forecasted product demand quite often is a function of previous and current demand, a significant decrease in demand could result in an increase in the charges for excess inventory quantities on hand. In addition, the Company's 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 the Company's inventory and its reported operating results.

Results of Operations

Year Ended December 31, 2002 Compared to Year Ended December 31, 2001

Revenues. Revenues increased $16.5 million, or 40%, to $57.4 million in 2002 from $40.9 million in 2001. Approximately $11.3 million of the $16.5 million increase, or 68%, represented the base revenues, (the revenue stream of an acquired company prior to acquisition), for the acquisitions made in 2002 and the full year effect of base revenues from acquisitions made in 2001. The balance of the increase was from the leveraged growth in acquisitions

and from existing businesses that introduced new products. Revenues for 2002 would have been approximately $56.2 million if our sales denominated in foreign currencies were translated into U.S. dollars using 2001 exchange rates, an increase of 37% over 2001.

Cost of product revenues. Cost of product revenues increased $8.6 million, or 43%, to $28.8 million in 2002 from $20.2 million in 2001. As a percentage of product revenues, cost of product revenues for 2002 was higher by 0.7 % compared to 2001 due to the additional cost of product revenues for fair value adjustments made to inventory and backlog acquired in connection with the acquisition of Genomic Solutions and sold prior to December 31, 2002. Without this additional expense of $514,000, the cost of product revenues as a percent of product revenues would have been the same as it was for 2001. A significant portion of the expenses associated with collaboration revenue is included in research and development expense.

General and administrative expense. General and administrative expense increased $2.2 million, or 31%, to $9.2 million in 2002 from $7.0 million in 2001 due primarily to acquisitions. A portion of the increase, $1.8 million or 82%, is due to the effects of our 2002 acquisitions and our 2001 acquisitions having a full year impact on 2002 spending compared to a partial year impact in 2001. The balance of the increase in spending over 2001 of approximately $400,000 was due primarily to increases in expenses such as insurance, professional legal and audit services, and salaries and related costs. As a percentage of revenues, general and administrative expense decreased from 17% in 2001 to 16% in 2002.

Restructuring and severance related expenses. During 2002 we incurred a charge of $784,000 related to restructurings at our Union Biometrica ("UBI") and Biochrom subsidiaries. The restructuring at UBI was due to the lack of strong revenue growth to support its infrastructure. The restructuring charges associated with UBI in 2002 totaled approximately $310,000 and consisted of $166,000 in lease buyout costs for excess and unused space, and $144,000 in personnel severance and related costs. As planned when we completed the acquisition of Walden Precision Apparatus ("WPA") in July 2002, the operations of WPA were moved into the Biochrom facility in the third quarter of 2002. As part of this consolidation, we eliminated duplicative positions in our Biochrom and WPA operations and reduced facility costs. This resulted in a $474,000 restructuring charge in 2002, which consisted entirely of severance and related costs related to existing Biochrom employees. During 2001, severance packages totaling $298,000 including related costs, were negotiated for the President of UBI and for the Chief Scientific Officer of UBI. Both the President and Chief Scientific Officer were executives of UBI prior to our acquisition of UBI, and the President was the majority shareholder prior to the acquisition. The termination of their employment resulted in an additional expense of $162,000 related to the intangible asset recorded at the date of acquisition for in place work force.

Sales and marketing expense. Sales and marketing expense increased $3.6 million, or 74%, to $8.4 million in 2002 from $4.8 million in 2001 due primarily to acquisitions. Excluding the effect of acquisitions made during 2001 and 2002 of $3.2 million, sales and marketing expense grew $397,000, or 8%, due primarily to the addition of sales, customer and technical support personnel to support the direct distribution of certain of our Biochrom products. As a percentage of revenues, sales and marketing expense was 15% in 2002 compared to 12% in 2001. We expect sales and marketing expense to continue to increase reflecting the continued addition of sales and marketing personnel to promote technology acquired in 2001 as well as to expand our distribution channels.

Research and development expense. Research and development spending was $4.1 million in 2002, $1.7 million of which was related to businesses acquired in 2001 and 2002. Excluding this $1.7 million, spending in 2002 was approximately $2.4 million, a decrease of approximately $770,000 from spending in 2001. This decrease was due to several factors including the timing of project spending, the amount of spending related to collaboration revenues, and the restructuring of our Union Biometrica subsidiary during the year. As a percentage of revenues, research and development was 7% in 2002 compared to 8% in 2001.

In-process research and development expense. As of the date of the acquisitions in 2002 of Genomic Solutions and in 2001 of Warner Instruments and Union Biometrica, we recorded $1.6 million, $159,000 and $5.3 million respectively of in-process research and development expense representing the estimated fair value of acquired research and development projects with no alternative future use.

Stock compensation expense. We recorded $1.3 million of stock compensation expense in the twelve months ended December 31, 2002. We will recognize approximately $550,000 of additional expense over the remaining vesting life of the options. In 2001, we recorded stock compensation expense of approximately $2.7 million in connection with the grant of stock options to employees.

Amortization of goodwill and other intangibles. Amortization of goodwill and other intangibles, including amortization of acquired technology, was $1.5 million in 2002 and $1.7 million in 2001. As a result of fully adopting SFAS 142, *"Goodwill and Other Intangible Assets"* we did not record any amortization of goodwill or other indefinite lived intangibles in 2002. For acquisitions subsequent to June 30, 2001, no amortization expense for goodwill or indefinite lived intangibles was recorded during 2001. If this adoption had been made at the beginning of 2001, amortization expense would have been approximately $654,000 for 2001 compared to the $1.5 million recorded in 2002. This increase of approximately $850,000 was the result of amortizing definite lived intangible assets related to our acquisitions in 2002 and the full year effect of amortization of definite lived intangible assets associated with our 2001 acquisitions.

Other income (expense), net. Other income, net, was $707,000 in 2002 compared to $1.2 million in 2001. Net interest income for 2002 was $341,000 compared to $1.4 million in 2001. Net interest income for 2002 and 2001 was the result of interest earned on the proceeds from our December 2000 initial public offering and the underwriters exercise of the over allotment in January 2001. The decline in net interest income in 2002 compared to 2001 was due to lower interest rates in 2002, and lower available cash balances in 2002. This reduction in cash balances was the result of using cash, both in 2001 and 2002, to fund acquisitions. Other income for 2002 also includes a favorable foreign currency gain of $402,000 compared to an unfavorable currency loss of $100,000 in 2001. Effective January 1, 2002, certain debt between us and our foreign subsidiaries is now treated as a long-term investment rather than as debt with repayment expected in the foreseeable future (as it was previously treated.) Accordingly, in 2002 we did not record a foreign currency gain adjustment in our consolidated statement of operations related to this intercompany debt. Instead, we recorded the effect of the exchange rate fluctuation as a currency translation adjustment in accumulated other comprehensive income (loss) in stockholders' equity (deficit). The currency translation adjustment recorded in other comprehensive income in connection with this intercompany debt in 2002 was a gain of $1,000,000. In 2001, the foreign currency gain reflected in the income statement related to this intercompany debt was approximately $116,000.

Income taxes. The Company's effective income tax rates were 35% for 2002 and 37% for 2001 notwithstanding the effects of the nondeductible in-process research and development charges for 2002 and 2001, certain stock compensation expense for 2002 and 2001 and certain amortization of goodwill and intangibles for 2001. The decrease in the income tax rate was principally due to the adoption of SFAS 142, *Goodwill and Other Intangible Assets*, which eliminates amortization of goodwill and certain intangibles deemed to have an indefinite life.

Year Ended December 31, 2001 Compared to Year Ended December 31, 2000

Revenues. Revenues increased $10.3 million, or 34%, to $40.9 million in 2001 from $30.6 million in 2000. Approximately $4.0 million of the $10.3 million increase, or 39%, represented the base revenues (the revenue stream of an acquired company prior to acquisition) for the acquisitions made in 2001 and the full period effect of base revenues from acquisitions made in 2000. The balance of the increase was from existing businesses that introduced new products including new lines of spectrophotometers and plate readers and from the leveraged growth in acquisitions. Revenues for 2001 would have been approximately $42.0 million if our sales denominated in foreign currencies were translated into U.S. dollars using 2000 exchange rates, an increase of 37% over 2000.

Cost of product revenues. Cost of product revenues increased $4.3 million, or 27%, to $20.2 million in 2001 from $15.8 million in 2000. As a percentage of total revenues, cost of product revenues for 2001 was lower by 2.4 % compared to 2000 due to a combination of product mix and collaboration revenue. A significant portion of the expenses associated with collaboration revenue is included in research and development expense.

General and administrative expense. General and administrative expense increased $1.8 million, or 35%, to $7.0 million in 2001 from $5.2 million in 2000 due primarily to acquisitions. Excluding the general and administrative spending from the acquisitions, general and administrative expense increased $0.7 million, or 14%, due to the full period effect of the additional costs associated with public company status, additional headcount to support expanding

operations, and legal expense in connection with the suit against us by Harvard University. As a percentage of revenues, general and administrative expense remained constant at approximately 17%.

Restructuring and Severance Related Expenses. During 2001, severance packages were negotiated totaling $298,000 including related costs, for the President and Chief Scientific Officer of Union Biometrica ("UBI"), both executives of UBI prior to the acquisition of UBI; the President being the majority shareholder and seller. The termination of their employment resulted in an additional expense of $162,000 related to the intangible asset recorded at the date of acquisition for in place work force.

Sales and marketing expense. Sales and marketing expense increased $1.7 million, or 52%, to $4.8 million in 2001 from $3.2 million in 2000 due primarily to acquisitions. Excluding the effect of acquisitions, sales and marketing expense grew $244,000, or 8%, due primarily to the addition of customer and technical support personnel as a result of our growing customer base and revenues. As a percentage of revenues, sales and marketing expense was 12% in 2001 compared to 10% in 2000. This increasing percentage reflects the continued addition of sales and marketing personnel to promote technology acquired in 2000 and 2001.

Research and development expense. Research and development spending was $3.2 million in 2001, $1.8 million of which resulted from 2001 acquisitions. Excluding this $1.8 million , spending in 2001 was approximately $1.4 million, basically unchanged from spending in 2000. As a percentage of revenues, research and development was 8% in 2001 compared to 5% in 2000. This higher level resulted primarily from the acquisition of Union Biometrica, which, as an early stage commercial technology company, spends a higher percentage of revenues on research and development than our traditional businesses. The Union Biometrica acquisition is expected to result in research and development spending at a higher level as a percentage of revenues than we have traditionally experienced.

In-process research and development expense. As of the date of the acquisitions of Warner Instruments and Union Biometrica, we recorded $159,000 and $5.3 million respectively of in-process research and development expense representing the estimated fair value of acquired research and development projects with no alternative future use.

Stock compensation expense. We recorded $2.7 million of stock compensation expense in the twelve months ended December 31, 2001. In 2000, we recorded stock compensation expense of approximately $4.7 million in connection with the grant of stock options to employees and we recorded $10.0 million of non-recurring stock compensation expense in connection with options granted in 1996 and 1999.

Amortization of goodwill and other intangibles. Amortization of goodwill and other intangibles, including amortization of acquired technology, was $1.7 million in 2001 and $604,000 in 2000. This increase of $1.1 million was the result of amortizing additional goodwill and other intangibles incurred in connection with our acquisitions in 2001 and the full year effect of our 2000 acquisitions.

Other income (expense), net. Other income, net, was $1.2 million in 2001 compared to other expense, net, of $38.1 million in 2000. In 2000, other expense, net, included a non-cash charge for common stock warrant interest expense of $36.9 million. Common stock warrant interest expense represents the difference between the fair value of common stock warrants for financial reporting purposes and their exercise price. This liability represented the right of warrant holders to require us to pay cash equal to the fair market value of the warrants in exchange for the warrants, or any common stock from the exercise of the warrants, beginning March 15, 2002. Effective with our initial public offering in December 2000, the warrants were exercised for common stock and the right to be paid cash terminated. The liability previously recorded became part of common stock and additional-paid-in capital. Net interest income for 2001 was $1.4 million compared to net interest expense of $756,000 in 2000. Net interest income for 2001 was the result of interest earned on the proceeds from our December 2000 initial public offering and the underwriters exercise of the over allotment in January 2001. The 2000 net interest expense resulted primarily from debt, which was incurred to finance acquisitions, partially offset by interest income on proceeds from the initial public offering. Foreign currency loss in 2001 decreased approximately $225,000 to $100,000 due primarily to a decline in dollar denominated debt in foreign subsidiaries and to less unfavorable exchange rates during 2001.

Income taxes. The Company's effective income tax rates were 37% for 2001 and 36% for 2000 not withstanding the effects of the nondeductible in-process research and development charges for 2001, certain stock compensation

expense and certain amortization of goodwill and intangibles for 2001 and 2000, and common stock warrant interest expense for 2000. The increase in the income tax rate was principally due to increased taxable income in jurisdictions that have higher statutory income tax rates, primarily in Germany.

Liquidity and Capital Resources

Historically, we have financed our business through cash provided by operating activities, the issuance of common stock, preferred stock, and bank borrowings. Our liquidity requirements have arisen primarily from investing activities, including funding of acquisitions, payments on outstanding indebtedness, research and development expenditures, and capital expenditures. As of December 31, 2002, we had cash and cash equivalents of $15.3 million. Since 1996, we have raised $72.5 million, consisting of $3.0 million of preferred and common stock issued in private placements or upon exercise of stock options and warrants, $17.7 million of debt and $51.8 million from issuance of common stock in our initial public offering in December 2000 and the subsequent exercise of the underwriters over allotment in January 2001. Upon receipt of the initial public offering proceeds on December 12, 2000, we repaid all existing debt and redeemed all outstanding preferred stock. Included in the $17.7 million of debt raised are the proceeds from the $6.0 million bridge loan entered into in March 2003.

On March 12, 2003, we entered into an agreement with Brown Brothers Harriman & Co. for a $6.0 million bridge loan in the form of a demand promissory note to partially fund the acquisition of GeneMachines. We are currently negotiating a $12.0 million (which will include the amount of the bridge loan) revolving credit facility which would, if implemented, be available to fund future acquisitions and for working capital purposes.

Our operating activities generated cash of $ 799,000 in 2002, $4.1 million in 2001 and $2.1 million in 2000. For all periods presented, operating cash flows were primarily due to operating results, including the full-year effect of acquisitions prior to non-cash charges, partially offset by working capital requirements. During 2002, Genomic Solutions required approximately $3.0 million in cash to fund working capital needs primarily as a result of the liabilities that were assumed as part of the acquisition.

Our investing activities used cash of $12.8 million in 2002, $20.2 million in 2001, and $5.3 million in 2000. Cash has been used in the following technology and business acquisitions:

- $9.7 million for Genomic Solutions in October 2002,
- $1.2 million for Walden Precision Apparatus Ltd. in July 2002,
- $1.8 million for Asys Hitech GmbH in December 2001,
- $3.7 million for Scie-Plas Ltd. in November 2001,
- $1.6 million for International Market Supply in June 2001,
- $7.5 million for Union Biometrica, Inc. in May 2001,
- $2.7 million for Warner Instruments Corporation in May 2001,
- $383,000 for substantially all the assets of MitoScan Corporation in December 2000,
- $3.1 million for substantially all the assets of AmiKa Corporation in July 2000,
- $469,000 for Biotronik's amino acid analysis systems business in May 2000,

In addition, subsequent to December 31, 2002, we have used cash in the following acquisitions.

- $3.7 million for substantially all the assets of the BTX division of Genetronics Biomedical Corporation in January 2003, and

- $8.1 million for substantially all of the assets of Genomic Instrumentation Services, d/b/a/ GeneMachines in March 2003.

Our financing activities have historically consisted of borrowings under a revolving credit facility, long-term debt and the issuance of preferred stock and common stock, including the common stock issued in our initial public offering. Financing activities used cash of $2.7 million in 2002 and provided cash of $9.7 million in 2001 and $36.5 million in 2000. During 2002, we used approximately $3.7 million of cash to repay debt, which originated at the sellers request for the acquisition of SciePlas Ltd. This was partially offset by proceeds from common stock issuances of approximately $1.1 million of which $886,000 was from the repayment of a note receivable from an officer. Prior to 1999, we had historically generated sufficient cash flow from operations to fund expenditures on capital equipment, debt service, equity transactions, stock repurchases and preferred dividend payments. In 1999, in connection with the acquisition of Biochrom, we increased our long-term indebtedness by approximately $5.5 million and issued approximately $1.0 million in convertible preferred stock. As a result, the level of debt service required increased substantially compared to historical levels. Upon completion of the initial public offering in 2000, the convertible preferred stock was converted into common stock and we used $1.5 million of the offering proceeds to redeem our series A redeemable preferred stock and $10.4 million to repay the bank term loan, the subordinated debt and the revolving credit facility.

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 operating plans, we expect that our available cash, cash generated from current operations and debt capacity will be sufficient to finance operations and capital expenditures for at least 12 months. However, we may use substantial amounts of capital to accelerate product development, expand our sales and marketing activities or make acquisitions. We may need to raise additional capital to the extent that we exhaust our available capital through these activities. Additional capital raising activities may dilute the ownership interests of existing stockholders to the extent we raise capital by issuing equity securities. Moreover, additional capital may not be available on acceptable terms or at all. Accordingly, there can be no assurance that we will be successful in raising additional capital.

Disclosures about Contractual Obligations

The following schedule represents our contractual obligations as of December 31, 2002.

	Payments Due by Period						
Contractual Obligation	**Total**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008 and beyond**
Notes payable	$ 871,532	$ 573,180	$ 298,352	$ —	$ —	$ —	$ —
Capital leases, including imputed interest	269,586	153,620	72,932	22,165	20,869	—	—
Operating leases	6,348,498	2,280,819	1,706,776	1,007,000	592,880	435,788	325,235
Total	$ 7,489,616	$ 3,007,619	$ 2,078,060	$ 1,029,165	$ 613,749	$ 435,788	$ 325,235

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 United Kingdom pound sterling and the Euro. During 2002 the U.S. dollar weakened against these currencies resulting in increased consolidated revenue and earnings growth, while in 2001, the U.S. dollar strengthened against these currencies resulting in reduced consolidated revenue and earnings growth, as expressed in U.S. dollars. For 2002, the gain associated with the translation of foreign equity into U.S. dollars was approximately $2.5 million, and, for 2001, the loss associated with the translation of

foreign equity into U.S. dollars was approximately $235,000. In addition, the currency fluctuations resulted in approximately $400,000 in foreign currency gains in 2002, and in 2001 a foreign currency loss of approximately $100,000.

Historically, we have not hedged our foreign currency position. Currently, we attempt to manage foreign currency risk through the matching of assets and liabilities. However, as our sales expand internationally, we plan to evaluate our currency risks and we may enter into foreign exchange contracts from time to time to mitigate foreign currency exposure.

Backlog

Our order backlog was approximately $5.6 million as of December 31, 2002 and $2.9 million as of December 31, 2001. 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.

Recently Issued Accounting Pronouncements

In June 2001, SFAS No. 143, *"Accounting for Asset Retirement Obligations"* was issued. SFAS No. 143 applies to legal obligations associated with the retirement of certain tangible long-lived assets. This Statement is effective for fiscal years beginning after June 15, 2002. Accordingly, the Company will adopt SFAS No. 143 on January 1, 2003. The Company does not expect that the adoption of this Statement will have a material impact on its consolidated results of operations or financial position.

In May 2002, SFAS No. 145, *Rescission of FASB Statements No. 4, 44, and 64, Amendment of FASB Statement No. 13, and Technical Corrections,* was issued. SFAS No. 145 which is effective for fiscal years beginning after May 15, 2002 rescinds SFAS No. 4, *Reporting Gains and Losses from Extinguishment of Debt*, SFAS No. 64, *Extinguishments of Debt Made to Satisfy Sinking-Fund Requirements*, and SFAS No. 44, *Accounting for Intangible Assets of Motor Carriers*. This Statement also amends SFAS No. 13, *Accounting for Leases*, to eliminate an inconsistency between the required accounting for sale-leaseback transactions. This Statement also amends other existing authoritative pronouncements to make various technical corrections, clarify meanings, or describe their applicability under changed conditions. The Company does not believe the impact of adopting SFAS No. 145 on January 1, 2003 will have a material impact on its consolidated results of operations or financial position.

In July 2002, SFAS No. 146, *Accounting for Costs Associated with Exit or Disposal Activities*, was issued. SFAS No. 146 is based on the fundamental principle that a liability for a cost associated with an exit or disposal activity should be recorded when it (1) is incurred, and (2) can be measured at fair value. SFAS No. 146 is effective for exit and disposal activities initiated after December 31, 2002. The Company does not believe that the adoption of this Statement on January 1, 2003 will have a material impact on its consolidated results of operations or financial position.

In November 2002, the FASB issued Interpretation No. 45, *Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness to Others*, *an interpretation of FASB Statements No. 5, 57 and 107 and a rescission of FASB Interpretation No. 34*. This Interpretation elaborates on the disclosures to be made by a guarantor in its interim and annual financial statements about its obligations under guarantees issued. The Interpretation also clarifies that a guarantor is required to recognize, at inception of a guarantee, a liability for the fair value of the obligation undertaken. The initial recognition and measurement provisions of the Interpretation are applicable to guarantees issued or modified after December 31, 2002 and are not expected to have a material effect on the Company's consolidated financial statements. The disclosure requirements are effective for financial statements of interim and annual periods ending after December 31, 2002.

In December 2002, the FASB issued SFAS No. 148, *Accounting for Stock-Based Compensation — Transition and Disclosure, an amendment of FASB Statement No. 123*. This Statement amends FASB Statement No. 123, *Accounting for Stock-Based Compensation,* to provide alternative methods of transition for a voluntary change to the fair value method of accounting for stock-based employee compensation. In addition, this Statement amends the disclosure requirements of Statement No. 123 to require prominent disclosures in both annual and interim financial statements. Certain of the disclosure modifications are required for fiscal years ending after December 15, 2002 and are included in the notes to the consolidated financial statements.

In January 2003, the FASB issued Interpretation No. 46, *Consolidation of Variable Interest Entities, an interpretation of ARB No. 51.* This Interpretation addresses the consolidation by business enterprises of variable interest entities as defined in the Interpretation. The Interpretation applies immediately to variable interests in variable interest entities created after January 31, 2003, and to variable interests in variable interest entities obtained after January 31, 2003. For public enterprises with a variable interest in a variable interest entity created before February 1, 2003, the Interpretation applies to that enterprise no later than the beginning of the first interim or annual reporting period beginning after June 15, 2003. The application of this Interpretation is not expected to have a material effect on the Company's consolidated financial statements. The Interpretation requires certain disclosures in financial statements issued after January 31, 2003 if it is reasonably possible that the Company will consolidate or disclose information about variable interest entities when the Interpretation becomes effective.

In November, 2002, the Emerging Issues Task Force ("EITF") reached a consensus on Issue No. 00-21, *Revenue Arrangements with Multiple Deliverables*. EITF Issue No. 00-21 addresses the accounting, by a vendor, for contractual arrangements in which multiple revenue-generating activities will be performed by the vendor. The Issue addresses when and, if so, how an arrangement involving multiple deliverables should be divided into separate units of accounting. The Issue also addresses how the arrangement consideration should be measured and allocated to the separate units of accounting in the arrangement. This Issue otherwise does not change applicable revenue recognition criteria. Companies are required to adopt this consensus for fiscal periods beginning after June 15, 2003. Companies may apply this consensus prospectively to new arrangements initiated after the date of adoption or as a cumulative catch adjustment. Early adoption of the consensus is permitted. We are currently evaluating the effects of adopting the provisions of the EITF's consensus on this Issue.

Impact of Inflation

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

Important Factors That May Affect Future Operating Results

Our operating results may vary significantly from quarter to quarter and year to year depending on a number of factors, including:

If it engages in any acquisition, Harvard Bioscience will incur a variety of costs, and may never realize the anticipated benefits of the acquisition.

Harvard Bioscience's business strategy includes the future acquisition of businesses, technologies, services or products that it believes are a strategic fit with its business. If Harvard Bioscience does 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 its business. Moreover, Harvard Bioscience may fail to realize the anticipated benefits of any acquisition as rapidly as expected or at all. Future acquisitions could reduce stockholders' ownership, cause Harvard Bioscience to incur debt, expose it to future liabilities and result in amortization expenses related to intangible assets with definite lives.

Harvard Bioscience may not realize the expected benefits of its recent merger with Genomic Solutions due to difficulties integrating the businesses, operations and product lines of Harvard Bioscience and Genomic Solutions.

Harvard Bioscience's ability to achieve the benefits of its recent merger with Genomic Solutions will depend in part on the integration and leveraging of technology, operations, sales and marketing channels and personnel of Harvard Bioscience and Genomic Solutions. The integration process is a complex, time-consuming and expensive process and may disrupt Harvard Bioscience's business if not completed in a timely and efficient manner. The challenges involved in this integration include the following:

- demonstrating to the combined company's customers and suppliers that the merger will not result in adverse changes in client service standards or business focus;

- persuading the combined company's employees that Harvard Bioscience's and Genomic Solutions' business cultures are compatible; and
- addressing any perceived adverse changes in business focus.

Harvard Bioscience may have difficulty successfully integrating the businesses, the domestic and foreign operations or the product lines of Harvard Bioscience and Genomic Solutions, and as a result, Harvard Bioscience may not realize any of the anticipated benefits of the merger. In particular, Harvard Bioscience may not successfully leverage Genomic Solutions' sales force or either company's distribution channels which could adversely affect the combined company following the merger. Additionally, neither Harvard Bioscience nor Genomic Solutions can assure that the growth rate of the combined company will equal the growth rates that have been experienced by Harvard Bioscience and Genomic Solutions, respectively, operating as separate companies in the past.

Genomic Solutions, Harvard Bioscience's recently acquired subsidiary, has a history of losses and may not be able to sustain profitability.

Genomic Solutions incurred net losses of $4.0 million for the six months ended June 30, 2002, $26.1 million for the year ended December 31, 2001, $8.9 million for the year ended December 31, 2000 and $11.1 million for the year ended December 31, 1999. As of June 30, 2002, Genomic Solutions had an accumulated deficit of $72.0 million. In September 2001, Genomic Solutions instituted a restructuring plan designed to reduce its operating expenses. In July 2002, Genomic Solutions announced a further restructuring of its operations. However, even with these restructurings, Genomic Solutions needs to generate significant revenues to achieve and maintain profitability. Genomic Solutions' continued revenue growth depends on many factors, many of which are beyond its control, including factors discussed in this risk factors section. Genomic Solutions may not sustain revenue growth. Even if Genomic Solutions does achieve profitability, it may not sustain or increase profitability on a quarterly or annual basis.

As an acquisitive company, the Company may be the subject of lawsuits from either an acquired company's previous stockholders or the Company's current stockholders.

As an acquisitive company, the Company may be the subject of lawsuits from either an acquired company's previous stockholders or the Company's current stockholders. These lawsuits could result from the actions of the acquisition target prior to the date of the acquisition, from the acquisition transaction itself or from actions after the acquisition. Defending potential lawsuits could cost the Company 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 the Company's assets.

Current negative economic trends may adversely impact Harvard Bioscience's business.

Harvard Bioscience may experience reduced demand for its products as a result of the recent downturn and increased uncertainty in the general economic environment in which Harvard Bioscience and its customers operate. Harvard Bioscience cannot project the extent of the impact of the recent economic downturn. If economic conditions worsen or if a wider economic slowdown occurs, Harvard Bioscience may experience a material adverse effect on its business, operating results, and financial condition.

Harvard Bioscience's business is subject to economic, political and other risks associated with international revenues and operations.

Since Harvard Bioscience manufactures and sells its products worldwide, its business is subject to risks associated with doing business internationally. Harvard Bioscience's revenues from its non-U.S. operations represented approximately 59% of total revenues for the year ended December 31, 2002. Harvard Bioscience anticipates that revenue from international operations will continue to represent a substantial portion of total revenues. In addition, a number of Harvard Bioscience's manufacturing facilities and suppliers are located outside the United States. Accordingly, Harvard Bioscience's future results could be harmed by a variety of factors, including:

- changes in foreign currency exchange rates, which resulted in a foreign currency gain of approximately $402,000 and an increase of foreign equity of approximately $2,527,000 for the year ended December 31, 2002,
- changes in a specific country's or region's political or economic conditions, including Western Europe and Japan, in particular,
- potentially negative consequences from changes in tax laws affecting the ability to expatriate profits,
- difficulty in staffing and managing widespread operations, and
- unfavorable labor regulations applicable to European operations, such as severance and the unenforceability of non-competition agreements in the European Union.

Harvard Bioscience's quarterly revenues will likely be affected by various factors, including the seasonal nature of purchasing in Europe and the timing of capital equipment purchases by customers.

Harvard Bioscience's revenues may vary from quarter to quarter due to a number of factors, including the timing of catalog mailings and new product introductions, future acquisitions and its substantial sales to European customers, who in summer months often defer purchases. Therefore, Harvard Bioscience expects revenues from European sales to be lower during the summer season and as a result quarter-to-quarter revenues will likely experience fluctuations. With the acquisition of Union Biometrica in May 2001 and Genomic Solutions in October 2002, an increasing portion of Harvard Bioscience's revenues may result from sales of relatively high-priced products. Delays in purchase orders, receipt, manufacture, shipment or receivables collection of these relatively high-priced products could lead to substantial variability in revenues, operating results and working capital requirements from quarter-to-quarter, which could adversely affect Harvard Bioscience's stock price. In particular, delays or reduction in purchase orders from the pharmaceutical and biotechnology industries could have a material adverse effect on Harvard Bioscience, as more fully described elsewhere in these risk factors.

Harvard Bioscience may lose money when it exchanges foreign currency received from international revenues into U.S. dollars.

For the year ended December 31, 2002, approximately 59% of Harvard Bioscience's business was conducted in currencies other than the U.S. dollar, which is its reporting currency. As a result, currency fluctuations among the U.S. dollar and the currencies in which Harvard Bioscience does business have caused and will continue to cause foreign currency transaction gains and losses. Currently, Harvard Bioscience attempts to manage foreign currency risk through the matching of assets and liabilities. In the future, Harvard Bioscience may undertake to manage foreign currency risk through additional hedging methods. Harvard Bioscience recognizes foreign currency gains or losses arising from its operations in the period incurred. Harvard Bioscience cannot guarantee that it will be successful in managing foreign currency risk or in predicting the effects of exchange rate fluctuations upon its future operating results because of the number of currencies involved, the variability of currency exposure and the potential volatility of currency exchange rates.

Additional costs for complying with recent and proposed future changes in Securities and Exchange Commission, Nasdaq Stock Market and accounting rules could adversely affect our profits.

Recent and proposed future changes in the Securities and Exchange Commission and Nasdaq rules, as well as changes in accounting rules, will cause the Company to incur additional costs including professional fees, as well as additional personnel costs, in order to keep informed of the changes and operate in a compliant manner. These additional costs may be significant enough to cause the Company's growth targets to be reduced, and consequently, the Company's financial position and results of operations may be negatively impacted.

With new rules, including the Sarbanes-Oxley Act of 2002, the Company may have difficulty in retaining or attracting officers, directors for the board and various sub-committees thereof.

The recent and proposed changes in SEC and Nasdaq rules, including those resulting from the Sarbanes-Oxley Act of 2002, may result in the Company being unable to attract and retain the necessary officers, board directors and

members of sub-committees thereof, to effectively manage the Company. The perceived increased personal risk associated with these recent changes, may deter qualified individuals from wanting to participate in these roles.

The Company may have difficulty obtaining adequate directors and officers insurance and the cost for coverage may significantly increase.

As an acquisitive company, the Company may have difficulty in obtaining adequate directors' and officers' insurance to protect the Company and its Directors and Officers from claims made against them. Additionally, even if adequate coverage is available, the costs for such coverage may be significantly greater than current costs. This additional cost may have a significant effect on the Company's profits and as a result the Company's results of operations may be adversely affected.

Harvard Bioscience plans significant growth, and there is a risk that it will not be able to manage this growth.

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

If it fails to retain key personnel and hire, train and retain qualified employees, Harvard Bioscience may not be able to compete effectively, which could result in reduced revenue or increased costs.

Harvard Bioscience's success is highly dependent on the continued services of key management, technical and scientific personnel. Harvard Bioscience's 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, Chane Graziano, the President, David Green, the Chief Financial Officer, Susan Luscinski, or any of the managerial, technical or scientific staff may significantly delay or prevent the achievement of product development and other business objectives. Harvard Bioscience maintains key person life insurance on Messrs. Graziano and Green. Harvard Bioscience's future success will also depend on its ability to identify, recruit and retain additional qualified scientific, technical and managerial personnel. Competition for qualified personnel in the technology area is intense, and Harvard Bioscience operates in several geographic locations where labor markets are particularly competitive, including Boston, Massachusetts and London and Cambridge, England, and 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 it is unable to hire and retain a sufficient number of qualified employees, Harvard Bioscience's ability to conduct and expand its business could be seriously reduced.

Harvard Bioscience's competitors and potential competitors may develop products and technologies that are more effective or commercially attractive than its products.

Harvard Bioscience expects to encounter increased competition from both established and development-stage companies that continually enter the market. Harvard Bioscience anticipates 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, and

- companies developing drug discovery technologies.

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

If Harvard Bioscience is unable to effectively protect its intellectual property, third parties may use its technology, which would impair Harvard Bioscience's ability to compete in its markets.

Harvard Bioscience's continued success will depend in significant part on its ability to obtain and maintain meaningful patent protection for certain of its products throughout the world. Patent law relating to the scope of claims in the technology fields in which Harvard Bioscience operates is still evolving. The degree of future protection for Harvard Bioscience's proprietary rights is uncertain. Harvard Bioscience owns 22 U.S. patents and has 20 patent applications pending in the U.S. Harvard Bioscience also owns numerous U.S. registered trademarks and trade names and has applications for the registration of trademarks and trade names pending. Harvard Bioscience relies on patents to protect a significant part of its intellectual property and to enhance its competitive position. However, Harvard Bioscience's presently pending or future patent applications may not issue as patents, and any patent previously issued to Harvard Bioscience may be challenged, invalidated, held unenforceable or circumvented. Furthermore, the claims in patents which have been issued or which may be issued to Harvard Bioscience in the future may not be sufficiently broad to prevent third parties from producing competing products similar to Harvard Bioscience's products. In addition, the laws of various foreign countries in which Harvard Bioscience competes may not protect its intellectual property to the same extent as do the laws of the United States. If Harvard Bioscience fails to obtain adequate patent protection for its proprietary technology, its ability to be commercially competitive will be materially impaired.

In addition to patent protection, Harvard Bioscience also relies on protection of trade secrets, know-how and confidential and proprietary information. To maintain the confidentiality of trade-secrets and proprietary information, Harvard Bioscience generally seeks to enter into confidentiality agreements with its employees, consultants and strategic partners upon the commencement of a relationship. However, Harvard Bioscience may not obtain these agreements in all circumstances. In the event of unauthorized use or disclosure of this information, these agreements, even if obtained, may not provide meaningful protection for Harvard Bioscience's 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 Harvard Bioscience's trade secrets and other proprietary information would impair its competitive advantages and could have a material adverse effect on its operating results, financial condition and future growth prospects.

Harvard Bioscience may be involved in lawsuits to protect or enforce its patents that would be expensive and time-consuming.

In order to protect or enforce its patent rights, Harvard Bioscience may initiate patent litigation against third parties. Harvard Bioscience 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 Harvard Bioscience's products are based on patents that are closely surrounded by patents held by competitors or potential competitors. As a result, Harvard Bioscience believes there is a greater likelihood of a patent dispute than would be expected if its 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 Harvard Bioscience's technical and management personnel from their normal responsibilities. Harvard Bioscience may not prevail in any of these suits. An adverse determination of any litigation or defense proceedings could put Harvard Bioscience's patents at risk of being invalidated or interpreted narrowly and could put its patent applications at risk of not issuing.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of Harvard Bioscience's 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 Harvard Bioscience's stock to decline.

Harvard Bioscience's success will depend partly on its ability to operate without infringing on or misappropriating the intellectual property rights of others.

Harvard Bioscience may be sued for infringing on the intellectual property rights of others, including the patent rights, trademarks and trade names of third parties. Intellectual property litigation is costly and the outcome is uncertain. If Harvard Bioscience does not prevail in any intellectual property litigation, in addition to any damages it might have to pay, Harvard Bioscience could be required to stop the infringing activity, or obtain a license to or design around the intellectual property in question. If Harvard Bioscience is unable to obtain a required license on acceptable terms, or is unable to design around any third party patent, Harvard Bioscience may be unable to sell some of its products and services, which could result in reduced revenue.

AmiKa Corporation, whose assets Harvard Bioscience purchased in July 2000, received and responded to correspondence from counsel to a third party competitor regarding the possible infringement by it of a patent and other pending patent applications held by such third party. Because this competitor has not pursued this matter since AmiKa's reply on June 7, 2000 in which AmiKa stated that it did not believe it was infringing on this competitor's patents, Harvard Bioscience believes that this matter has been concluded. However, Harvard Bioscience cannot assure you that this third party competitor will not assert these or similar claims in the future. Harvard Bioscience does not currently derive a significant portion of its revenue from products which depend on the intellectual property related to this alleged infringement.

Harvard Bioscience is dependent upon its licensed technologies and may need to obtain additional licenses in the future to offer its products and remain competitive.

Harvard Bioscience has licensed key components of its technologies from third parties. While it does not currently derive a material portion of its revenue from products that depend on these licensed technologies, Harvard Bioscience may in the future. If its license agreements were to terminate prematurely or if it breaches the terms of any licenses or otherwise fails to maintain its rights to these technologies, Harvard Bioscience may lose the right to manufacture or sell its products that use these licensed technologies. In addition, Harvard Bioscience may need to obtain licenses to additional technologies in the future in order to keep its products competitive. If it fails to license or otherwise acquire necessary technologies, Harvard Bioscience may not be able to develop new products that it needs to remain competitive.

Many of Harvard Bioscience's current and potential customers are from the pharmaceutical and biotechnology industries and are subject to risks faced by those industries.

Harvard Bioscience derives a substantial portion of its revenues from pharmaceutical and biotechnology companies. Harvard Bioscience expects that pharmaceutical and biotechnology companies will continue to be its major source of revenues for the foreseeable future. As a result, Harvard Bioscience is subject to risks and uncertainties that affect the pharmaceutical and biotechnology industries, such as pricing pressures as third-party payers continue challenging the pricing of medical products and services, government regulation, ongoing consolidation and uncertainty of technological change, and to reductions and delays in research and development expenditures by companies in these industries. In particular, several proposals are being contemplated by lawmakers in the United States to extend the Federal Medicare program to include reimbursement for prescription drugs. Many of these proposals involve negotiating decreases in prescription drug prices or imposing price controls on prescription drugs. If appropriate reimbursement cannot be obtained, it could result in customers purchasing fewer products from Harvard Bioscience as they reduce their research and development expenditures.

In particular, the biotechnology industry has been faced with declining market capitalization and a difficult capital-raising and financing environment. If biotechnology companies are unable to obtain the financing necessary to purchase Harvard Bioscience's products, Harvard Bioscience's business and results of operations could be materially

adversely affected. As it relates to the pharmaceutical industry, several companies have significant patents that have expired or are about to expire, which could result in reduced revenues for those companies. If pharmaceutical companies suffer reduced revenues as a result of these patent expirations, they may be unable to purchase Harvard Bioscience's products, and Harvard Bioscience's business and results of operations could be materially adversely affected.

In addition, Harvard Bioscience is dependent, both directly and indirectly, upon general health care spending patterns, particularly in the research and development budgets of the pharmaceutical and biotechnology industries, as well as upon the financial condition and purchasing patterns of various governments and government agencies. Many of Harvard Bioscience's 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. There exists the risk of a potential decrease in the level of governmental spending allocated to scientific and medical research which could substantially reduce or even eliminate these grants. If government funding necessary to purchase Harvard Bioscience's products were to decrease, Harvard Bioscience's business and results of operations could be materially adversely affected.

If Harvard Bioscience is unable to achieve and sustain market acceptance of its target validation high throughput screening, assay development and ADMET screening products across their broad intended range of applications, Harvard Bioscience will not generate expected revenue growth.

Harvard Bioscience's business strategy depends, in part, on successfully developing and commercializing its ADMET screening, molecular biology, high-throughput/high-content screening, and genomics, proteomics and high-throughput screening to meet customers' expanding needs and demands, an example of which is the COPAS™ technology obtained from the 2001 acquisition of Union Biometrica. Market acceptance of this and other new products will depend on many factors, including the extent of Harvard Bioscience's marketing efforts and its ability to demonstrate to existing and potential customers that its technologies are superior to other technologies or techniques and products that are available now or may become available in the future. If Harvard Bioscience's new products do not gain market acceptance, or if market acceptance occurs at a slower rate than anticipated, it could materially adversely affect its business and future growth prospects.

Harvard Bioscience's products compete in markets that are subject to rapid technological change, and therefore one or more of its products could be made obsolete by new technologies.

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

Harvard Bioscience offers and plans to offer a broad product line and has incurred and expects to continue to incur substantial expenses for development of new products and enhanced versions of its existing products. The speed of technological change in its market may prevent Harvard Bioscience from being able to successfully market some or all of its 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 Harvard Bioscience's profitability or cause Harvard Bioscience to experience significant losses.

Harvard Bioscience has limited experience in manufacturing some of its products that could cause problems or delays resulting in lost revenue.

If Harvard Bioscience fails to manufacture and deliver products in a timely manner, its relationships with its customers could be seriously harmed, and its revenue could decline. To achieve the production levels necessary for

successful commercialization, Harvard Bioscience will need to scale-up its manufacturing facilities and in some cases establish automated manufacturing methods and quality control procedures. Harvard Bioscience cannot assure you that manufacturing or quality control problems will not arise as it attempts to scale-up its production or that it can scale-up manufacturing and quality control in a timely manner or at commercially reasonable costs. If it is unable to manufacture these products consistently on a timely basis because of these or other factors, Harvard Bioscience may not achieve the level of sales from these products that it otherwise anticipates.

If Amersham Biosciences (formerly Amersham Pharmacia Biotech) terminates its distribution agreement with Harvard Bioscience or fails to perform its obligations under the distribution agreement, it could impair the marketing and distribution efforts for some of Harvard Bioscience's products and result in lost revenues.

For the year ended December 31, 2002, approximately 18% of Harvard Bioscience's revenues were generated through an agreement with Amersham Biosciences, which was renegotiated in August 2001, under which Amersham Biosciences acts as the primary marketing and distribution channel for the products of Harvard Bioscience's Biochrom subsidiary. Under the terms of this agreement, Harvard Bioscience is restricted from allowing another person or entity to distribute, market and sell the majority of the products of its Biochrom subsidiary. Harvard Bioscience is also restricted from making or promoting sales of the majority of the products of its Biochrom subsidiary to any person or entity other than Amersham Biosciences or its authorized sub-distributors. Harvard Bioscience has little or no control over Amersham Biosciences' marketing and sales activities or the use of its resources. Amersham Biosciences may fail to purchase sufficient quantities of products from Harvard Bioscience or perform appropriate marketing and sales activities. The failure by Amersham Biosciences to perform these activities could materially adversely affect Harvard Bioscience's business and growth prospects during the term of this agreement. In addition, Harvard Bioscience's inability to maintain its arrangement with Amersham Biosciences for product distribution could materially impede the growth of Harvard Bioscience's business and its ability to generate sufficient revenue. Harvard Bioscience's agreement with Amersham Biosciences may be terminated with 30 days notice under some circumstances, including in the event of a breach of a material term by Harvard Bioscience. This agreement has an initial term of three years, commencing August 1, 2001, after which it will automatically renew for an additional two years, unless terminated earlier by either party. In addition, the agreement may be terminated in accordance with its terms by either party upon 18 months prior written notice. While Harvard Bioscience believes its relationship with Amersham Biosciences is good, Harvard Bioscience cannot guarantee that the contract will be renewed or that Amersham Biosciences will aggressively market Harvard Bioscience's products in the future.

Accounting for goodwill may have a material adverse effect on Harvard Bioscience.

Harvard Bioscience has historically amortized goodwill purchased in its acquisitions on a straight-line basis ranging from five to 15 years. Upon the adoption of SFAS No. 142, "Goodwill and Other Intangible Assets," goodwill and intangible assets with indefinite lives from acquisitions after June 30, 2001 and existing goodwill and intangible assets with indefinite lives from acquisitions prior to July 1, 2001 that remain as of December 31, 2001 are no longer amortized, but instead are evaluated annually to determine whether any portion of the remaining balance of goodwill and indefinite lived intangibles may not be recoverable, or more frequently, if events or circumstances indicate there may be an impairment. If it is determined in the future that a portion of Harvard Bioscience's goodwill is impaired, Harvard Bioscience will be required to write off that portion of its goodwill which could have an adverse effect on net income for the period in which the write off occurs. At December 31, 2002, Harvard Bioscience had goodwill of $31.1 million, or 29% of its total assets.

Harvard Bioscience may be adversely affected by litigation or arbitration involving Paul D. Grindle.

On February 4, 2002, Paul D. Grindle, the former owner of Harvard Apparatus, Inc., initiated an arbitration proceeding against Harvard Bioscience and certain directors before JAMS in Boston, Massachusetts. Mr. Grindle's claims arise out of post-closing purchase price adjustments related to Harvard Bioscience's purchase of the assets and business of Harvard Apparatus by virtue of an Asset Purchase Agreement dated March 15, 1996 and certain related agreements. In the arbitration demand, Mr. Grindle sought the return of 1,563,851 shares of stock in Harvard Bioscience, or the disgorgement of the profits of Harvard Bioscience's sale of the stock, as well as compensatory damages and multiple damages and attorney's fees under Mass. Gen. Laws, chapter 93A. In a demand letter that was attached to the arbitration demand, Mr. Grindle asserted losses in the amount of $15 million, representing the value of the 1,563,851 shares of Harvard Bioscience's stock as of January 2, 2002. On October 30, 2002, the Company received a decision from the arbitrator that it has prevailed on all claims asserted against it and certain of its directors

in the arbitration action. Specifically, the Company received a written decision from the arbitrator granting its motion for summary disposition with respect to all claims brought against all parties in the action. We have filed a complaint in the Massachusetts Superior Court seeking to confirm the arbitrator's decision. Mr. Grindle filed a complaint in the Massachusetts Superior Court seeking to vacate the arbitrator's decision. These two matters have been consolidated and are pending. Harvard Bioscience believes that the defense of this challenge could involve significant litigation-related expenses, which could have an adverse effect on Harvard Bioscience's results of operations.

Genomic Solutions, Harvard Bioscience's recently acquired subsidiary, and its customers are subject to significant technological uncertainty which could result in reduced acceptance and demand for Genomic Solutions' products.

Genomic Solutions' products, and the research for which they are predominately used, involve several new and complex technologies. The instrumentation and software that comprise Genomic Solutions' systems have only recently been used in commercial applications. Scientists and technicians using Genomic Solutions' products require new technical skills and training and may experience difficulties with the products. As the products continue to be used, it is possible that previously unrecognized defects will emerge. Further, in order for Genomic Solutions to address new applications for its products, it may have to add features and design new software. If it is unable to validate or achieve the improvements in its products necessary for their continued successful commercialization, the demand for its products will suffer.

The outcomes of research based on technologies using Genomic Solutions' products will be subject to the risks of failure inherent in the development of new technologies. These risks include the possibility that:

- any products based on these technologies are ineffective, unreliable or unsafe, or otherwise fail;
- producers will be unable to manufacture the products on a large scale or market the products economically;
- proprietary rights of third parties will preclude the marketing of the products; and
- third parties will market equivalent or superior products.

The failure of research and development activities using Genomic Solutions' products to result in commercially viable products could reduce the demand for those products.

Customer, vendor and employee uncertainty about the effects of the merger with Genomic Solutions could harm the Company.

Harvard Bioscience's and Genomic Solutions' customers may, in response to the consummation of the merger, delay or defer purchasing decisions. Any delay or deferral in purchasing decisions by customers could adversely affect the business of the combined company. Similarly, Genomic Solutions' employees may experience uncertainty about their future role with the combined company until or after Harvard Bioscience executes its strategies with regard to Genomic Solutions employees. This may adversely affect the combined company's ability to attract and retain key Genomic Solutions management, sales, marketing and technical personnel.

A significant portion of the sales cycle for Harvard Bioscience's products is lengthy and it may spend significant time on sales opportunities with no assurance of success.

Harvard Bioscience's ability to obtain customers for its products, specifically for products made by Union Biometrica and Genomic Solutions, depends in significant part upon the perception that its products can help accelerate drug discovery and development efforts. The sales cycle for its systems is typically between three and six months due to the education effort that is required. Harvard Bioscience's sales efforts often require sales presentations to various departments within a single customer, including research and development personnel and key management. In addition, Harvard Bioscience may be required to negotiate agreements containing terms unique to each customer. Harvard Bioscience may expend substantial funds and management effort with no assurance that it will successfully sell its systems or products to the customer.

Ethical concerns surrounding the use of genomic information and misunderstanding of the nature of its business could adversely affect the Company's ability to develop and sell its existing products and new products.

Genetic screening of humans is used to determine individual predisposition to medical conditions. Genetic screening has raised ethical issues regarding the confidentiality and appropriate uses of the resulting information. Government authorities may regulate or prohibit the use of genetic screening to determine genetic predispositions to medical conditions. Additionally, the public may disfavor and reject the use of genetic screening.

Genomic and proteomic research is used to determine the role of genes and proteins in living organisms. The Company's products are designed and used for genomic and proteomic research and drug discovery and cannot be used for genetic screening without significant modification. However, it is possible that government authorities and the public may fail to distinguish between the genetic screening of humans and genomic and proteomic research. If this occurs, the Company's products and the processes for which its products are used may be subjected to government regulations intended to affect genetic screening. Further, if the public fails to distinguish between the two fields, it may pressure the Company's customers to discontinue the research and development initiatives for which the Company's products are used.

The merger with Genomic Solutions may fail to qualify as a reorganization for federal income tax purposes, resulting in the recognition of taxable gain or loss in respect of Harvard Bioscience's treatment of the merger as a taxable sale.

Both Harvard Bioscience and Genomic Solutions intend the merger to qualify as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code of 1986, as amended. Although the Internal Revenue Service, or IRS, will not provide a ruling on the matter, Genomic Solutions has obtained a legal opinion from its tax counsel that the merger will constitute a reorganization for federal income tax purposes. This opinion does not bind the IRS or prevent the IRS from adopting a contrary position. If the merger fails to qualify as a reorganization, the merger would be treated as a deemed taxable sale of assets by Genomic Solutions for an amount equal to the merger consideration received by Genomic Solutions' stockholders plus any liabilities assumed by Harvard Bioscience. As successor to Genomic Solutions, Harvard Bioscience would be liable for any tax incurred by Genomic Solutions as a result of this deemed asset sale.

Failure to raise additional capital or generate the significant capital necessary to expand its operations and invest in new products could reduce Harvard Bioscience's ability to compete and result in lower revenue.

Harvard Bioscience anticipates that its existing capital resources, including debt and equity, will enable it to maintain currently planned operations for the foreseeable future. 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, Harvard Bioscience may need additional funding sooner than anticipated. Harvard Bioscience's inability to raise capital could seriously harm its business and product development efforts.

If Harvard Bioscience raises additional funds through the sale of equity or convertible debt or equity-linked securities, existing percentages of ownership in the company will be reduced. In addition, these transactions may dilute the value of outstanding Harvard Bioscience stock. Harvard Bioscience may issue securities that have rights, preferences and privileges senior to its common stock. If it raises additional funds through collaborations or licensing arrangements, Harvard Bioscience may relinquish rights to certain of its technologies or products, or grant licenses to third parties on terms that are unfavorable. Harvard Bioscience may be unable to raise additional funds on acceptable terms. If future financing is not available or is not available on acceptable terms, Harvard Bioscience may have to curtail operations or change its business strategy.

Harvard Bioscience's 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 more productive tasks.

The market price of Harvard Bioscience's common stock has experienced significant fluctuations since its initial public offering in December 2000 and may become volatile and could decline in the future, perhaps substantially, in response to various factors, many of which are beyond its control, including:

- technological innovations by competitors or in competing technologies,
- revenues and operating results fluctuating or failing to meet the expectations of securities analysts or investors in any quarter,

- termination or suspension of equity research coverage by securities' analysts,
- comments of securites' analysts and mistakes by or misinterpretation of comments from analysts,
- downward revisions in securities analysts' estimates or management guidance,
- investment banks and securities' analysts may themselves be subject to suits that may adversely affect the perception of the market,
- conditions or trends in the biotechnology and pharmaceutical industries,
- announcements of significant acquisitions or financings or changes in strategic partnerships, and
- a decrease in the demand for Harvard Bioscience's common stock.

In addition, the stock market in general, and the Nasdaq National Market and the biotechnology industry market in particular, have experienced significant price and volume fluctuations that at times have been unrelated or disproportionate to the operating performance of those companies. These broad market and industry factors may seriously harm the market price of Harvard Bioscience's common stock, regardless of its 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 Harvard Bioscience could result in substantial costs, potential liabilities and the diversion of management's attention and resources.

Provisions of Delaware law and of Harvard Bioscience's charter and bylaws may make a takeover more difficult which could cause its stock price to decline.

Provisions in Harvard Bioscience's 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. Harvard Bioscience also has 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 Harvard Bioscience's management and board of directors. Such provisions may also limit the price that investors might be willing to pay for shares of Harvard Bioscience's common stock in the future.

An active trading market for Harvard Bioscience's common stock may not be sustained.

Although Harvard Bioscience's common stock is quoted on the Nasdaq National Market, an active trading market for the shares may not be sustained.

Future issuance of preferred stock may dilute the rights of Harvard Bioscience's common stockholders.

Harvard Bioscience's 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 be paid on Harvard Bioscience's common stock.

Harvard Bioscience intends to retain all of its earnings to finance the expansion and development of its business and does not anticipate paying any cash dividends in the foreseeable future. As a result, capital appreciation, if any, of Harvard Bioscience's common stock will be a stockholder's sole source of gain for the foreseeable future.

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

We manufacture and test the majority of products in research centers in the United States, the United Kingdom, Germany and Austria. We sell our products globally through our direct catalog sales, 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. Historically, we have not hedged our foreign currency position. Currently, we attempt to manage foreign currency risk through the matching of assets and liabilities. However, as our sales expand internationally, we plan to evaluate currency risks and we may enter into foreign exchange contracts from time to time to mitigate foreign currency exposure.

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

The consolidated financial statements filed as part of this Annual Report on Form 10-K are listed under Item 15 below.

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

None.

PART III

Item 10. ***Directors and Executive Officers of Registrant.***

Incorporated by reference to the Company's definitive Proxy Statement to be filed pursuant to Regulation 14A, in connection with the 2003 Annual Meeting of Stockholders. Information concerning executive officers of the Registrant is included in Part I of this Report as Item 4.A.

Item 11. ***Executive Compensation.***

Incorporated by reference to the Company's definitive Proxy Statement to be filed pursuant to Regulation 14A, in connection with the 2003 Annual Meeting of Stockholders.

Item 12. ***Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.***

Incorporated by reference to the Company's definitive Proxy Statement to be filed pursuant to Regulation 14A, in connection with the 2003 Annual Meeting of Stockholders.

Item 13. ***Certain Relationships and Related Transactions.***

Incorporated by reference to the Company's definitive Proxy Statement to be filed pursuant to Regulation 14A, in connection with the 2003 Annual Meeting of Stockholders.

Item 14. Controls and Procedures.

(a) Evaluation of disclosure controls and procedures.

As required by new Rule 13a-15 under the Securities Exchange Act of 1934, within the 90 days prior to the date of this report, we carried out an evaluation under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures. In designing and evaluating our disclosure controls and procedures, we and our management recognize that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and our management necessarily was required to apply its judgment in evaluating and implementing possible controls and procedures. Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that they believe that, as of the date of completion of the

evaluation, our disclosure controls and procedures were reasonably effective to ensure that information required to be disclosed by us in the reports 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. In connection with the new rules, we will continue to review and document our disclosure controls and procedures, including our internal controls and procedures for financial reporting, on an ongoing basis, and may from time to time make changes aimed at enhancing their effectiveness and to ensure that our systems evolve with our business.

(b) Changes in internal controls.

None.

PART IV

Item 15. ***Exhibits, Financial Statement Schedules, and Reports on Form 8-K.***

(a) (1) Financial Statements.

The following documents are filed as part of this report:

1. Independent Auditors' Report.
2. Consolidated Balance Sheets as of December 31, 2002 and 2001.
3. Consolidated Statements of Operations for the years ended December 31, 2002, 2001 and 2000.
4. Consolidated Statements of Stockholders' Equity (Deficit) and Comprehensive Income (Loss) for the years ended December 31, 2002, 2001 and 2000.
5. Consolidated Statements of Cash Flows for the years ended December 31, 2002, 2001 and 2000.
6. Notes to Consolidated Financial Statements.

(a) (2) Consolidated Financial Statement Schedules.

None required.

(a) (3) Exhibits.

The following exhibits are filed as part of this report. Where such filing is made by incorporation by reference to a previously filed document, such document is identified.

(1)2.1	Asset Purchase Agreement dated March 2, 1999 by and among Biochrom Limited and Pharmacia Biotech Limited and Pharmacia & Upjohn, Inc. and Harvard Apparatus, Inc.
(1)2.2	Asset Purchase Agreement dated July 14, 2000 by and between Harvard Apparatus, Inc., AmiKa Corporation and Ashok Shukla.
(2)2.3	Agreement and Plan of Merger dated as of May 31, 2001 by and among Harvard Bioscience, Inc., Union Biometrica, Inc. and Union Biometrica, Inc.
(3)2.4	Agreement and Plan of Merger by and among Harvard Bioscience, Inc., HAG Acq. Corp. and Genomic Solutions, Inc., dates as of July 17, 2002 (excluding schedules and exhibits which Harvard Bioscience, Inc. agrees to furnish supplementally to the Securities and Exchange Commission upon request).

(1)3.1	Second Amended and Restated Certificate of Incorporation of the Registrant.
(1)3.2	Amended and Restated By-laws of the Registrant.
(1)4.1	Specimen certificate for shares of Common Stock, $0.01 par value, of the Registrant.
(1)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.
(1)10.1	Harvard Apparatus, Inc. 1996 Stock Option and Grant Plan.
(1)10.2	Harvard Bioscience, Inc. 2000 Stock Option and Incentive Plan.
(1)10.3	Harvard Bioscience, Inc. Employee Stock Purchase Plan.
+(4)10.4	Distribution Agreement dated August 1, 2001 by and between Biochrom Limited and Amersham Pharmacia Biotech UK Limited.
(1)10.5	Employment Agreement between Harvard Bioscience and Chane Graziano.
(1)10.6	Employment Agreement between Harvard Bioscience and David Green.
(1)10.8	Form of Director Indemnification Agreement.
(4)10.9	Lease Agreement dated January 3, 2002 between Seven October Hill LLC and Harvard Bioscience, Inc.
(1)10.10	Lease of Unit 22 Phase I Cambridge Science Park, Milton Road, Cambridge dated March 3, 1999 between The Master Fellows and Scholars of Trinity College Cambridge, Biochrom Limited and Harvard Apparatus, Inc.
(3)10.11	Employment Agreement between Genomics Solutions and Jeff Williams
(5)10.12	Lease between Genomic Solutions Inc. and Highland Industrial Properties, L.L.C., dated August 7, 1997
(6)10.13	Fourth Addendum to Lease between Genomic Solutions Inc. and Highland Industrial Properties, L.L.C., dated May 17, 2000
(7)10.14	Fifth Addendum to Lease between Genomic Solutions Inc. and Highland Industrial Properties, L.L.C., dated September 10, 2001
(7)10.15	Lease between Cartesian Technologies, Inc. and Airport Industrial Complex, dated February 5, 2002
10.16	Lease between Genomic Solutions Inc. and County Road Properties, dated March 8, 2003 and first Addendum thereto, dated March 10, 2003.
21.1	Subsidiaries of the Registrant.
23.1	Consent of KPMG LLP.

99.1	Sarbanes-Oxley Act of 2002, Section 906 – Certification of Chief Executive Officer
99.2	Sarbanes-Oxley Act of 2002, Section 906 – Certification of Chief Financial Officer

(1) Previously filed as an exhibit to the Company's Registration Statement on Form S-1 (File No. 333-45996) and incorporated by reference thereto.

(2) Previously filed as an exhibit to the Company's report on Form 8-K/A (filed August 14, 2001 and incorporated by reference thereto.)

(3) Previously filed as an exhibit to the Company's Registration Statement on Form S-4 (File No. 333-98927) and incorporated by reference thereto.

(4) Previously filed as an exhibit to the Company's Annual Report on Form 10-K (filed April 1, 2002 and incorporated by reference thereto.)

(5) Previously filed as an exhibit to Genomic Solutions Inc.'s Registration Statement on Form S-1, as amended (File No. 333-30246) and incorporated by reference thereto.

(6) Previously filed as an exhibit to Genomic Solutions Inc.'s Annual Report on Form 10-K (filed April 2, 2001 and incorporated by reference thereto.)

(7) Previously filed as an exhibit to Genomic Solutions Inc.'s Annual Report on Form 10-K (filed April 1, 2002 and incorporated by reference thereto.)

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

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

(b) Reports on Form 8-K.

1. Form 8-K filed July 19, 2002 – reporting the signing of the Agreement and Plan of Merger among the Company, HAG Acq. Corp. (a wholly-owned subsidiary of the Company) and Genomic Solutions Inc.
2. Form 8-K filed August 15, 2002 – reporting the submission to the Securities and Exchange Commission the certification required by Section 906 of the Sarbanes-Oxley Act of 2002.
3. Form 8-K filed September 23, 2002 – reporting the filing of a prospectus supplement to the Company's prospectus dated September 17, 2002.
4. Form 8-K filed November 7, 2002 – reporting the completion of the Company's acquisition of Genomic Solutions, Inc. pursuant to an Agreement and Plan of Merger dated July 17, 2002.
5. Form 8-K filed March 3, 2003 – reporting the signing of an Asset Purchase Agreement among Genomic Solutions Inc, a wholly-owned subsidiary of the Company, and Genomic Instrumentation Services, Inc., d/b/a/ GeneMachines.
6. Form 8-K filed March 25, 2003 – reporting the completion of the aquisition of Genomic Instrumentation Services, Inc., d/b/a GeneMachines.

INDEPENDENT AUDITORS' REPORT

The Board of Directors
Harvard Bioscience, Inc.:

We have audited the accompanying consolidated balance sheets of Harvard Bioscience, Inc. and subsidiaries (the "Company") as of December 31, 2002 and 2001, and the related consolidated statements of operations, stockholders' equity (deficit) and comprehensive income (loss), and cash flows for each of the years in the three-year period ended December 31, 2002. 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 auditing standards generally accepted in the United States of America. 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 consolidated financial position of Harvard Bioscience, Inc. and subsidiaries as of December 31, 2002 and 2001, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2002 in conformity with accounting principles generally accepted in the United States of America.

As discussed in Note 2 to the consolidated financial statements, effective January 1, 2002, the Company fully adopted the provisions of Statement of Financial Accounting Standards ("SFAS") 142, "Goodwill and Other Intangible Assets" as required for goodwill and intangible assets resulting from business combinations consummated prior to June 30, 2001.

/s/ KPMG LLP

March 3, 2003, except as to Note 22,
which is as of March 12, 2003
Boston, Massachusetts

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	December 31,	
	2002	2001
Current assets:		
Cash and cash equivalents (note 7)	$ 15,313,280	$ 29,385,455
Trade accounts receivable, net of reserve for uncollectible accounts of $144,058 and $97,597 at December 31, 2002 and 2001, respectively, (note 19)	13,916,563	6,490,189
Other receivable and other assets	478,566	1,114,142
Inventories (note 5)	15,467,268	5,972,708
Catalog costs	282,690	243,878
Prepaid expenses	1,882,943	700,227
Deferred tax asset (note 13)	1,072,943	846,291
Total current assets	48,414,253	44,752,890
Property, plant and equipment, net (notes 6 and 10)	5,918,029	3,505,742
Other assets:		
Catalog costs, less current portion	—	60,225
Deferred tax asset (note 13)	668,902	256,131
Goodwill and other intangibles, net of accumulated amortization of $2,289,554 and$2,743,908 at December 31, 2002 and 2001, respectively (notes 3 and 4)	51,345,704	33,194,508
Other assets (note 12)	1,236,613	592,275
Total other assets	53,548,824	34,103,139
Total assets	$ 107,583,501	$ 82,361,771
Current liabilities:		
Current installments of long-term debt (note 7)	$ 699,005	$ 3,894,088
Trade accounts payable	5,524,688	3,100,414
Deferred revenue	1,458,703	599,535
Accrued income taxes payable	1,150,642	1,442,311
Accrued expenses (note 17)	7,362,343	2,912,201
Other liabilities	403,244	207,339
Total current liabilities	16,598,625	12,155,888
Long-term debt, less current installments (note 7)	399,965	637,153
Deferred income tax liability (note 13)	930,251	2,756,861
Other liabilities	1,273,433	—
Total long-term liabilities	2,603,649	3,394,014
Total liabilities	19,202,274	15,549,902
Commitments and contingencies (notes 10, 14, 18 and 21)		
Stockholders' equity (notes 8,9,14 and 20):		
Common stock, par value $.01 per share, 80,000,000 shares authorized; 34,692,050 and 31,339,373 shares issued and 30,031,266 and 26,678,589 shares outstanding at December 31, 2002 and 2001	346,921	313,394
Additional paid-in-capital – stock options	6,208,515	5,837,474
Additional paid-in-capital – common stock	165,413,193	147,455,103
Accumulated deficit	(82,850,958)	(83,588,285)
Accumulated other comprehensive income (loss)	894,431	(789,134)
Notes receivable	(963,130)	(1,748,938)
Treasury stock, 4,660,784 common shares, at cost	(667,745)	(667,745)
Total stockholders' equity	88,381,227	66,811,869
Total liabilities and stockholders' equity	$ 107,583,501	$ 82,361,771

See accompanying notes to consolidated financial statements.

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2002	2001	2000
Product revenues	$ 56,343,610	$ 40,005,442	$ 30,574,800
Research revenues	1,036,772	862,945	—
Total revenues (notes 15 and 19)	57,380,382	40,868,387	30,574,800
Costs and expenses			
Cost of product revenues	28,823,765	20,179,762	15,833,338
General and administrative expense	9,187,125	7,000,638	5,181,299
Restructuring and severance related expense	783,824	459,925	—
Sales and marketing expense	8,435,145	4,840,468	3,185,340
Research and development expense	4,145,997	3,178,591	1,532,896
Stock compensation expense	1,269,397	2,678,743	14,675,299
In-process research and development expense (note 3)	1,551,400	5,447,000	—
Amortization of goodwill and other intangibles	1,542,759	1,743,821	604,191
Operating income (loss)	1,640,970	(4,660,561)	(10,437,563)
Other income (expense):			
Foreign currency gain (loss)	402,373	(99,566)	(324,153)
Common stock warrant interest expense (note 9)	—	—	(36,884,915)
Interest expense	(104,175)	(6,869)	(916,210)
Interest income	445,674	1,358,554	159,849
Amortization of deferred financing costs	—	—	(152,683)
Other	(36,497)	(10,023)	45,291
Other income (expense), net	707,375	1,242,096	(38,072,821)
Income (loss) before income taxes	2,348,345	(3,418,465)	(48,510,384)
Income taxes (note 13)	1,611,018	1,789,953	1,359,401
Net income (loss)	737,327	(5,208,418)	(49,869,785)
Accrual of preferred stock dividends (note 8)	—	—	(136,151)
Net income (loss) available to common shareholders	$ 737,327	$ (5,208,418)	$ (50,005,936)
Income (loss) per share (note 16):			
Basic	$ 0.03	$ (0.20)	$ (6.25)
Diluted	$ 0.03	$ (0.20)	$ (6.25)
Weighted average common shares:			
Basic	27,090,054	25,784,852	8,005,386
Diluted	27,597,564	25,784,852	8,005,386

See accompanying notes to consolidated financial statements.

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT) AND COMPREHENSIVE INCOME (LOSS)
YEARS ENDED DECEMBER 31, 2002, 2001 AND 2000

	Number Of shares Outstanding	Common Stock	Additional Paid-in Capital - Stock Options	Additional Paid-in Capital - Common Stock	Accumulated Deficit	Accumulated Other Comprehensive Income (loss)	Notes Receivable	Treasury Stock	Total Stockholders' Equity (Deficit)
Balance at December 31, 1999	10,259,410	$ 102,604	$ 3,283,164	—	$ (28,373,931)	$ (54,690)	—	$ (667,745)	$ (25,710,598)
Preferred stock dividends	—	—	—	—	(136,151)	—	—	—	(136,151)
Issuance of common stock									
Initial public offering	6,250,000	62,500	—	44,731,292	—	—	—	—	44,793,792
Preferred stock conversion	955,935	9,559	—	990,441	—	—	—	—	1,000,000
Common stock warrants	8,509,333	85,093	—	67,994,187	—	—	—	—	68,079,280
Stock option exercises	3,467,954	34,670	(13,322,514)	14,878,752	—	—	(1,587,939)	—	2,969
Stock compensation expense	—	—	14,675,299	—	—	—	—	—	14,675,299
Comprehensive loss:									
Net loss	—		—	—	(49,869,785)	—	—	—	(49,869,785)
Translation adjustments	—		—	—	—	(499,883)	—	—	(499,883)
Total comprehensive loss									(50,369,668)
Balance at December 31, 2000	29,442,632	$ 294,426	$ 4,635,949	$ 128,594,672	$ (78,379,867)	$ (554,573)	$ (1,587,939)	$ (667,745)	$ 52,334,923
Issuance of common stock									
Underwriters overallotment	937,500	9,375	—	6,964,735	—	—	—	—	6,974,110
Business acquisitions	659,282	6,593	2,781,222	7,140,024	—	—	—	—	9,927,839
Stock option exercises	288,075	2,881	(4,419,439)	4,653,564	—	—	—	—	237,006
Stock purchase plan	11,884	119	—	102,108	—	—	—	—	102,227
Stock compensation expense	—	—	2,678,743	—	—	—	—	—	2,678,743
Accrued interest shareholder note			160,999				(160,999)		—
Comprehensive loss:									
Net loss	—	—	—	—	(5,208,418)	—	—	—	(5,208,418)
Translation adjustments	—	—	—	—	—	(234,561)	—	—	(234,561)
Total comprehensive loss									(5,442,979)
Balance at December 31, 2001	31,339,373	$ 313,394	$ 5,837,474	$ 147,455,103	$ (83,588,285)	$ (789,134)	$ (1,748,938)	$ (667,745)	$ 66,811,869
Issuance of common stock									
Business acquisitions	3,195,083	31,951	—	16,766,165	—	—	—	—	16,798,116
Stock option exercises	128,355	1,284	(998,857)	1,088,450	—	—	—	—	90,877
Stock purchase plan	29,239	292	—	103,475	—	—	—	—	103,767
Stock compensation expense	—	—	1,269,397	—	—	—	—	—	1,269,397
Shareholder note									
Accrued interest	—	—	100,501	—	—	—	(100,501)	—	—
Note repayment	—	—	—	—	—	—	886,309	—	886,309
Comprehensive income:									
Net income	—	—	—	—	737,327	—	—	—	737,327
Translation adjustments	—	—	—	—	—	2,526,789	—	—	2,526,789
Minimum pension liability adjustment, net of tax	—	—	—	—	—	(843,224)	—	—	(843,224)
Total comprehensive income									2,420,892
Balance at December 31, 2002	34,692,050	$ 346,921	$ 6,208,515	$ 165,413,193	$ (82,850,958)	$ 894,431	$ (963,130)	$ (667,745)	$ 88,381,227

See accompanying notes to consolidated financial statements.

HARVARD BIOSCIENCE, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2002	2001	2000
Cash flows from operating activities:			
Net income (loss)	$ 737,327	$ (5,208,418)	$ (49,869,785)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Common stock warrant interest expense	—	—	36,884,915
Stock compensation expense	1,269,397	2,678,743	14,675,299
In-process research and development expense	1,551,400	5,447,000	—
Impairment loss on write down of intangible assets	—	162,090	—
Depreciation	1,114,125	622,090	393,357
Amortization of catalog costs	352,659	605,108	340,037
Gain on sale of fixed assets	—	(36)	(2,207)
Provision for bad debts	23,411	8,978	2,430
Amortization of goodwill and other intangibles	1,542,759	1,743,821	604,191
Amortization and write-off of deferred financing costs	—	—	152,683
Deferred income taxes	(555,462)	193,628	927,665
Changes in operating assets and liabilities, net of effects of business acquisitions:			
Increase in accounts receivable	(3,739,516)	(691,318)	(737,414)
(Increase) decrease in other receivables	1,106,591	37,433	(1,045,776)
(Increase) decrease in inventories	1,312,088	(637,426)	(737,737)
(Increase) decrease in prepaid expenses and other assets	(904,888)	11,272	85,555
(Increase) decrease in other assets	183,596	396,962	(108,492)
Increase (decrease) in trade accounts payable	(628,622)	(47,727)	324,672
Increase (decrease) in accrued income taxes payable	(486,034)	631,716	(225,672)
Increase (decrease) in accrued expenses	(1,353,735)	234,614	442,794
Increase (decrease) in deferred revenue	216,593	(1,204,386)	—
Increase (decrease) in other liabilities	(942,225)	(889,113)	39,395
Net cash provided by operating activities	799,464	4,095,032	2,145,810
Cash flows from investing activities:			
Additions to property, plant and equipment	(1,306,730)	(1,838,851)	(629,518)
Additions to catalog costs	(324,108)	(358,402)	(673,811)
Proceeds from sales of fixed assets	113	5,626	2,658
Acquisition of businesses, net of cash acquired	(10,735,975)	(17,984,128)	(4,031,625)
Net cash used in investing activities	(12,366,700)	(20,175,755)	(5,332,296)
Cash flows from financing activities:			
Proceeds from short-term debt	—	—	1,600,000
Repayments of short-term debt	—	(3,800,000)	
Proceeds from long-term debt	—	4,325,519	2,000,000
Repayments of long-term debt	(3,744,850)	(507,395)	(7,859,328)
Dividends paid	—	—	(171,072)
Net proceeds from issuance of preferred stock	—	—	—
Redemption of preferred stock	—	—	(1,500,000)
Net proceeds from issuance of common stock	600,374	5,880,318	46,250,994
Net cash provided (used) by financing activities	(3,144,476)	9,698,442	36,520,594
Effect of exchange rate changes on cash	639,537	(49,258)	86,833
Increase (decrease) in cash and cash equivalents	(14,072,175)	(6,431,539)	33,420,941
Cash and cash equivalents at the beginning of year	29,385,455	35,816,994	2,396,053
Cash and cash equivalents at the end of year	$ 15,313,280	$ 29,385,455	$ 35,816,994
Non cash investing and financing activity:			
Common stock and options issued for acquisition	$ 17,278,689	$ 9,927,839	—
Supplemental disclosures of cash flow information:			
Cash paid for interest	$ 111,812	$ 6,600	$ 1,008,673
Cash paid for income taxes	$ 2,087,454	$ 729,886	$ 1,571,192

See accompanying notes to consolidated financial statements.

(1) Organization

On March 15, 1996, HAI Acquisition Corp. and its subsidiary, Guell Limited, purchased certain assets and assumed certain liabilities of the former Harvard Apparatus, Inc. and its subsidiary in the United Kingdom, Harvard Apparatus, Ltd. (the "Purchase") for cash consideration of approximately $3,342,000 (including $342,000 of acquisition related expenses). After the date of the Purchase, HAI Acquisition Corp. and Guell Limited legally changed their names to Harvard Apparatus, Inc. and Harvard Apparatus, Ltd., respectively. On November 29, 2000, Harvard Apparatus, Inc. changed its name to Harvard Bioscience, Inc.

We are global developer, manufacturer and marketer of a broad range of specialized products, primarily scientific instruments, used to accelerate drug discovery research at pharmaceutical and biotechnology companies, universities and government laboratories worldwide. We sell our products to thousands of researchers in over 100 countries through our direct sales force, our 1,000 page catalog (and various other specialty catalogs), and through distributors, including Amersham Biosciences and PerkinElmer. We have sales and manufacturing operations in the United States, the United Kingdom, Germany, Austria and Belgium with sales facilities in Japan, 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 (the "Company"). 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 of America requires the use of management's estimates. Such estimates include the determination and establishment of certain accruals and provisions, including those for inventory obsolescence, catalog cost amortization periods, tax and reserves for bad debts. In addition, certain estimates are required in order to determine the value of assets and in-process research and development associated with acquisitions. Estimates are also required to evaluate the recoverability of existing long lived and intangible assets, including goodwill. Actual results could differ 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) Inventories

Inventories are stated at the lower of cost or market. Cost is determined using the first-in first-out (FIFO) method.

(e) Property, Plant and Equipment

Property, plant and equipment are stated at cost. Equipment under capital leases is stated at the present value of the minimum lease payments at the lease agreement date. Property, plant and equipment is 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	3-7 years
Furniture and fixtures	5-10 years
Automobiles	4-6 years

Property and equipment held under capital leases and leasehold improvements are amortized straight line over the shorter of the lease term or estimated useful life of the asset. Amortization of assets held under capital leases is included with depreciation expense.

(f) 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). Costs of drawings and design that were acquired at the purchase on March 15, 1996 are being amortized over their estimated useful life of seven years.

(g) 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.

(h) Foreign Currency Translation

All assets and liabilities of the Company's foreign subsidiaries are translated at exchange rates in effect at year-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 (deficit) in accumulated other comprehensive income (loss) in the consolidated balance sheets. Effective January 1, 2002, certain debt between the Company and its foreign subsidiaries is being treated as a long-term investment rather than as debt with repayment expected in the foreseeable future as previously treated. For the year ended December 31, 2002, the Company did not record a foreign currency gain adjustment in its income statement related to this intercompany debt. Instead the Company recorded the effect of the exchange rate fluctuation as a currency translation adjustment, in accumulated other comprehensive income (loss) in stockholders' equity (deficit).

(i) Stock Based Compensation

The Company applies the intrinsic-value-based method of accounting prescribed by Accounting Principles Board (APB) Opinion No. 25, *Accounting for Stock Issued to Employees,* and related interpretations including Financial Accounting Standards Board ("FASB") Interpretation No. 44, *Accounting for Certain Transactions involving Stock Compensation, an interpretation of APB Opinion*

No. 25, issued in March 2000, to account for its fixed-plan stock options. Under this method, compensation expense is recorded, using the graded method, on the date of grant only if the current market price of the underlying stock exceeded the exercise price. Statement of Financial Accounting Standards ("SFAS") No. 148, *Accounting for Stock-Based Compensation Transition and Disclosure*, an amendment of FASB Statement No. 123, provides alternative methods of transition for a voluntary change to the fair-value-based method of accounting for stock-based employee compensation plans under SFAS No. 123, *Accounting for Stock Based Compensation,* and amends the disclosure requirements of SFAS No. 123. As allowed by SFAS No. 148 and 123, the Company has elected to continue to apply the intrinsic-value-based method of accounting described above, and has adopted only the disclosure requirements of SFAS No. 148. The following table illustrates the effect on net income (loss) if the fair-value-based method had been applied to all outstanding awards in each period.

	2002	2001	2000
Net income(loss) available to common stockholders, as reported	$ 737,327	$ (5,208,418)	$ (50,005,936)
Add: stock-based employee compensation expense included in reported net income, net of tax	1,222,076	2,622,726	14,458,611
Deduct: total stock-based employee compensation expense determined under fair-value based method for all rewards, net of tax	4,794,772	3,124,647	14,610,415
Pro forma net loss	$ (2,835,369)	$ (5,710,339)	$ (50,157,740)
Basic net income (loss) per share	$ 0.03	$ (0.20)	$ (6.25)
Pro forma basic net loss per share	$ (0.10)	$ (0.22)	$ (6.27)
Diluted net income (loss) per share	$ 0.03	$ (.020)	$ (6.25)
Pro forma diluted net loss per share	$ (0.10)	$ (0.22)	$ (6.27)

(j) Income (Loss) Per Share

Basic income (loss) per share is computed by dividing the net income (loss) available to common shareholders by the weighted average number of shares of common stock outstanding during the periods presented. The computation of diluted income per share is similar to the computation of basic income 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. For 2001 and 2000, diluted loss per share is the same as basic loss per share as the inclusion of common stock equivalents would be antidilutive.

(k) Comprehensive Income (Loss)

The Company follows SFAS No. 130, *Reporting Comprehensive Income (Loss).* SFAS No. 130 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 (loss), which encompasses, net of tax, net income (loss), foreign currency translation adjustments and a pension minimum additional liability adjustment, net of tax, in the consolidated statements of stockholders' equity (deficit). As of December 31, 2002, accumulated comprehensive income consisted of cumulative foreign currency translation adjustments of $1,737,655 and a minimum pension liability adjustment of $(843,224). As of December 31, 2001, accumulated comprehensive loss of $(789,134) consisted entirely of cumulative foreign currency translation adjustments.

(l) Revenue Recognition

The Company recognizes revenue from product sales at the time of shipment or installation when applicable. Product returns are estimated and provided for based on historical experience. For long- term collaboration agreements, revenue is recognized based on the costs incurred, which are included as part of research and development expense, as the related work on the contracts progress.

(m) Goodwill and Other Intangibles

Goodwill represents the excess of costs over fair value of assets of businesses acquired. The Company fully adopted the provisions of SFAS No. 142, *Goodwill and Other Intangible Assets,* as of January 1, 2002. Goodwill and intangible assets acquired in a purchase business combination and determined to have an indefinite useful life are not amortized, but instead 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 SFAS No. 142. An impairment loss is recognized to the extent that the carrying amount exceeds the asset's fair value. SFAS No. 142 also requires that intangible assets with estimable useful lives be amortized over their respective estimated useful lives to their estimated residual values, and reviewed for impairment in accordance with SFAS No. 144, *Accounting for Impairment or Disposal of Long-Lived Assets*.

In connection with SFAS No. 142's transitional goodwill impairment evaluation, the Statement required the Company to perform an assessment of whether there was an indication that goodwill is impaired as of the date of adoption. To accomplish this, the Company was required to identify its reporting units and determine the carrying value of each reporting unit by assigning the assets and liabilities, including the existing goodwill and intangible assets, to those reporting units as of January 1, 2002. The Company was required to determine the fair value of each reporting unit and compare it to the carrying amount of the reporting unit within six months of January 1, 2002. To the extent the carrying amount of a reporting unit exceeded the fair value of the reporting unit, the Company would be required to perform the second step of the transitional impairment test, as this is an indication that the reporting unit goodwill may be impaired. The second step was not required as the Company identified one reporting unit, the fair value of which exceeded its carrying value. The Company has chosen the fourth quarter to perform its annual impairment test.

Prior to the adoption of SFAS No. 142, goodwill was amortized on a straight-line basis over the expected periods to be benefited, generally 5 to 15 years, and assessed for recoverability by determining whether the amortization of the goodwill balance over its remaining life could be recovered through undiscounted future operating cash flows of the acquired operation. All other intangible assets were amortized on a straight-line basis generally from 10 to 15 years. The amount of goodwill and other intangible asset impairment, if any, was measured based on projected discounted future operating cash flows using a discount rate reflecting the Company's average cost of funds.

(n) Impairment of Long-Lived Assets and Long-Lived Assets to be Disposed Of

SFAS No. 144, *Accounting for Impairment or Disposal of Long-Lived Assets*, provides a single accounting model for long-lived assets to be disposed of. SFAS No. 144 also changes the criteria for classifying an asset as held for sale; and broadens the scope of businesses to be disposed of that qualify for reporting as discontinued operations and changes the timing of recognizing losses on such operations. The Company adopted SFAS No. 144 on January 1, 2002. The adoption of SFAS No. 144 did not affect the Company's consolidated financial statements.

In accordance with SFAS No. 144, long-lived assets, such as property, plant, and equipment, and purchased intangibles subject to amortization, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized by the amount by which the carrying amount of the asset exceeds the fair value of the asset. Assets to be disposed of would be separately presented in the consolidated balance sheet and reported at the lower of the carrying amount or fair value less costs to sell, and are no longer depreciated. The assets and liabilities of a disposed group classified as held for sale would be presented separately in the appropriate asset and liability sections of the balance sheet.

Prior to the adoption of SFAS No. 144, the Company accounted for the impairment of long-lived assets in accordance with SFAS No. 121, *Accounting for Impairment of Long-Lived Assets and for Long-Lived Assets to be Disposed Of*.

(o) Fair Value of Financial Instruments

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

(p) Recently Issued Accounting Pronouncements

In June 2001, SFAS No. 143, *"Accounting for Asset Retirement Obligations"* was issued. SFAS No. 143 applies to legal obligations associated with the retirement of certain tangible long-lived assets. This statement is effective for fiscal years beginning after June 15, 2002. Accordingly, the Company will adopt SFAS No. 143 on January 1, 2003. The Company does not expect that the adoption of this statement will have a material impact on consolidated results of operations or financial position.

In May 2002, SFAS No. 145, *Rescission of FASB Statements No. 4, 44, and 64, Amendment of FASB Statement No. 13, and Technical Corrections,* was issued. SFAS No. 145 which is effective for fiscal years beginning after May 15, 2002 rescinds SFAS No. 4, *Reporting Gains and Losses from Extinguishment of Debt*, SFAS No. 64, *Extinguishments of Debt Made to Satisfy Sinking-Fund Requirements*, and SFAS No. 44, *Accounting for Intangible Assets of Motor Carriers*. This Statement also amends SFAS No. 13, *Accounting for Leases*, to eliminate an inconsistency between the required accounting for sale-leaseback transactions. This Statement also amends other existing authoritative pronouncements to make various technical corrections, clarify meanings, or describe their applicability under changed conditions. The Company does not believe the impact of adopting SFAS No. 145 on January 1, 2003 will have a material impact on its consolidated results of operations or financial position.

In July 2002, SFAS No. 146, *Accounting for Costs Associated with Exit or Disposal Activities*, was issued. SFAS No. 146 is based on the fundamental principle that a liability for a cost associated with an exit or disposal activity should be recorded when it (1) is incurred, and (2) can be measured at fair value.

SFAS No. 146 is effective for exit and disposal activities initiated after December 31, 2002. The Company does not believe that the adoption of this Statement on January 1, 2003 will have a material impact on its consolidated results of operations or financial position.

In November 2002, the FASB issued Interpretation No. 45, *Guarantor's Accounting and Disclosure Requirements for Guarantees,* Including *Indirect Guarantees of Indebtedness to Others*, *an interpretation of FASB Statements No. 5, 57 and 107 and a rescission of FASB Interpretation No. 34*. This Interpretation elaborates on the disclosures to be made by a guarantor in its interim and annual financial statements about its obligations under guarantees issued. The Interpretation also clarifies that a guarantor is required to recognize, at inception of a guarantee, a liability for the fair value of the obligation undertaken. The initial recognition and measurement provisions of the Interpretation are applicable to guarantees issued or modified after December 31, 2002 and are not expected to have a material effect on the Company's consolidated financial statements. The disclosure requirements are effective for financial statements of interim and annual periods ending after December 31, 2002.

In December 2002, the FASB issued SFAS No. 148, *Accounting for Stock-Based Compensation — Transition and Disclosure, an amendment of FASB Statement No. 123*. This Statement amends FASB Statement No. 123, *Accounting for Stock-Based Compensation,* to provide alternative methods of transition for a voluntary change to the fair value method of accounting for stock-based employee compensation. In addition, this Statement amends the disclosure requirements of Statement No. 123 to require prominent disclosures in both annual and interim financial statements. Certain of the disclosure modifications are required for fiscal years ending after December 15, 2002 and are included in the notes to these consolidated financial statements.

In January 2003, the FASB issued Interpretation No. 46, Consolidation of Variable Interest Entities, an interpretation of ARB No. 51. This Interpretation addresses the consolidation by business enterprises of variable interest entities as defined in the Interpretation. The Interpretation applies immediately to variable interests in variable interest entities created after January 31, 2003, and to variable interests in variable interest entities obtained after January 31, 2003. For public enterprises with a variable interest in a variable interest entity created before February 1, 2003, the Interpretation applies to that enterprise no later than the beginning of the first interim or annual reporting period beginning after June 15, 2003. The application of this Interpretation is not expected to have a material effect on the Company's consolidated financial statements. The Interpretation requires certain disclosures in financial statements issued after January 31, 2003 if it is reasonably possible that the Company will consolidate or disclose information about variable interest entities when the Interpretation becomes effective.

In November, 2002, the EITF reached a consensus on Issue No. 00-21, Revenue Arrangements with Multiple Deliverables. EITF Issue No. 00-21 addresses the accounting, by a vendor, for contractual arrangements in which multiple revenue-generating activities will be performed by the vendor. The Issue addresses when and, if so, how an arrangement involving multiple deliverables should be divided into separate units of accounting. The Issue also addresses how the arrangement consideration should be measured and allocated to the separate units of accounting in the arrangement. This Issue otherwise does not change applicable revenue recognition criteria. Companies are required to adopt this consensus for fiscal periods beginning after June 15, 2003. Companies may apply this consensus prospectively to new arrangements initiated after the date of adoption or as a cumulative catch adjustment. Early adoption of the consensus is permitted. We are currently evaluating the effects of adopting the provisions of the EITF's consensus on this Issue.

(3) Acquisition of Businesses

On May 19, 2000, the Company acquired substantially all of the assets of Biotronik, a manufacturer of Amino Acid Analyzers. Cash consideration of approximately $469,000 was paid for the assets (including approximately $12,000 of acquisition related expenses). The costs of the acquisition allocated on the basis of fair market value of the assets acquired and the purchase method of accounting resulted in an allocation of $335,000 to goodwill.

On July 14, 2000, the Company acquired substantially all of the assets of Amika Corporation, a manufacturer and distributor of sample preparation devices and consumables. Cash consideration of $3,100,000 was paid for the assets (including approximately $61,000 of acquisition related expenses). The cost of the acquisition allocated on the basis of fair market value of the assets acquired and the purchase method of accounting resulted in an allocation of $3,015,000 to goodwill. The assets acquired consisted of approximately $85,000 of inventory. In addition, the Company acquired the right of first refusal to all new technologies developed and offered for sale by the predecessor Company for a period of four years on a fair value licensing arrangement.

On December 21, 2000, the Company acquired substantially all the assets and certain liabilities of MitoScan Corporation, a manufacturer of a submitochondrial particle toxicity testing products for cash and future contingent payments based on future product revenues. Cash consideration of approximately $383,000 was paid for the assets (including approximately $83,000 of acquisition related expenses). The cost of the acquisition allocated on the basis of fair market value of assets acquired and the purchase method of accounting resulted in an allocation of approximately $386,000 to goodwill.

On May 1, 2001, the Company acquired substantially all the assets and certain liabilities of Warner Instruments Corporation ("Warner Instruments"), a developer, manufacturer and marketer of cell and tissue electro-physiology products. Cash consideration of $2,700,000 (including approximately $69,000 of acquisition related expenses) was paid for the assets. The cost of the acquisition allocation on the basis of fair market value of assets acquired and the purchase method of accounting resulted in the following allocation: current assets of $951,000, property, plant and equipment of $34,000, purchased intangibles of $1.9 million which included: trade name of $320,000, workforce in place of $380,000, acquired technologies of $1.0 million , patents of $9,000, in-process research and development of $159,000 and goodwill of $136,000 and liabilities assumed of $234,000.

On May 31, 2001, the Company acquired all of the outstanding common and preferred shares of Union Biometrica, Inc. ("Union Biometrica") for $17.5 million. Union Biometrica develops, manufactures and markets
instruments that enable high throughput analysis and sorting of model organisms used in drug discovery research. The transaction was accounted for using the purchase method of accounting. The aggregate purchase price of $17.5 million, net of cash acquired of $562,000, included 659,282 common shares and 263,202 common stock options that had an estimated fair value of $10 million. The purchase price which has been allocated on the basis of fair market value of assets acquired and liabilities assumed resulted in the following allocation: current assets of $0.5 million, property, plant and equipment of $0.2 million, other assets of $1.6 million, purchased intangibles of $10.1 million, which included work force in place of $1.4 million, acquired technologies of $8 million and trademarks of $0.8 million, in-process research and development of $5.3 million, goodwill of $6.2 million and liabilities assumed of $6.5 million.

On June 29, 2001, the Company acquired all the stock of International Market Supply, Ltd ("IMS"), a company engaged in developing, manufacturing and marketing respiration products. Cash consideration of approximately $1,600,000 (including approximately $114,000 of acquisition related expenses) was paid for the stock. The cost of the acquisition was allocated on the basis of fair market value of assets acquired and the purchase method of accounting resulted in an allocation of approximately $1,402,000 to goodwill, $462,000 to current assets, $39,000 to property, plant and equipment and $277,000 in liabilities assumed.

On November 1, 2001, the Company acquired all the stock of Scie-Plas, Ltd., a designer, manufacturer and marketer of electrophoresis tools for molecular biology. Cash consideration of $4,151,000 (including approximately $99,000 of acquisition related expenses) was paid for the stock. The Company had not finalized the allocation of purchase price as of December 31, 2001. An estimation of the allocation was prepared and included as part of the financial statements for the year ended December 31, 2001. The estimated allocation did not differ significantly from the final allocation. The final purchase price has been allocated as follows: $3,926,000 to goodwill and other intangibles, $327,000 to property, plant and equipment, current assets of $804,000, other assets $23,000 and liabilities assumed of $929,000.

On December 6, 2001, the Company acquired all the stock of Asys Hitech GmbH, a designer, manufacturer and marketer of low volume, high throughput, liquid dispensers used for high throughput screening in drug discovery research. Cash consideration of $2,043,000 (including approximately $143,000 of acquisition related expenses) was paid for the stock. The Company had not finalized the allocation of purchase price as of December 31, 2001. An estimation of the allocation was prepared and included as part of the financial statements for the year ended December 31, 2001. The estimated allocation did not differ significantly from the final allocation. The final purchase price has been allocated as follows: $1,983,000 to goodwill and other intangibles, $23,000 to property, plant and equipment, current assets of $512,000, other assets of $39,000 and liabilities assumed of $514,000.

On July 1, 2002, the Company, acquired all the stock of Walden Precision Apparatus ("WPA"), a designer, manufacturer and marketer of low cost diode-array spectrophotometers for cash consideration of $1,466,000 (including approximately $101,000 of acquisition related expenses). As of December 31, 2002, cash consideration of $280,000 and acquisition costs of $9,500 have not been paid. The allocation of the purchase price is as follows: $1,671,000 to goodwill and other intangibles, $110,000 to property, plant and equipment, current assets of $599,000 and liabilities assumed of $914,000.

On October 25, 2002, the Company acquired all of the outstanding common stock of Genomic Solutions, Inc. for approximately $27.0 million, including $0.7 million in related acquisition costs. The results of operations have been included in the consolidated financial statements since the date of acquisition. Genomic Solutions develops, manufactures and sells products in the fields of proteomics, high-throughput screening and DNA microarray systems including products for protein sample preparation and analysis in conjunction with mass spectrometry; high-speed, noncontact assay preparation for high-throughput screening and high-fidelity microarray processing and analysis. As a result of the acquisition, the Company is expected to further its strategy of providing a broad range of specialized products in strong positions in niche markets focused on the bottlenecks in drug discovery. Genomic Solutions has strong products in niche markets within the bottlenecked fields of : protein sample preparation for mass spectrophotometry, assay preparation for high-throughput screening and microarray processing.

The aggregate purchase price of $27.0 million included 3,195,083 common shares that had an estimated fair value of $17.3 million. The fair value of the stock was estimated using the weighted average market value of the shares for the two days prior and three days subsequent to the announcement of the acquisition on July 17, 2002. The amount recorded in the consolidated statement of stockholders equity (deficit) and used in the purchase price allocation below is net of approximately $481,000 of costs associated with registering and issuing these shares. The purchase price which has been allocated on the basis of fair market value of assets acquired and liabilities assumed at the date of acquisition resulted in the following allocation which is net of cash acquired of $156,700 and in-process research and development of $1,551,400:

		(in thousands)
Current assets	$	13,224
Property, plant and equipment		1,949
Long-term assets		418
Deferred tax asset, net		1,612
Goodwill and other indefinite lived intangibles		11,192
Intangible assets		5,367
Total assets acquired	$	33,762
Current liabilities		(8,435)
Long-term debt		(70)
Total liabilities assumed		(8,505)
Net assets acquired	$	25,257

The $5.4 million of acquired intangible assets was allocated to existing products and technology. In the fourth quarter of 2002, $1.6 million of in-process research and development was expensed and $0.5 million of fair value adjustments related to backlog and inventory was expensed through cost of goods sold for orders that were on backlog at the date of acquisition but have since been sold.

All acquisitions have been accounted for by the purchase method of accounting for business combinations. Accordingly, the accompanying consolidated statements of operations do not include any revenues or expenses related to these acquisitions prior to the respective acquisition dates.

In connection with the acquisition of Warner Instruments, Union Biometrica and Genomic Solutions, certain research and development projects acquired were determined to have no alternative future use. Accordingly, $159,000, $5,288,000 and $1,551,400, respectively, of purchased in-process research and development was expensed in the second quarter of 2001 for Warner and Union Biometrica and the fourth quarter of 2002 for Genomic Solutions. The amount was established by identifying research projects for which technological feasibility had not been established and for which no alternative future uses existed. The value of the projects identified to be in progress were determined by estimating future cash flows from the projects once commercially feasible, discounting net cash flows back to their present value and then applying a percentage of completion to the calculated value. The discount rate used averaged 25% to 44% for the projects identified. Development of the technologies remains a substantial risk to the Company due to factors including the remaining effort to achieve technological feasibility, rapidly changing customer markets and competitive threats from other companies. Additionally, the value of other intangible assets acquired may become impaired.

The following unaudited pro forma results of operations gives effect to the acquisition of Genomic Solutions as if it had occurred as of January 1, 2001. Pro forma information related to the WPA acquisition is not provided as the acquisition is not material to the consolidated financial statements. Such pro forma information reflects certain adjustments including amortization of goodwill, income tax effect and an increase in the number of weighted average shares outstanding. The pro forma information does not necessarily reflect the results of operations that would have occurred had the acquisition taken place as described and is not necessarily indicative of results that may be obtained in the future.

	Years Ended December 31,	
	2002	2001
	(Unaudited, in 000's except per share data)	
Pro forma revenues	$ 73,786	$ 57,708
Pro forma net loss	$ (10,365)	$ (34,241)
Pro forma net loss per share:		
Basic and diluted	$ (0.34)	$ (1.18)
Pro forma weighted average common shares:		
Basic and diluted	30,285	28,980

(4) Goodwill and Other Intangible Assets

On January 1, 2002, the Company fully adopted SFAS No. 142, *"Goodwill and Other Intangible Assets."* As a result of the adoption, goodwill and other indefinite-lived intangible assets are no longer being amortized, but are subject to annual impairment reviews, or more frequently, if events or circumstances indicate there may be an
impairment. During the second quarter of 2002, the Company completed the implementation impairment review as required. The review concluded there was no impairment of goodwill at the time of implementation. On December 31, 2002, the Company completed its annual goodwill impairment test and concluded there was no impairment.

With the adoption of SFAS No. 142, the Company ceased amortization of goodwill and other indefinite lived intangible assets as of January 1, 2002. The following table presents the annual results of the Company assuming SFAS 142 was adopted on January 1, 2000.

	Years Ended December 31,		
	2002	2001	2000
Net income (loss) available to common shareholders	$ 737,327	$ (5,208,418)	$ (50,005,936)
Add back: goodwill amortization, net of tax	—	811,714	458,979
Adjusted net income (loss)	$ 737,327	$ (4,396,704)	$ (49,546,957)
Basic and diluted earnings per share:			
Net income (loss)	$ 0.03	$ (0.20)	$ (6.25)
Goodwill amortization, net of tax	—	0.03	0.06
Adjusted net income (loss)	$ 0.03	$ (0.17)	$ (6.19)

Intangible assets consist of the following:

	December 31, 2002		December 31, 2001	
	Gross Carrying Value	Accumulated Amortization	Gross Carrying Value	Accumulated Amortization
Amortizable intangible assets:				
Existing technology	$ 20,784,949	$ 2,019,453	$ 11,966,892	$ 568,981
Tradename	1,788,328	269,101	1,679,818	157,101
Patents	9,000	1,000	9,000	400
Total Amortizable Intangible Assets	$ 22,582,277	$ 2,289,554	$ 13,655,710	$ 726,482
Unamortizable intangible assets:				
Goodwill and indefinite lived intangible assets	$ 31,052,981	$ —	$ 22,282,706	$ 2,017,426
Total Intangible Assets	$ 53,635,258	$ 2,289,554	$ 35,938,416	$ 2,743,908

On July 1, 2002, the Company acquired intangible assets of approximately $1.7 million in connection with the acquisition of Walden Precision Apparatus ("WPA") consisting of approximately $1.2 million of amortizable assets and $0.5 million of goodwill (including approximately $0.1 million of acquisition related expenses). On October 25, 2002, the Company acquired intangible assets of approximately $16.6 million in connection with the acquisition of Genomic Solutions consisting of approximately $5.4 million of amortizable assets and $11.2 million of goodwill (including approximately $0.7 million of acquisition related expenses). Intangible asset amortization expense was $1,543,000 for the year ended December 31, 2002. As a result of the Company completing its adoption of SFAS No. 142, there have been no changes to amortizable lives or methods other than goodwill and indefinite lived intangible assets associated with acquisitions consummated prior to June 30, 2001 is no longer amortized. Amortization expense of existing amortizable intangible assets is estimated to be $2.1 million for each of the years ending December 31, 2003, 2004 and 2005 and $2.0 million for the years ending December 31, 2006 and 2007.

(5) Inventories

Inventories consist of the following:

	December 31, 2002	December 31, 2001
Finished goods	$ 6,057,012	$ 3,329,336
Work in process	1,878,663	593,833
Raw materials	7,531,593	2,049,539
	$ 15,467,268	$ 5,972,708

(6) Property, Plant and Equipment

Property, plant and equipment consists of the following:

	December 31, 2002	December 31, 2001
Land and buildings	$ 1,104,153	$ 756,232
Machinery and equipment	4,459,426	2,688,150
Computer equipment	2,185,125	1,331,204
Furniture and fixtures	1,040,214	478,015
Automobiles	254,606	177,613
	9,043,524	5,431,214
Less accumulated depreciation	3,125,495	1,925,472
	$ 5,918,029	$ 3,505,742

(7) Long-Term Debt

Long-term debt consists of the following:

	December 31, 2002	December 31, 2001
Notes payable	$ 871,532	$ 4,333,174
Capital lease obligations (note 10)	227,438	198,067
	1,098,970	4,531,241
Less current installments	699,005	3,894,088
	$ 399,965	$ 637,153

On November 1, 2001, at the request of the sellers of Scie-Plas Ltd., the Company entered into a loan agreement with the sellers to defer payment of approximately $3.9 million of the purchase price for the outstanding shares of Scie-Plas Ltd. (see note 3). The loan is secured with cash in an equal amount and accrues interest at the same rate of interest earned by the cash. Approximately $3.5 million of the note was paid in November, 2002, and the remaining $.4 million is due May 1, 2003.

On December 5, 2001, in connection with the purchase of the outstanding shares of Asys Hitech, GmbH, the Company assumed a liability of $278,000 related to amounts owed to a shareholder of Asys Hitech. Approximately $167,000 of this debt was paid in April, 2002, with the remaining $111,000 paid in December 2002.

In connection with the acquisition of Asys Hitech, payment of approximately $200,000 of the purchase price was deferred until settlement of the final statement of net assets. Final settlement of the statement of net assets occurred in 2002, resulting in a reduction of the purchase price of approximately $43,000. The balance of $157,000 is due and payable on September 6, 2003.

On July 1, 2002, in connection with the purchase of the outstanding shares of Walden Precision Apparatus ("WPA"), the Company assumed liabilities of $298,000 related to amounts owed to shareholders of WPA. The entire debt will be paid in the first half of 2004.

(8) Convertible and Redeemable Preferred Stock

During 1999, 48,500 shares of Series B convertible and redeemable preferred stock were issued . The net proceeds from this issuance were $925,174. The Company's Series B convertible redeemable preferred stock had a dividend preference over the Series A preferred stock, and as a result, no dividends were paid in respect of shares of Series A preferred stock unless all accrued dividends that became payable in respect of Series B preferred stock were paid. The Series B redeemable convertible preferred stock was convertible at the option of the holder, at any time, into shares of common stock of the Company at a conversion rate of 19.71 shares of common stock for each share of Series B redeemable convertible preferred stock, subject to adjustment for subdivision of Series B preferred stock or any issuance of additional shares of Series B preferred stock. In December 2000, the convertible preferred stock was converted to 955,935 shares of common stock of the Company simultaneously with the initial public offering of the Company's common stock.

Redeemable preferred Series A stock paid quarterly cumulative dividends in arrears at a rate of approximately $0.26 per share. On March 3, 2000, convertible and redeemable preferred "B" stock started to accrue dividends at a rate of $1.44 that were payable a year in arrears on March 3, 2001, and thereafter quarterly in arrears. In December 2000, the redeemable preferred stock was redeemed in full simultaneously with the initial public offering of the Company's common stock.

(9) Common Stock Warrants

On March 15, 1996, common stock warrants, which enabled the holders to purchase a like amount of the Company's common stock for $0.0005 per share, were issued in connection with the issuance of Series A redeemable preferred stock (6,046,510 warrants) and subordinated debentures (2,463,395 warrants).

Commencing on March 15, 2002, the holders of the warrants may have at any time required the Company to repurchase the warrants, or any common shares previously acquired from exercise of the warrants, for their fair market
value as determined in good faith by the Company's board of directors. In 2000 interest expense of $36,884,915 was recorded to accrue the estimated amount of this potential liability in accordance with EITF 96-13, *Accounting for Derivative Financial Instruments Indexed to and Potentially Settled in, a Company's Own Stock*.

In December 2000, the holders of the outstanding common stock warrants terminated the requirement of the Company to repurchase the warrants. Accordingly, the outstanding common stock warrants were converted to 8,509,337 shares of the Company's common stock simultaneously with the initial public offering of the Company's common stock and the liability previously recorded was reclassified to stockholders' equity.

(10) Leases

The Company leases automobiles and equipment under various leases that are classified as capital leases. The carrying value of automobiles and equipment under capital leases at December 31, 2002 and 2001 was $254,711 and $199,822, respectively, which is net of $74,835 and $12,834, respectively, of accumulated depreciation.

The Company has noncancelable operating leases for office and warehouse space expiring at various dates through 2009. Rent expense for the years ended December 31, 2002, 2001 and 2000 was approximately $2,209,000, $744,000 and $541,000, respectively.

Future minimum lease payments for both capital and operating leases, with initial or remaining terms in excess of one year at December 31, 2002, are as follows:

	Capital Leases	Operating Leases
2003	$ 153,620	$ 2,280,819
2004	72,932	1,706,776
2005	22,165	1,007,000
2006	20,869	592,880
2007	—	435,788
Thereafter	—	325,235
Net minimum lease payments	$ 269,586	$ 6,348,498
Less amount representing interest	42,148	
Present value of net minimum lease payments	$ 227,438	

(11) Related Party Transactions

In 2000, the Company paid an annual consulting fee to a former stockholder who formerly served on its board of directors and, by written agreement, provided no less than five days of consulting services each month. The agreement was scheduled to expire on March 15, 2001 or at the time of any initial public offering of the Company's stock or other sale of a material portion of the Company's stock or assets, if such a transaction occurred before that date. As of September 30, 2000, the agreement with the former stockholder was rescinded. The related consulting expense for the year ended December 31, 2000 was $294,583.

The Company holds two promissory notes, with accrued interest at December 31, 2002 in the amounts of $63,023 and $48,151 for amounts owed by Jeffrey Williams, the President of the Company's Genomic Solutions subsidiary and a member of the Company's Board of Directors. The notes were assumed by the Company in connection with the acquisition of Genomic Solutions. Both notes have a five year maturity. The first note, with an original principal of $47,250 and accrued interest of $15,773, was due in January, 2003. This note was paid in full by Mr. Williams in February, 2003 with a principal payment of $47,250 and accrued interest of $16,377. The remaining note with a principal balance of $40,000 matures in February, 2005.

(12) Employee Benefit Plans

The Company sponsors profit sharing retirement plans for its U.S. employees, which includes an employee savings plan established under Section 401(k) of the U.S. Internal Revenue Code (the "401(k) Plan"). The 401(k) plan covers substantially all full-time employees who meet certain eligibility requirements. Contributions to the profit sharing retirement plan are at the discretion of management. For the years ended December 31, 2002, 2001, and 2000, the Company contributed approximately $175,000, $142,000 and $81,000, respectively, to the plans.

Certain of the Company's subsidiaries in the United Kingdom (UK), Harvard Apparatus Limited, and Biochrom Limited maintain contributory, defined benefit pension plans for substantially all of their employees.

The components of the Company's pension expense follows:

	Years Ended December 31,		
	2002	2001	2000
Components of net periodic benefit cost:			
Service cost	$ 399,779	$ 390,223	$ 319,053
Interest cost	458,614	418,178	347,215
Expected return on plan assets	(543,096)	(512,564)	(527,397)
Net amortization gain (loss	39,224	17,581	(20,769)
Net periodic benefit cost	$ 354,521	$ 313,418	$ 118,102

The funded status of the Company's defined benefit pension plans and the amount recognized in the consolidated balance sheets at December 31, 2002 and 2001 follows:

	2002	2001
Change in benefit obligation:		
Balance at beginning of year	$ 7,272,720	$ 7,221,941
Service cost	399,779	390,223
Interest cost	458,614	418,178
Participants' contributions	90,516	94,357
Actuarial loss (gain)	67,887	(606,776)
Benefits paid	(300,211)	(68,592)
Currency translation adjustment	796,062	(176,611)
Balance at end of year	$ 8,785,367	$ 7,272,720
Change in fair value of plan assets:		
Balance at beginning of year	$ 6,442,800	$ 6,744,668
Actual return on plan assets	(316,806)	(421,810)
Participants' contributions	90,516	94,357
Employer contributions	310,772	243,428
Benefits paid	(300,211)	(68,592)
Expenses paid	(48,275)	—
Currency translation adjustment	647,129	(149,251)
Balance at end of year	$ 6,825,925	$ 6,442,800

	Years Ended December 31,	
	2002	2001
Funded status	$ (1,959,442)	$ (829,920)
Unrecognized net loss	2,290,299	1,211,987
Net amount recognized	$ 330,857	$ 382,067

The amounts recognized in the consolidated balance sheets consist of:

	2002	2001
Prepaid benefit cost	$ 330,857	$ 382,067
Minimum pension liability	(1,204,575)	—
Accumulated other comprehensive loss	843,224	—
Deferred tax asset	361,351	—
Net amount recognized	$ 330,857	382,067

The weighted average assumptions used in determining the net pension cost for the Company's plans follows:

	Years Ended December 31,		
	2002	2001	2000
Weighted average assumptions:			
Discount rate	5.5%	6.0%	6.0%
Expected return on assets	7.7%	8.0%	7.0-8.0%
Rate of compensation increase	3.25%	4.0%	4.5%

(13) Income Taxes

Income tax expense (benefit) attributable to income (loss) from continuing operations for the years ended December 31, 2002, 2001 and 2000 consisted of:

	Years Ended December 31,		
	2002	2001	2000
Current income tax expense (benefit):			
Federal and state	$ (21,165)	$ (158,835)	$ (560,364)
Foreign	2,187,645	1,755,161	992,100
	2,166,480	1,596,326	431,736
Deferred income tax (benefit) expense:			
Federal and state	(141,450)	396,038	903,168
Foreign	(414,012)	(202,411)	24,497
	(555,462)	193,627	927,665
Total income tax expense	$ 1,611,018	$ 1,789,953	$ 1,359,401

The income tax benefits derived from certain stock-based compensation, amount to $0, $121,275 and $0 for the years ended December 31,2002, 2001 and 2000, respectively, were allocated to stockholders' equity.

Income tax expense for the periods ended December 31, 2002, 2001 and 2000 differed from the amount computed by applying the U.S. federal income tax rate of 34% to pretax income (loss) as a result of the following:

	Years Ended December 31,		
	2002	2001	2000
Computed "expected" income tax expense (benefit)	$ 798,437	$ (1,162,278)	$ (16,469,067)
Increase (decrease) in income taxes resulting from:			
Foreign tax rate and regulation differential	65,151	195,561	112,097
State income taxes, net of federal income tax benefit	29,613	(73,834)	63,600
Foreign trading gross receipts tax benefit	(76,776)	(30,195)	(32,596)
Interest expense (common stock warrants)	—	—	12,539,403
Stock compensation expense in excess of allowable tax benefits on exercise of options	382,840	826,487	5,197,149
Nondeductible acquisition goodwill, trademark and workforce	—	127,234	—
Nondeductible in-process research and development	527,476	1,851,980	—
Federal tax expense differential from prior year tax	(126,640)	(31,381)	(48,896)
Tax credits	(203,399)	—	—
Change in valuation allowance allocated to income tax Expense	220,147	—	—
Other	(5,831)	86,379	(2,289)
Total income tax expense	$ 1,611,018	$ 1,789,953	$ 1,359,401

Income tax expense is based on the following pre-tax income (loss) for the years ended December 31, 2002, 2001 and 2000:

	Years Ended December 31,		
	2002	2001	2000
Domestic	$ (2,676,602)	$ (7,408,456)	$ (51,098,496)
Foreign	5,024,947	3,989,991	2,588,112
	$ 2,348,345	$ (3,418,465)	$ (48,510,384)

The tax effects of temporary differences that give rise to significant components of the deferred tax assets and deferred tax liabilities at December 31, 2002 and 2001 are as follows:

	Years Ended December 31	
	2002	2001
Deferred tax assets:		
Accounts receivable	$ 283,466	$ 1,055
Inventory	713,333	286,868
Operating loss and credit carryforwards	18,209,525	1,467,814
Accrued expenses	108,463	56,793
Goodwill and other intangibles	893,848	35,782
Property, plant and equipment	166,898	21,897
Minimum pension liability	361,351	—
Other accrued liabilities	1,316,909	293,211
Total gross deferred tax assets	22,053,794	2,163,420
Less: valuation allowance	(15,160,201)	—
Net deferred tax assets	6,893,593	2,163,420
Deferred tax liabilities:		
Property, plant and equipment	174,599	39,616
Intangible assets	5,907,400	3,778,243
Total deferred tax liabilities	6,081,999	3,817,859
Net deferred tax asset (liability)	$ 811,594	$ (1,654,439)

The amount recorded as gross deferred tax assets as of December 31, 2002 and December 31, 2001 represents the amount of tax benefits of existing deductible temporary differences or carryforwards that are more likely than not to be realized through the generation of sufficient future taxable income within the carryforward period. The Company believes that a portion of the gross deferred tax asset at December 31, 2002 will more likely than not be realized in the carryforward period. Management reviews the recoverability of deferred tax assets during each reporting period.

At December 31, 2002, the Company had federal and state net operating loss carryforwards available to offset future taxable income of approximately $47,727,000 which will begin to expire in 2012. Furthermore, the Company had foreign operating loss carryforwards to offset future taxable income of approximately $1,000,000 which begin to expire in 2006. The Company also had general business and minimum tax credit carryforwards available to reduce future regular income taxes of approximately $638,000 and $65,000, respectively, which begin to expire in 2010. Utilization of the net operating losses and tax credits may be subject to an annual limitation imposed by change in control provisions of Section 382 of the Internal Revenue Code and similar state provisions.

In accordance with SFAS No. 109, *Accounting for Income Taxes,* the accounting for the tax benefits of acquired deductible temporary differences which are not recognized at the acquisition date because a valuation allowance may be established and recognized subsequent to the acquisitions, will be applied first to reduce to zero, any goodwill and other noncurrent intangible assets related to the acquisitions. Any remaining tax benefits would be recognized as reduction of income tax expense. As of December 31, 2002, approximately $21,854,000 of the Company's gross deferred tax asset pertains to acquired companies. If the Company concludes in a subsequent period, that a valuation allowance is required for previously recognized tax benefits from acquisitions, the establishment or reestablishment of that valuation allowance would be recognized as income tax expense attributable to income from continuing operations, not as an increase in goodwill related to the acquisition. The Company's deferred tax liability relates significantly to the financial statement and tax carrying basis amount of certain acquired identifiable intangible assets.

The total valuation allowance for deferred tax assets as of December 31, 2002 was $15,160,201 of which $220,146 was charged against income tax expense while $14,940,055 was charged against acquisition goodwill and intangible assets. The total valuation allowance increased by $15,160,201 from December 31, 2001, as a result of an increase in acquired temporary differences, including net operating loss carryforwards, from 2002 acquisitions. If the valuation allowance is fully realized, $14,940,055 will reduce goodwill and intangible assets and the balance of $220,146 will reduce income tax expense.

Undistributed earnings of the Company's foreign subsidiaries amounted to approximately $12,725,476, $7,736,580 and $5,297,594 at December 31, 2002, 2001 and 2000, respectively. The Company's policy is that these earnings are indefinitely reinvested and, accordingly, no related provision for U.S federal and state income taxes has been provided. Upon distribution of those earnings in the form of dividends or otherwise, the Company will be subject to both U.S. income taxes (less foreign tax credits) and withholding taxes in the various foreign countries.

(14) Stock Compensation Plans

In 2000, the Company approved a stock purchase plan allowing employees to purchase the Company's common stock at 85% of the lesser of beginning or ending fair market value at six month intervals. Under this plan, 500,000 shares of common stock are authorized for issuance of which 41,123 shares were issued as of December 31, 2002.

In 1996, the Company adopted the 1996 Stock Option and Grant Plan (the "1996 Plan") and in 2000, the Company adopted the 2000 Stock Option and Incentive Plan (the "2000 Plan" and, together with the 1996 Plan the "Plans") pursuant to which the Company's Board of Directors can grant stock options to employees, directors and consultants . The Plans authorize grants of options to purchase up to 5,442,005 shares of authorized but unissued stock.

As of December 31, 2002 and 2001, 2,935,177 and 1,790,176 "Incentive Stock Options," and 3,005,868 and 2,827,367 "Non-qualified Stock Options," respectively, had been granted to employees. The Incentive Stock Options become fully vested over a four year period, on a pro rata basis. The Non-qualified Stock Options granted prior to 1999 became vested during 2000 as the fair market value of the Company's common stock was determined to be, on a fully diluted basis, not less than $1.42 per common share. For non-qualified options granted under the 1996 Plan during 1999, prior to an amendment to the 1996 Plan dated September 29, 2000, the options were deemed to be vested and exercisable upon either (i) the sale of all or substantially all of the assets or capital stock of the Company for an actual or implied price per share of not less than $2.09 or (ii) an initial public offering of the Company's stock with a price per share of not less than $2.09 and gross proceeds to the Company of at least $15 million. On September 29, 2000, the vesting schedule was amended so that the options were vested and exercisable upon either (i) a sale of all or substantially all of the assets or capital stock of the Company for an actual or implied net price per share of Common Stock of not less than $2.09 or (ii) if the fair market value of the Company at any time prior to December 31, 2000 resulted in a per share valuation, on a fully diluted basis, of not less than $2.09 per share. As a result of the 1996 Plan amendment, the related options vested immediately as a per share valuation of $2.09 was attained.

The Company applies APB Opinion No. 25 in accounting for the Plans. APB No. 25 requires no recognition of compensation expense for stock option awards when on the date of grant the exercise price is equal to the estimated fair market value of the Company's common stock and the number of options granted is fixed. During the year ended December 31, 2002, 1,323,500 stock options were granted to employees at exercise prices equal to fair market value of the Company's common stock on the date of grant. During the year ended December 31, 2001, 52,621 stock options were granted to employees at an exercise price of $1.87 for 42,766 of the options and $1.05 for 9,855 of the options, which was estimated to be less than the fair market value of the Company's common stock on the date of grant. During the year ended December 31, 2000, 1,140,466 stock options were granted to employees at an exercise price of $1.05, which was estimated to be less than the fair market value of the Company's common stock on the date of grant. Accordingly, for the years ended December 31, 2002, 2001 and 2000, compensation expense of $1,269,397, $2,678,743 and $4,635,949, respectively, was recognized on these stock option grants. As of December 31, 2002 additional compensation expense of approximately $550,000 million will be recognized in future periods. The Company's 1996 and 1999 Non-qualified Stock Option awards were considered variable awards as the number of shares to be acquired by the employees was indeterminable at the date of grant. For the year ended December 31, 2000, the Company recognized compensation expense of $10,039,350 on the non-qualified options granted in 1999.

On September 29, 2000, two officers exercised 563,942 non-vested options that were granted during 2000 for 563,942 shares of restricted common shares for cash consideration of $286 and two promissory notes amounting to $589,652 payable to the Company. The notes have a three-year maturity and a fixed interest rate of 10% per annum, compounded annually. The restricted stock becomes fully vested over a four-year period, on a pro rata basis. The estimated fair market value of the shares awarded on the original option date grant and on the date of exercise was estimated to be $6,767,310 of which $900,859, $1,673,025 and $3,217,154 has been recognized as stock compensation expense for the years ended December 31, 2002, 2001 and 2000, respectively. The remaining unearned compensation of approximately $386,000 million is being amortized to

expense over the remaining vesting period. Also on September 29, 2000, two officers of the Company exercised 916,514 fully vested options for cash of $465 and two promissory notes amounting to $958,298 payable to the Company. The notes have a three-year maturity and a fixed interest rate of 10% per annum, compounded annually. In February 2002, one of the officers satisfied his obligations under these promissory notes by payment in full to the Company of the principal amount of the notes and accrued interest of $886,309.The following is a summary of stock option activity.

	Employee Stock Options	
	Options Outstanding	Weighted Average Exercise Price
Balance at December 31, 1999	2,932,020	$ 0.33
Options exercised	(3,467,955)	0.45
Options forfeited	(5,421)	1.05
Options granted	1,170,466	1.23
Balance at December 31, 2000	629,110	$ 1.33
Options exercised	(288,075)	0.40
Options forfeited	(150,027)	3.20
Options granted	515,057	4.14
Balance at December 31, 2001	706,065	$ 3.37
Options exercised	(128,355)	0.71
Options forfeited	(98,403)	5.54
Options granted	1,323,500	5.75
Balance at December 31, 2002	1,802,807	$ 5.19

During 2002, 2001 and 2000, there were no other additional options exercised, canceled, expired or forfeited, or changes in any option terms, including exercise prices. The weighted average fair value of options granted during 2002, 2001 and 2000 was $4.16, $6.68 and $8.75, respectively.

The following is a summary of information relating to stock options outstanding at December 31, 2002:

	Options Outstanding			Options Exercisable	
Range of Exercise price	Number outstanding at December 31, 2002	Weighted-average remaining contractual life	Weighted-average exercise price	Shares exercisable at December 31, 2002	Weighted-average exercise price
$ 0.01	9,534	1.6 years	$ 0.01	9,534	$ 0.01
$ 1.05-4.39	801,773	9.8 years	$ 2.31	133,396	$ 1.12
$ 6.47-8.15	951,500	8.5 years	$ 7.47	102,372	$ 7.82
$ 9.05-10.60	40,000	8.7 years	$ 9.90	10,000	$ 9.90
$ 0.01-10.60	1,802,807	8.6 years	$ 5.19	255,302	$ 4.12

Had the Company determined compensation cost based on the fair value of the options at the grant date, as is permitted by SFAS No. 123, the Company's net income (loss) would have been as follows:

	Years Ended December 31,		
	2002	2001	2000
Net income (loss) available to common shareholders	$ 737,327	$ (5,208,418)	$ (50,005,936)
Pro forma net loss available to common shareholders	$ (2,835,369)	$ (5,710,339)	$ (50,157,740)
Basic net loss per share	$ 0.03	$ (0.20)	$ (6.25)
Pro forma basic net loss per share	$ (0.10)	$ (0.22)	$ (6.27)
Diluted net loss per share	$ 0.03	$ (0.20)	$ (6.25)
Pro forma diluted net loss per share	$ (0.10)	$ (0.22)	$ (6.27)

The fair value of each option grant for the Company's Plans is estimated on the date of the grant using the Black-Scholes pricing model, with the following weighted average assumptions used for grants in 2002, 2001 and 2000.

	Years Ended December 31,		
	2002	2001	2000
Risk free interest rates	4.0%	5.4%	5.9%
Expected option lives	3 years	2 years	2 years
Expected dividend yields	0%	0%	0%
Expected volatility	91.40%	89.12%	80.90%

(15) Segment and Related Information

The Company operates in one business segment: the development, manufacture and marketing of specialized products used to accelerate drug discovery research at pharmaceutical and biotechnology companies, universities and government laboratories worldwide. The Company provides tools for drug discovery focusing on the areas of target validation, high throughput screening, sample preparation, assay development and ADMET screening. These products all have similar economic characteristics and attributes, including similar nature of the products and services, similar marketing and distribution channels, similar production processes and similar class of customers. As a result, the Company aggregates its product lines into a single segment of tools for drug discovery. The Company operates primarily in three geographic regions: the United States, United Kingdom and the rest of the world.

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

Revenues by geographic area consists of the following:

	Y ears Ended December 31,		
	2002	2001	2000
United States	$23,622,032	$16,504,892	$9,379,986
United Kingdom.	25,034,535	19,098,428	15,828,225
Rest of the world	8,723,815	5,265,067	5,366,589
	$57,380,382	$40,868,387	$30,574,800

Long lived assets by geographic area consists of the following:

	December 31, 2002	December 31, 2001
United States	$ 39,698,739	$ 23,297,647
United Kingdom	14,221,355	11,167,486
Rest of the world	3,343,639	2,235,117
	$ 57,263,733	$ 36,700,250

(16) Income (Loss) Per Share

Basic income (loss) per share is based upon net income (loss) less dividends on preferred stock divided by the weighted average common shares outstanding during each year. The calculation of diluted net income (loss) per share assumes conversion of stock options into common stock. Net income (loss) and shares used to compute net income (loss) per share, basic and diluted, are reconciled below:

	Years Ended December 31, 2002	2001	2000
Net income (loss) available to common shareholders	$ 737,327	$ (5,208,418)	$ (50,005,936)
Weighted average common shares outstanding during the year	27,090,054	25,784,852	8,005,386
Effect of dilutive securities:			
Common stock options	507,510	—	—
	27,597,564	25,784,852	8,005,386

For the years ended December 31, 2001 and 2000, common equivalent shares of 597,517 and 7,456,010, respectively, resulting from stock options, warrants and restricted stock were not included in the computation of diluted earnings per share because to do so would have been antidilutive.

(17) Accrued Expenses

Accrued expenses consist of:

	December 31, 2002	December 31, 2001
Accrued compensation and payroll	$ 1,862,719	$ 1,643,321
License fees	1,446,479	—
Accrued legal and professional fees	1,185,389	367,198
Warranty costs	689,231	279,331
Other	2,178,525	622,351
	$ 7,362,343	$ 2,912,201

(18) Contingencies

The Company is subject to legal proceedings and claims arising out of its normal course of business. Management, after review and consultation with counsel, considers that amounts accrued for in connection therewith are adequate.

(19) Concentrations of Credit Risk

One commercial customer accounted for 18%, 30% and 39% of revenues for the years ended December 31, 2002, 2001 and 2000, respectively. At December 31, 2002 and 2001, one customer accounted for 11% and 26% of net accounts receivable, respectively. Except as noted above, no other individual customer accounted for more than 10% of revenues for the years ended December 31, 2002, 2001 and 2000. In addition, except as noted above, no other individual customer accounted for more than 10% of accounts receivable at December 31, 2002 and 2001.

(20) Initial Public Offering

On December 7, 2000, the Company sold, pursuant to an underwritten initial public offering, 6,250,000 shares of common stock at a price of $8 per share. Following the offering, proceeds were used to repay substantially all of the Company's short-term and long-term debt as well as redeem its redeemable preferred stock (see note 8). On January 4, 2001, the underwriters exercised their allotment option whereby the Company sold an additional 937,500 shares of its common stock at a price of $8 per share. The net proceeds to the Company as a result of these offerings was approximately $51.8 million.

(21) Asserted Legal Claims

On December 26, 2000, Harvard University filed a lawsuit in U.S. District Court, District of Massachusetts alleging that our use of the "Harvard Bioscience" and "Harvard Apparatus" names infringes on Harvard University's trademarks. Harvard University was seeking both injunctive relief and monetary damages. On April 10, 2001, the U.S. District Court, District of Massachusetts denied Harvard University's request for a preliminary injunction prohibiting the Company from using the name "Harvard Bioscience" and "Harvard Apparatus". The Court did issue an order directing the Company not to use the "Harvard" name in the color crimson or in a font similar to the font used by Harvard University. On May 6, 2002, the U.S. District Court, District of Massachusetts issued a partial summary judgment order against Harvard University regarding the Company's use of the name "Harvard Apparatus". In December 2002, we settled our dispute with Harvard University by way of a royalty-free license agreement that allows us to continue using the names Harvard Apparatus, Harvard Bioscience and various Harvard related product names. This license agreement is subject to termination in certain limited circumstances. Harvard Bioscience will continue to be used as the Company's name and Harvard Apparatus and various Harvard related product names will continue to be used as brand names on products and catalogs. The names will be used subject to various stylistic restrictions, primarily avoiding the use of the color crimson and fonts that are similar to those regularly used by Harvard University

On February 4, 2002, Paul D. Grindle, the former owner of Harvard Apparatus, Inc., initiated an arbitration proceeding against us and certain directors before JAMS in Boston, Massachusetts. Mr. Grindle's claims arise out of post-closing purchase price adjustments related to our purchase of the assets and business of Harvard Apparatus by virtue of an Asset Purchase Agreement dated March 15, 1996 and certain related agreements. In the arbitration demand, Mr. Grindle sought the return of 1,563,851 shares of stock in Harvard Bioscience, or the disgorgement of the profits of our sale of the stock, as well as compensatory damages and multiple damages and attorney's fees under Mass. Gen. Laws, chapter 93A. In a demand letter that was attached to the arbitration demand, Mr. Grindle asserted losses in the amount of $15 million, representing the value of the 1,563,851 shares of Harvard Bioscience's stock as of January 2, 2002. On October 30, 2002, we received a decision from the arbitrator that we have prevailed on all claims asserted against us and certain of our directors in the arbitration action. Specifically, we received a written decision from the arbitrator granting our motion for summary disposition with respect to all claims brought against all parties in

the action. We have filed a complaint in the Massachusetts Superior Court seeking to confirm the arbitrator's decision. Mr. Grindle filed a complaint in the Massachusetts Superior Court seeking to vacate the arbitrator's decision. These two matters have been consolidated and are currently pending.

In September, 2002, our Genomic Solutions subsidiary filed suit against Affymetrix, Inc. in the State of Michigan Circuit Court for the County of Washtenaw for breach of contract, negligent/innocent misrepresentation, tortuous interference with prospective economic advantage and declaratory relief. The action arises out of a License Agreement that Genomic Solutions entered into with Affymetrix with respect to certain Affymetrix patent rights. Genomic Solutions is seeking monetary damages including a return of license and royalty fees previously paid to Affymetrix and declaratory relief providing that no further fees are owing to Affymetrix. In November, 2002, Affymetrix filed a counter-claim against Genomic Solutions alleging breach of contract and requesting approximately $1.45 million in damages for license and other fees and interest allegedly owed. Discovery in the case is on-going. Management believes the counter-claim is without merit and intends to vigorously defend it. The $1.45 million in damages for license and other fees is fully reserved for in the Company's consolidated financial statements.

In December, 2002, Oxford Gene Technology Ltd. filed suit against our Genomic Solutons subsidiary, Mergen Ltd., Clontech Laboratories, Inc., PerkinElmer Life Sciences, Inc., Axon Instruments, Inc. and BioDiscovery, Inc. in the United States District Court for the District of Delaware seeking unspecified damages as a result of alleged infringement by each of the defendants of a United States Patent issued to Oxford Gene Technology. In March, 2003, Genomic Solutions filed an answer denying the allegations and asserted counter-claims seeking a declaratory judgment of non-infringement and a declaratory judgment of invalidity. Management denies the allegations and will vigorously defend the lawsuit.

From time to time, we may be involved in routine legal matters that arise in the ordinary course of our business. We are not currently a party to any other claims or proceedings which, we believe, would have, individually or in the aggregate, a material adverse effect on our business, financial condition or results of operations.

(22). Subsequent Events

In January 2003 we acquired substantially all the assets of the BTX division of Genetronics Biomedical Corporation for $3.7 million in cash. BTX designs, develops, manufactures and distributes electroporation products.

On March 12, 2003 we acquired substantially all of the assets of Genomic Instrumentation Services, d/b/a/ GeneMachines for approximately $8.1 million in cash. GeneMachines designs, develops, manufactures and distributes high throughput instrumentation for DNA and protein microarray production, nucleic acid sample preparation and DNA synthesis.

On March 12, 2003, we entered into an agreement with Brown Brothers Harriman & Co. for a $6.0 million bridge loan in the form of a demand promissory note to partially fund the acquisition of GeneMachines. We are currently negotiating a $12.0 million (which will include the amount of the bridge loan) revolving credit facility which would, if implemented, be available to fund future acquisitions and for working capital purposes.

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 31, 2003 By: /s/ Chane Graziano
Chane Graziano
Chief Executive Officer

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

Signature	Title	Date
/s/ Chane Graziano Chane Graziano	Chief Executive Officer and Director (Principal Executive Officer)	March 31, 2003
/s/ Susan Luscinski Susan M. Luscinski	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	March 31, 2003
/s/ David Green David Green	President and Director	March 31, 2003
/s/ Christopher W. Dick Christopher W. Dick	Director	March 31, 2003
/s/ Richard C. Klaffky, Jr. Richard C. Klaffky, Jr.	Director	March 31, 2003
/s/ Robert Dishman Robert Dishman	Director	March 31, 2003
/s/ John F. Kennedy John F. Kennedy	Director	March 31, 2003
/s/ Earl R. Lewis Earl R. Lewis	Director	March 31, 2003
/s/ Jeffrey S. Williams Jeffrey S. Williams	Director	March 31, 2003

Section 302 Certification

I, Chane Graziano, certify that:

1. I have reviewed this annual report on Form 10-K of Harvard Bioscience, Inc.;

2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;

3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;

4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:

a) Designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;

b) Evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and

c) Presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date.

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):

a) All significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls.

6. The registrant's other certifying officers and I have indicated in this annual report whether or not there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: March 31, 2003

/s/ Chane Graziano
Chane Graziano
Chief Executive Officer

Section 302 Certification

I, Susan Luscinski, certify that:

1. I have reviewed this annual report on Form 10-K of Harvard Bioscience, Inc.;

2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;

3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;

4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:

a) Designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;

b) Evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and

c) Presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date.

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):

a) All significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls.

6. The registrant's other certifying officers and I have indicated in this annual report whether or not there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: March 31, 2003

/s/ Susan Luscinski
Susan Luscinski
Chief Financial Officer

Exhibit 10.16

STANDARD INDUSTRIAL LEASE

AMERICAN INDUSTRIAL REAL ESTATE ASSOCIATION

[GRAPHIC]

1. Parties. This Lease, dated, for reference purposes only, March , 2003, 19__, is made by and between County Road Properties, a partnership (herein called "Lessor") and Genomic Solutions Inc., a Delaware corporation (herein called "Lessee").

2. Premises. Lessor hereby leases to Lessee and Lessee leases from Lessor for the term, at the rental, and upon all of the conditions set forth herein, that certain real property situated in the County of San Mateo State of California, commonly known as 935 Washington Street, San Carlos, California and described as a single story building containing 22,000 square feet, more or less, measuring 100 feet by 220 feet, situated on that certain 3.87 acre parcel lying adjacent to the north-westernly line of Block 7, North Redwood Subdivision. Said premises are cross-hatched on Exhibit "A" attached hereto and made a part hereof. Lessee is granted the non-exclusive right of ingress and egress and parking over the area marked with diagonal lines on Exhibit "A". Said real property including the land and all improvements thereon, is herein called "the Premises".

3. Term.

3.1 **Term**. The term of this Lease shall be for a term of eighteen (18) months commencing on May 1, 2003 and ending on November 30, 2004 unless sooner terminated pursuant to any provision hereof; See Paragraph 16.29 of Addendum

3.2. **Delay in Commencement.** See Paragraph 16.30 of Addendum.

4. Rent. Lessee shall pay to Lessor as rent for the Premises equal monthly payments of $ 16,500.00, in advance, on the first day of each month of the term hereof. Lessee shall pay Lessor upon the closing of the transactions contemplated under the Purchase Agreement $ 16,500.00 as rent for May 2003

Rent for any period during the term hereof which is for less than one month shall be a pro rata portion of the monthly installment. Rent shall be payable in lawful money of the United States to Lessor at the address stated herein or to such other persons or at such other places as Lessor may designate in writing.

5. Security Deposit. Lessee shall deposit with Lessor upon $ 16,500.00 as security for Lessee's faithful performance of Lessee's obligations hereunder. If Lessee fails to pay rent or other charges due hereunder, or otherwise defaults with respect to any provision of this Lease, Lessor may use, apply or retain all or any portion of said deposit for the payment of any rent or other charge in default or for the payment of any other sum to which Lessor may become obligated by reason of Lessee's default, or to compensate Lessor for any loss or damage which Lessor may suffer thereby. If Lessor so uses or applies all or any portion of said deposit, Lessee shall within ten (10) days after written demand therefor deposit cash with Lessor in an amount sufficient to restore said deposit to the full amount hereinabove stated and Lessee's failure to do so shall be a material breach of this Lease. Lessor shall not be required to keep said deposit separate from its general accounts. If Lessee performs all of Lessee's obligations hereunder, said deposit, or so much thereof as has not theretofore been applied by Lessor, shall be returned, without payment of interest or other increment for its use, to Lessee (or, at Lessor's option, to the last assignee, if any of Lessee's interest hereunder) at the expiration of the term hereof, and after Lessee has vacated the Premises. No trust relationship is created herein between Lessor and Lessee with respect to said Security Deposit.

6. Use.

6.1 Use. The Premises shall be used and occupied only for manufacturing, warehousing, research and development and related office uses as well as other related legal use and for no other purpose;*

6.2 Compliance with Law.

(a) Lessor warrants to Lessee that the Premises, in its existing state, but without regard to the use for which Lessee will use the Premises, does not violate any applicable building code regulation or ordinance at the time that this Lease is executed. In the event that it is determined that this warranty has been violated, then it shall be the obligation of the Lessor, after written notice from Lessee, to promptly, at Lessor's sole cost and expense, to rectify any such violation. In the event that Lessee does not give to Lessor written notice of the violation of this warranty within 1 year from the commencement of the term of this Lease, it shall be conclusively deemed that such violation did not exist and the correction of the same shall be the obligation of the Lessee.

(b) Except as provided in paragraph 6.2 (a), Lessee shall, at Lessee's expense, comply promptly with all applicable statutes, ordinances, rules, regulations, orders, restrictions of record, and requirements in effect during the term or any part of the term hereof regulating the use by Lessee of the Premises. Lessee shall not use nor permit the use of the Premises in any manner that will tend to create waste or a nuisance or, if there shall be more than one tenant in the building containing the Premises, shall tend to disturb such other tenants.

6.3 Condition of Premises. Except as provided in paragraph 6.2 (a) Lessee hereby accepts the Premises in their condition existing as of the date of the execution hereof, subject to all applicable zoning, municipal, county and state laws, ordinances and regulations governing and regulating the use of the Premises, and accepts this Lease subject thereto and to all matters disclosed thereby and by any exhibits attached hereto. Lessee acknowledges that neither Lessor nor Lessor's agent has made any representation or warranty as to the suitability of the Premises for the conduct of Lessee's business.

7. Maintenance, Repairs and Alterations.

7.1 Lessee's Obligation. Lessee shall keep in good order, condition and repair the Premises and every part thereof, nonstructural, (whether or not such portion of the Premises requiring repair, or the means of repairing the same are reasonably or readily accessible to Lessee, and whether or not the need for such repairs occurs as a result of Lessee's use, any prior use, the elements or the age of such portion of the Premises) including, without limiting the generality of the foregoing, all plumbing, heating, airconditioning, ventilating, electrical, lighting facilities and equipment within the Premises, fixtures, walls (interior, ceilings, roofs (interior), floors, windows, doors, plate glass and skylights located within the Premises, and all landscaping, and signs located on the Premises and sidewalks and parkways adjacent to the Premises.

7.2 Surrender. On the last day of the term hereof, or on any sooner termination; Lessee shall surrender the Premises to Lessor in the same condition as

when received, broom clean, ordinary wear and tear excepted. Lessee shall repair any damage to the Premises occasioned by the removal of Lessee's trade fixtures, furnishings and equipment pursuant to Paragraph 7.5(d), which repair shall include the patching and filling of holes and repair of structural damage.

7.3 Lessor's Rights. If Lessee fails to perform Lessee's obligations under this Paragraph 7, Lessor may at its option (but shall not be required to) enter upon the Premises, after ten (10) days prior written notice to Lessee, and put the same in good order, condition and repair, and the cost thereof together with interest thereon at the rate of 10% per annum shall become due and payable as additional rental to Lessor together with Lessee's next rental installment.

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the closing of the transactions contemplated under the Purchase Agreement.
* subject to Lessor's approval, which shall not be unreasonably withheld as well as any and all applicable government approvals.

*except Lessor shall repair structural protions and the roof of the building, all exterior walls, driveways, parking lots and fences.
#See Paragraph 16.40 of Addendum

7.4. Lessor's Obligations. Subject to the provisions of Paragraphs 6.2(a) and 9 and except for damage caused by any negligent or intentional act or omission of Lessee, Lessee's agents, employees, or invitees in which event Lessee shall repair the damage. Lessor, at Lessor's expense shall keep in good order, condition and repair the foundations, exterior walls and the exterior roof of the Premises. Lessor shall not, however, be obligated to paint such exterior, nor shall Lessor be required to maintain the interior surface of exterior walls, windows, doors or plate glass. Lessor shall have no obligation to make repairs under this Paragraph 7.1 until a reasonable time after receipt of written notice of the need for such repairs. Lessee expressly waives the benefits of any statute now or hereafter in effect which would otherwise afford Lessee the right to make repairs at Lessor's expense or to terminate this Lease because of Lessor's failure to keep the Premises in good order, condition and repair.*

7.5 Alterations and Additions.

(a) Lessee shall not, without Lessor's prior written consent make any alterations, improvements, additions, or Utility Installations in, on or about the Premises, except for nonstructural alterations not exceeding $10,000 in any calendar year in cost. As used in this Paragraph 7.5 the term "Utility Installation" shall mean bus ducting, power panels, wiring, fluorescent fixtures, space heaters, conduits, airconditioning equipment and plumbing. Lessor may require that Lessee remove any or all of said alterations, improvements, additions or Utility Installations at the expiration of the term, and restore the Premises to their prior condition. Lessor may require Lessee to provide Lessor, at Lessee's sole cost and expense, a lien and completion bond in an amount equal to one and one-half times the estimated cost of such improvements, to insure Lessor against any liability for mechanic's and materialmen's liens and to insure completion of the work. Should Lessee make any alterations, improvements, additions or Utility Installations without the prior approval of Lessor, Lessor may require that Lessee remove any or all of the same.

(b) Any alterations, improvements, additions or Utility Installations in or about the Premises that Lessee shall desire to make and which requires the consent of the Lessor shall be presented to Lessor in written form, with proposed detailed plans. If Lessor shall give its consent the consent shall be deemed conditioned upon Lessee acquiring a permit to do so from appropriate governmental agencies, the furnishing of a copy thereof to Lessor prior to the commencement of the work and the compliance by Lessee of all conditions of said permit in a prompt and expeditious manner.

(c) Lessee shall pay, when due, all claims for labor or materials furnished or alleged to have been furnished to or for Lessee at or for use in the Premises, which claims are or may be secured by any mechanics' or materialmen's lien against the Premises or any interest therein. Lessee shall give Lessor not less than ten (10) days' notice prior to the commencement of any work in the Premises, and Lessor shall have the right to post notices of non-responsibility in or on the Premises as provided by law. If Lessee shall, in good faith, contest the validity of any such lien, claim or demand, then Lessee shall, at its sole expense defend itself and Lessor against the same and shall pay and satisfy any such adverse judgment that may be rendered thereon before the enforcement thereof against the Lessor or the Premises, upon the condition that if Lessor shall require, Lessee shall furnish to Lessor a surety bond satisfactory to Lessor in an amount equal to such contested lien, claim or demand indemnifying Lessor against liability for the same and holding the Premises free from the effect of such lien or claim. In addition, Lessor may require Lessee to pay Lessor's attorneys fees and costs in participating in such action if Lessor shall decide it is to its best interest to do so.

(d) Unless Lessor requires their removal, as set forth in Paragraph 7.5(a), all alterations, Improvements, additions and Utility Installations (whether or not such Utility Installations constitute trade fixtures of Lessee), which may be made on the Premises, shall become the property of Lessor and remain upon and be surrendered with the Premises at the expiration of the term. Notwithstanding the provisions of this Paragraph 7.5(d). Lessee's machinery and equipment, other than that which is affixed to the Premises so that it cannot be removed without material damage to the Premises, shall remain the property of Lessee and may be removed by Lessee subject to the provisions of Paragraph 7.2.#

8. Insurance Indemnity.

8.1 Insuring Party. As used in this Paragraph 8, the term "insuring party" shall mean the party who has the obligation to obtain the Property Insurance required hereunder. The insuring party shall be designated in Paragraph 16.26 hereof. Whether the insuring party is the Lessor or the Lessee, Lessee shall, as additional rent for the Premises, pay its pro rata portion; See Paragraph 16.33 of Addendum cost of all insurance required hereunder. If Lessor is the insuring party Lessee shall, within ten (10) days following demand by Lessor, reimburse Lessor for the cost of the insurance so obtained.

8.2 Liability Insurance. Lessee shall, at Lessee's expense obtain and keep in force during the term of this Lease a policy of Combined Single Limit, Bodily Injury and Property Damage Insurance insuring Lessor and Lessee against any liability arising out of the ownership, use, occupancy or maintenance of the Premises and all areas appurtenant thereto. Such insurance shall be a combined single limit policy in an amount not less than $1,000,000. The policy shall contain cross liability endorsements and shall insure performance by Lessee of the indemnity provisions of this Paragraph 8. The limits of said insurance shall not, however, limit the liability of Lessee hereunder. In the event that the Premises constitute a part of a larger property said insurance shall have a Lessor's Protective Liability endorsement attached thereto. If Lessee shall fail to procure and maintain said insurance Lessor may, but shall not be required to procure and maintain the same, but at the expense of Lessee. Not more frequently than each 5 years, if, in the reasonable opinion of Lessor, the amount of liability insurance required hereunder is not adequate, Lessee shall increase said insurance coverage as required by Lessor. Provided, however that in no event shall the amount of the liability insurance increase be more than fifty percent greater than the amount thereof during the preceding five years of the term of this lease. However, the failure of Lessor to require any additional insurance coverage shall not be deemed to relieve Lessee from any obligations under this Lease.

8.3 Property Insurance.

(a) The insuring party shall obtain and keep in force during the term of this Lease a policy or policies of insurance covering loss or damage to the Premises, in the amount of the full replacement value thereof, as the same may exist from time to time, which replacement value is now $4,250,000.00, but in no event less than the total amount of promissory notes secured by liens on the Premises against all perils included within the classification of fire, extended coverage, vandalism, malicious mischief, special extended perils (all risk) and sprinkler leakage. Said insurance shall provide for payment of loss thereunder to Lessor or to the holders of mortgages or deeds of trust on the Premises. The insuring party shall, in addition, obtain and keep in force during the term of this Lease a policy of rental income insurance covering a period of six months, with loss payable to Lessor, which insurance shall also cover all real estate taxes and insurance costs for said period. If the insuring party shall fail to procure and maintain said insurance the other party may, but shall not be required to, procure and maintain the same, but at the expense of Lessee. If such insurance coverage has a deductible clause, Lessee shall be liable for the deductible

amount.

(b) If the Premises are part of a larger building, or if the Premises are part of a group of buildings owned by Lessor which are adjacent to the Premises, then Lessee shall pay for any increase in the property insurance of such other building or buildings if said increase is caused by Lessee's acts, omissions, use or occupancy of the Premises.

(c) If the Lessor is the insuring party the Lessor will not insure Lessee's fixtures, equipment or tenant improvements unless the tenant improvements have become a part of the Premises under paragraph 7, hereof. But if Lessee is the insuring party the Lessee shall insure its fixtures equipment and tenant improvements.

(d) Not more frequently than each three years, if, in the opinion of Lessor, the amount of property insurance required hereunder is not adequate, the insuring party shall increase said insurance coverage as required by Lessor. However, such increase may be more frequent than each three years if required by the insurance carrier in order to maintain insurance for the full replacement value of the Premises.

8.4 Insurance Policies. Insurance required hereunder shall be in companies holding a "General Policyholders Rating" of B plus or better as set forth in the most current issue of "Best's Insurance Guide". The insuring party shall deliver to the other party copies of policies of such insurance or certificates evidencing the existence and amounts of such insurance with loss payable clauses satisfactory to Lessor. No such policy shall be cancellable or subject to reduction of coverage or other modification except after ten (10) days' prior written notice to Lessor. If Lessee is the insuring party Lessee shall, within ten (10) days prior to the expiration of such policies, furnish Lessor with renewals or "binders" thereof, or Lessor may order such insurance and charge the cost thereof to Lessee, which amount shall be payable by Lessee upon demand. Lessee shall not do or permit to be done anything which shall invalidate the insurance policies referred to in Paragraph 8.3. If Lessee does or permits to be done anything which shall increase the cost of the insurance policies referred to in Paragraph 8.3, then Lessee shall forthwith upon Lessor's demand reimburse Lessor for any additional premiums attributable to any act or omission or operation of Lessee causing such increase in the cost of insurance. If Lessor is the insuring party, and if the insurance policies maintained hereunder cover other improvements in addition to the Premises, Lessor shall deliver to Lessee a written statement setting forth the amount of any such insurance cost increase and showing in reasonable detail the manner in which it has been computed.

8.5 Waiver of Subrogation. Lessee and Lessor each hereby waive any and all rights of recovery against the other, or against the officers, employees, agents and representatives of the other, for loss of or damage to such waiving party or its property or the property of others under its control to the extent that such loss or damage is insured against under any insurance policy in force at the time of such loss or damages. The insuring party shall, upon obtaining the policies of insurance required hereunder, give notice to the insurance carrier or carriers that the foregoing mutual waiver of subrogation is contained in this Lease.

8.6. Indemnity. Lessee shall indemnify and hold harmless Lessor from and against any and all claims arising from Lessee's use of the Premises, or from the conduct of Lessee's business or from any activity, work or things done, permitted or suffered by Lessee in or about the Premises or elsewhere and shall further indemnify and hold harmless Lessor from and against any and all claims arising from any breach or default in the performance of any obligation on Lessee's part to be performed under the terms of this Lease, or arising from any negligence of the Lessee, or any of Lessee's agents, contractors, or employees, and from and against all costs, attorney's fees, expenses and liabilities incurred in the defense of any such claim or any action or proceeding brought thereon; and in case any action or proceeding be brought against Lessor by reason of any such claim, Lessee upon notice from Lessor shall defend the same at Lessee's expense by counsel satisfactory to Lessor. Lessee, as a material part of the consideration to Lessor, hereby assumes all risk of damage to property or injury to persons, in, upon or about the Premises arising from any cause and Lessee hereby waives all claims in respect thereof against Lessor. See Paragraph 16.38 of Addendum

8.7 Exemption of Lessor from Liability. Lessee hereby agrees that Lessor shall not be liable for injury to Lessee's business or any loss of income therefrom or for damage to the goods, wares, merchandise or other property of Lessee, Lessee's employees, invitees, customers, or any other person in or about the Premises, nor shall Lessor be liable for injury to the person of Lessee, Lessee's employees, agents or contractors, whether such damage or injury is caused by or results from fire, steam, electricity, gas, water or rain, or from the breakage, leakage, obstruction or other defects of pipes, sprinklers, wires, appliances, plumbing, air conditioning or lighting fixtures, or from any other cause, whether the said damage or injury results from conditions arising upon the Premises or upon other portions of the building of which the Premises are a part, or from other sources or places, and regardless of whether the cause of such damage or injury or the means of repairing the same is inaccessible to Lessee Lessor shall not be liable for any damages arising from any act or neglect of any other tenant, if any of the building in which the Premises are located

9. Damage or Destruction.

9.1 Partial Damage — Insured. Subject to the provisions of Paragraphs 9.3 and 9.4. if the Premises are damaged and such damage was caused by a casualty covered under an insurance policy required to be maintained pursuant to Paragraph 8.3. Lessor shall at Lessor's expense repair such damage but not Lessee's fixtures, equipment or tenant improvements unless the same have become a part of the Premises pursuant to Paragraph 7.5 hereof as soon as reasonably possible and this Lease shall continue in full force and effect. Notwithstanding the above, if the Lessee is the insuring party, and if the insurance proceeds received by Lessor are not sufficient to effect such repair, Lessor shall give notice to Lessee of the amount required in addition to the insurance proceeds to effect such repair. Lessee shall contribute the required amount to Lessor within ten days after Lessee has received notice from Lessor of the shortage in the insurance. When Lessee shall contribute such amount to Lessor, Lessor shall make such repairs as soon as reasonably possible and this Lease shall continue in full [ILLEGIBLE].

9.2 Partial Damage — Uninsured. Subject to the provisions of Paragraphs 9.3 and 9.4, if at any time during the term hereof the Premises are damaged, except by a negligent or willful act of Lessee, (in which event Lessee shall make the repairs, at its expense) and such damage was caused by a casualty not covered under an insurance policy required to be maintained pursuant to Paragraph 8.3, Lessor may at Lessor's option either (i) repair such damage as soon as reasonably possible at Lessor's expense, in which event this Lease shall continue in full force and effect, or (ii) give written notice to Lessee within thirty (30) days after the date of the occurrence of such damage of Lessor's intention to cancel and terminate this Lease as of the date of the occurrence of such damage. In the event Lessor elects to give such notice of Lessor's intention to cancel and terminate this Lease, Lessee shall have the right within ten (10) days after the receipt of such notice to give written notice to Lessor of Lessee's intention to repair such damage at Lessee's expense, without reimbursement from Lessor, in which event this Lease shall continue in full force and effect, and Lessee shall proceed to make such repairs as soon as reasonably possible. If Lessee does not give such notice within such 10-day period this Lease shall be cancelled and terminated as of the date of the occurrence of such damage.

9.3 Total Destruction. If at any time during the term hereof the Premises are totally destroyed from any cause whether or not covered by the insurance required to be maintained pursuant to Paragraph 8.3 (including any total destruction required by any authorized public authority) this Lease shall automatically terminate as of the date of such total destruction.

9.4 Damage Near End of Term. If the Premises are partially destroyed or damaged during the last six months of the term of this Lease, Lessor may at Lessor's option cancel and terminate this Lease as of the date of occurrence of such damage by giving written notice to Lessee of Lessor's election to do so within 30 days after the date of occurrence of such damage.

9.5 Abatement of Rent; Lessee's Remedies.

(a) If the Premises are partially destroyed or damaged and Lessor or Lessee repairs or restores them pursuant to the provisions of this Paragraph 9, the rent payable hereunder for the period during which such damage, repair or restoration continues shall be abated in proportion to the degree to which Lessee's use of the Premises is impaired; Except for abatement of rent if any, Lessee shall have no claim against Lessor for any damage suffered by reason of any such damage, destruction, repair or restoration.

(b) If Lessor shall be obligated to repair or restore the Premises under the provisions of this Paragraph 9 and shall not commence such repair or restoration within 90 days after such obligation shall accrue. Lessee may at Lessee's option cancel and terminate this Lease by giving Lessor written notice of Lessee's election to do so at any time prior to the commencement of such repair or restoration. In such event this Lease shall terminate as of the date of such notice.

9.6 Termination — Advance Payments. Upon termination of this Lease pursuant to this Paragraph 9, an equitable adjustment shall be made concerning advance rent and any advance payments made by Lessee to Lessor. Lessor shall, in addition, return to Lessee so much of Lessee's security deposit as has not theretofore been applied by Lessor.

9.7 Waiver. Lessee waives the provisions of California Civil Code Sections 1932 (2) and 1933 (4) which relate to termination of leases when the thing leased is destroyed and agrees that such event shall be governed by the terms of this Lease.

10. Real Property Taxes.

10.1 Payment of Taxes. Lessee shall pay its pro rata share (as reflected in Paragraph 16.33) to Lessor upon written notice thereof. real property taxes applicable to the Premises during the term of this Lease. All such payments shall be made at least ten (10) days prior to the delinquency date of such payment. Lessee shall promptly furnish Lessor with satisfactory evidence that such taxes have been paid: If any such taxes paid by Lessee shall cover any period of time prior to or after the expiration of the term hereof, Lessee's share of such taxes shall be equitably prorated to cover only the period of time within the tax fiscal year during which this Lease shall be in effect, and Lessor shall reimburse Lessee to the extent required.

10.2 Definition of "Real Property" Tax. As used herein, the term "real property tax" shall include any form of assessment, license fee, commercial rental tax, levy, penalty, or tax (other than inheritance or estate taxes), imposed by any authority having the direct or indirect power to tax, including any city, county, state or federal government, or any school, agricultural, lighting, drainage or other improvement district thereof, as against any legal or equitable interest of Lessor in the Premises or in the real property of which the Premises are a part, as against Lessor's right to rent or other income therefrom, or as against Lessor's business of leasing the Premises or any tax imposed in substitution, partially or totally, of any tax previously included within the definition of real property tax, or any additional tax the nature of which was previously included within the definition of real property tax.

10.3 Joint Assessment. If the Premises are not separately assessed, Lessee's liability shall be an equitable proportion of the real property taxes for all of the land and improvements included within the tax parcel assessed, such proportion to be determined by Lessor from the respective valuations assigned in the assessor's work sheets or such other information as may be reasonably available. Lessor's reasonable determination thereof, in good faith, shall be conclusive.

10.4 Personal Property Taxes.

(a) Lessee shall pay prior to delinquency all taxes assessed against and levied upon trade fixtures, furnishings, equipment and all other personal property of Lessee contained in the Premises or elsewhere. When possible, Lessee shall cause said trade fixtures, furnishings, equipment and all other personal property to be assessed and billed separately from the real property of Lessor.

(b) If any of Lessee's said personal property shall be assessed with Lessor's real property, Lessee shall pay Lessor the taxes attributable to Lessee within 10 days after receipt of a written statement setting forth the taxes applicable to Lessee's property.

11. Utilities.

Lessee shall pay for all water, sewer, gas, heat, light, power, telephone and other utilities and services supplied to the Premises, together with any taxes thereon. If any such services are not separately metered to Lessee, Lessee shall pay a reasonable proportion to be determined by Lessor of all charges jointly metered with other premises.

12. Assignment and Subletting.

12.1 Lessor's Consent Required. Lessee shall not voluntarily or by operation of law assign, transfer, mortgage, sublet, or otherwise transfer or encumber all or any part of Lessee's interest in this Lease or in the Premises, without Lessor's prior written consent, which Lessor shall not unreasonably withhold. Any attempted assignment, transfer, mortgage, encumbrance or subletting without such consent shall be void, and shall constitute a breach of this Lease.

12.2 Lessee Affiliate. Notwithstanding the provisions of paragraph 12.1 hereof, Lessee may assign or sublet the Premises, or any portion thereof, without Lessor's consent, to any corporation which controls, is controlled by or is under common control with Lessee, or to any corporation resulting from the merger or consolidation with Lessee, or to any person or entity which acquires all the assets of Lessee as a going concern of the business that is being conducted on the Premises, provided that said assignee assumes, in full, the obligations of Lessee under this Lease. Any such assignment shall not, in any way, affect or limit the liability of Lessee under the terms of this Lease even if after such assignment or subletting the terms of this Lease are materially changed or altered without the consent of Lessee, the consent of whom shall not be necessary.

12.3 No Release of Lessee. Regardless of Lessor's consent, no subletting or assignment shall release Lessee of Lessee's obligation or alter the primary liability of Lessee to pay the rent and to perform all other obligations to be performed by Lessee hereunder. The acceptance of rent by Lessor from any other person shall not be deemed to be a waiver by Lessor of any provision hereof. Consent to one assignment or subletting shall not be deemed consent to any subsequent assignment or subletting. In the event of default by any assignee of Lessee or any successor of Lessee, in the performance of any of the terms hereof, Lessor may proceed directly against Lessee without the necessity of exhausting remedies against said assignee. Lessor may consent to subsequent assignments or subletting of this Lease or amendments or modifications to this Lease with assignees of Lessee, without notifying Lessee, or any successor of Lessee, and without obtaining its or their consent thereto and such action shall not relieve Lessee of liability under this Lease.

12.4 Attorney's Fees. In the event Lessee shall assign or sublet the Premises or request the consent of Lessor to any assignment or subletting or if Lessee shall request the consent of Lessor for any act that Lessee proposes to do then Lessee shall pay Lessor's reasonable attorneys fees incurred in connection therewith, such attorneys fees not to exceed $250.00 for each such request.

13. Defaults; Remedies.

13.1 Defaults. The occurrence of any one or more of the following events shall constitute a material default and breach of this Lease by Lessee:

(a) The vacating or abandonment of the Premises by Lessee.

(b) The failure by Lessee to make any payment of rent or any other payment required to be made by Lessee hereunder, as and when due, where such failure shall continue for a period of three days after written notice thereof from Lessor to Lessee.

(c) The failure by Lessee to observe or perform any of the covenants, conditions or provisions of this Lease to be observed or performed by Lessee, other than described in paragraph (b) above, where such failure shall continue for a period of 30 days after written notice hereof from Lessor to Lessee; provided, however, that if the nature of Lessee's default is such that more than 30 days are reasonably required for its cure, then Lessee shall not be deemed to be in default if Lessee commenced such cure within said 30-day period and thereafter diligently pursues such cure to completion.

(d) (i) The making by Lessee of any general assignment, or general arrangement for the benefit of creditors; (ii) the filling by or against Lessee of a petition to have Lessee adjudged a bankrupt or a petition for reorganization or arrangement under any law relating to bankruptcy (unless, in the case of a petition filed against Lessee, the same is dismissed within 60 days); (iii) the appointment of a trustee or receiver to take possession of substantially all of Lessee's assets located at the Premises or of Lessee's interest in this Lease, where possession is not restored to Lessee within 30 days; or (iv) the attachment, execution or other judicial seizure of substantially all of Lessee's assets located at the Premises or of Lessee's interest in this Lease, where such seizure is not discharged within 30 days.

(e) The discovery by Lessor that any financial statement given to Lessor by Lessee, any assignee of Lessee, any subtenant of Lessee, any successor in interest of Lessee or any guarantor of Lessee's obligations hereunder, and any of them, was materially false.

13.2 Remedies. In the event of any such material default or breach by Lessee, Lessor may at any time thereafter, with or without notice or demand and without limiting Lessor in the exercise of any right or remedy which Lessor may have by reason of such default or breach:

(a) Terminate Lessee's right to possession of the Premises by any lawful means, in which case this Lease shall terminate and Lessee shall immediately surrender possession of the Premises to Lessor. In such event Lessor shall be entitled to recover from Lessee all damages incurred by Lessor by reason of Lessee's default including, but not limited to, the cost of recovering possession of the Premises; expenses of reletting, including necessary renovation and alteration of the Premises, reasonable attorney's fees, and any real estate commission actually paid; the worth at the time of award by the court having jurisdiction thereof of the amount by which the unpaid rent for the balance of the term after the time of such award exceeds the amount of such rental loss for the same period that Lessee proves could be reasonably avoided; that portion of the leasing commission paid by Lessor pursuant to Paragraph 15 applicable to the unexpired term of this Lease.

(b) Maintain Lessee's right to possession in which case this Lease shall continue in effect whether or not Lessee shall have abandoned the Premises. In such event Lessor shall be entitled to enforce all of Lessor's rights and remedies under this Lease, including the right to recover the rent as it becomes due hereunder.

(c) Pursue any other remedy now or hereafter available to Lessor under the laws or judicial decisions of the State in which the Premises are located.

13.3 Default by Lessor. Lessor shall not be in default unless Lessor fails to perform obligations required of Lessor within a reasonable time, but in no event later than thirty (30) days after written notice by Lessee to Lessor and to the holder of any first mortgage or deed of trust covering the Premises whose name and address shall have theretofore been furnished to Lessee in writing, specifying wherein Lessor has failed to perform such obligations; provided, however, that if the nature of Lessor's obligation is such that more than thirty (30) days are required for performance then Lessor shall not be in default if Lessor commences performance within such 30-day period and thereafter diligently prosecutes the same to completion.

13.4 Late Charges. Lessee hereby acknowledges that late payment by Lessee to Lessor of rent and other sums due hereunder will cause Lessor to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed on Lessor by the terms of any mortgage or trust deed covering the Premises. Accordingly, if any installment of rent or any other sum due from Lessee shall not be received by Lessor or Lessor's designee within ten (10) days after such amount shall be due, Lessee shall pay to Lessor a late charge equal to 5% of such overdue amount. The parties hereby agree that such late charge represents a fair and reasonable estimate of the costs Lessor will incur by reason of late payment by Lessee. Acceptance of such late charge by Lessor shall in no event constitute a waiver of Lessee's default with respect to such overdue amount, nor prevent Lessor from exercising any of the other rights and remedies granted hereunder.

14. Condemnation. If the Premises or any portion thereof are taken under the power of eminent domain, or sold under the threat of the exercise of said power (all of which are herein called "condemnation"), this Lease shall terminate as to the part so taken as of the date the condemning authority takes title or possession, whichever first occurs. If more than 10% of the floor area of the improvements on the Premises, or more than 25% of the land area of the Premises which is not occupied by any improvements, is taken by condemnation, Lessee may, at Lessee's option, to be exercised in writing only within ten (10) days after Lessor shall have given Lessee written notice of such taking (or in the absence of such notice, within ten (10) days after the condemning authority shall have taken possession) terminate this Lease as of the date the condemning authority takes such possession. If Lessee does not terminate this Lease in accordance with the foregoing, this Lease shall remain in full force and effect as to the portion of the Premises remaining, except that the rent shall be reduced in the proportion that the floor area taken bears to the total floor area of the building situated on the Premises. Any award for the taking of all or any part of the Premises under the power of eminent domain or any payment made under threat of the exercise of such power shall be the property of Lessor, whether such award shall be made as compensation for diminution in value of the leasehold or for the taking of the fee, or as severance damages; provided, however, that Lessee shall be entitled to any award for loss of or damage to Lessee's trade fixtures and removable personal property. In the event that this Lease is not terminated by reason of such condemnation. Lessor shall, to the extent of severance damages received by Lessor in connection with such condemnation, repair any damage to the Premises caused by such condemnation except to the extent that Lessee has been reimbursed therefor by the condemning authority. Lessee shall pay any amount in excess of such severance damages required to complete such repair.

15. Broker's Fee. Upon execution of this Lease by both parties, Lessor shall pay to N/A, a licensed real estate broker, a fee as set forth in a separate agreement between Lessor and said broker, or in the event there is no separate agreement the sum of $0.00 for brokerage services rendered by said broker to Lessor in this transaction. Lessor further agrees that if Lessee exercises any option granted herein or any option substantially similar thereto, either to extend the term of this Lease, to renew this Lease, to purchase said Premises or any part thereof and/or any adjacent property which Lessor may own or in which Lessor has an interest, or any other option granted herein, or if said broker is the procuring cause of any other lease or sale entered into between the parties pertaining to the Premises and/or any adjacent property in which Lessor has an interest, then as to any of said transactions, Lessor shall pay said broker a fee in accordance with the schedule of said broker in effect at the time of execution of this Lease. Lessor agrees to pay said fee not only on behalf of Lessor but also on behalf of any person, corporation, association, or other entity having an ownership interest in said real property or any part thereof, when such fee is due hereunder. Any transferee of Lessor's Interest in this Lease, by accepting an assignment of such interest, shall be deemed to have assumed Lessor's obligation under this Paragraph 15. Said broker shall be a third party beneficiary of the provisions of this Paragraph.

16. General Provisions.

16.1 **Estoppel Certificate.**

(a) Lessee shall at any time upon not less than ten (10) days' prior written notice from Lessor execute, acknowledge and deliver to Lessor a statement in writing (i) certifying that this Lease is unmodified and in full force and effect (or, if modified, stating the nature of such modification and certifying that this Lease, as so modified, is in full force and effect) and the date to which the rent and other charges are paid in advance, if any, and (ii) acknowledging that there are not, to Lessee's knowledge, any uncured defaults on the part of Lessor hereunder, or specifying such defaults if any are claimed. Any such statement may be conclusively relied upon by any prospective purchaser or encumbrancer of the Premises.

(b) Lessee's failure to deliver such statement within such time shall be conclusive upon Lessee (i) that this Lease is in full force and effect, without modification except as may be represented by Lessor, (ii) that there are no uncured defaults in Lessor's performance, and (iii) that not more than one month's rent has been paid in advance or such failure may be considered by Lessor as a default by Lessee under this Lease.

(c) If Lessor desires to finance or refinance the Premises, or any part thereof, Lessee hereby agrees to deliver to any lender designated by Lessor such financial statements of Lessee as may be reasonably required by such lender. Such statements shall include the past three years' financial statements of Lessee. All such financial statements shall be received in confidence and shall be used only for the purposes herein set forth.

16.2 **Lessor's Liability.** The term "Lessor" as used herein shall mean only the owner or owners at the time in question of the fee title or a lessee's interest in a ground lease of the Premises, and except as expressly provided in Paragraph 15, in the event of any transfer of such title or interest, Lessor herein named (and in case of any subsequent transfers the then grantor) shall be relieved from and after the date of such transfer of all liability as respects Lessor's obligations thereafter to be performed, provided that any funds in the hands of Lessor or the then grantor at the time of such transfer, in which Lessee has an interest, shall be delivered to the grantee. The obligations contained in this Lease to be performed by Lessor shall, subject as aforesaid, be binding on Lessor's successors and assigns, only during their respective periods of ownership.

16.3 **Severability.** The invalidity of any provision of this Lease as determined by a court of competent jurisdiction, shall in no way affect the validity

of any other provision hereof.

16.4 **Interest on Past-due Obligations.** Except as expressly herein provided, any amount due Lessor not paid when due shall bear interest at 10% per annum from the date due. Payment of such interest shall not excuse or cure any default by Lessee under this Lease, provided, however, that interest shall not be payable on late charges incurred by Lessee nor on any amounts upon which late charges are paid by Lessee.

16.5 **Time of Essence.** Time is of the essence.

16.6 **Captions.** Article and paragraph captions are not a part hereof.

16.7 **Incorporation of Prior Agreements; Amendments**. This Lease contains all agreements of the parties with respect to any matter mentioned herein. No prior agreement or understanding pertaining to any such matter shall be effective. This Lease may be modified in writing only, signed by the parties in interest at the time of the modification. Except as otherwise stated in this Lease, Lessee hereby acknowledges that neither the real estate broker listed in Paragraph 15 hereof nor any cooperating broker on this transaction nor the Lessor or any employees or agents of any of said persons has made any oral or written warranties or representations to Lessee relative to the condition or use by Lessee of said Premises and Lessee acknowledges that Lessee assumes all responsibility regarding the Occupational Safety Health Act or the legal use of adaptability of the Premises and the compliance thereof to all applicable laws and regulations enforced during the term of this Lease except as otherwise specifically stated in this Lease.

16.8 **Notices.** Any notice required or permitted to be given hereunder shall be in writing and may be given by personal delivery or by certified mail, and if given personally or by mail, shall be deemed sufficiently given if addressed to Lessee or to Lessor, at the address noted below the signature of the respective parties, as the case may be. Either party may by notice to the other specify a different address for notice purposes except that upon Lessee's taking possession of the Premises, the Premises shall constitute Lessee's address for notice purposes. A copy of all notices required or permitted to be given to Lessor hereunder shall be concurrently transmitted to such party or parties at such addresses as Lessor may from time to time hereafter designate by notice to Lessee.

16.9 **Waivers**. No waiver by Lessor of any provision hereof shall be deemed a waiver of any other provision hereof or of any subsequent breach by Lessee of the same or any other provision. Lessor's consent to or approval of any act shall not be deemed to render unnecessary the obtaining of Lessor's consent to or approval of any subsequent act by Lessee. The acceptance of rent hereunder by Lessor shall not be a waiver of any preceding breach by Lessee of any provision hereof, other than the failure of Lessee to pay the particular rent so accepted, regardless of Lessor's knowledge of such preceding breach at the time of acceptance of such rent.

16.10 **Recording.** Lessee shall not record this Lease without Lessor's prior written consent, and such recordation shall, at the option of Lessor constitute a non-curable default of Lessee hereunder. Either party shall, upon request of the other, execute, acknowledge and deliver to the other a "short form" memorandum of this Lease for recording purposes.

16.11 **Holding Over.** If Lessee remains in possession of the Premises or any part thereof after the expiration of the term hereof without the express written consent of Lessor, such occupancy shall be a tenancy from month to month at a rental in the amount of the last monthly rental plus all other charges payable hereunder, and upon all the terms hereof applicable to a month-to-month tenancy.

16.12 **Cumulative Remedies.** No remedy or election hereunder shall be deemed exclusive but shall, wherever possible, be cumulative with all other remedies at law or in equity.

16.13 **Covenants and Conditions.** Each provision of this Lease performable by Lessee shall be deemed both a covenant and a condition.

16.14 **Binding Effect; Choice of Law.** Subject to any provisions hereof restricting assignment or subletting by Lessee and subject to the provisions of Paragraph 16.2 this Lease shall bind the parties, their personal representatives, successors and assigns. This Lease shall be governed by the laws of the State in which the Premises are located.

16.15 **Subordination.**

(a) This Lease, at Lessor's option, shall be subordinate to any ground lease, mortgage, deed of trust, or any other hypothecation for security now or hereafter placed upon the real property of which the Premises are a part and to any and all advances made on the security thereof and to all renewals, modifications, consolidations, replacements and extensions thereof. Notwithstanding such subordination, Lessee's right to quiet possession of the Premises shall not be disturbed. If Lessee is not in default and so long as Lessee shall pay the rent and observe and perform all of the provisions of this Lease unless this Lease is otherwise terminated pursuant to its terms. If any mortgagee, trustee or ground lessor shall elect to have this Lease prior to the lien of its mortgage, deed of trust or ground lease, and shall give written notice thereof to Lessee, this Lease shall be deemed prior to such mortgage, deed of trust or ground lease, whether this Lease is dated prior or subsequent to the date of said mortgage, deed of trust or ground lease or the date of recording thereof.

(b) Lessee agrees to execute any documents required to effectuate such subordination or to make this Lease prior to the lien of any mortgage, deed of trust or ground lease, as the case may be, and failing to do so within ten (10) days after written demand, does hereby make, constitute and irrevocably appoint Lessor as Lessee's attorney in fact and in Lessee's name, place and stead, to do so.

16.16 **Attorney's Fees.** If either party or the broker named herein brings an action to enforce the terms hereof or declare rights hereunder, the prevailing party in any such action, on trial or appeal, shall be entitled to his reasonable attorney's fees to be paid by the losing party as fixed by the court. The provisions of this paragraph shall inure to the benefit of the broker named herein who seeks to enforce a right hereunder.

16.17 **Lessor's Access.** Lessor and Lessor's agents shall have the right to enter the Premises at reasonable times on 24 hours notice (except in emergencies) for the purpose of inspecting the same, showing the same to prospective purchasers, or lenders, or lessees, and making such alterations, repairs, improvements or additions to the Premises or to the building of which they are a part as Lessor may deem necessary or desirable. Lessor may at any time place on or about the Premises any ordinary "For Sale" signs and Lessor may at any time during the last 120 days of the term hereof place on or about the Premises any ordinary "For Lease" signs, all without rebate of rent or liability to Lessee.

16.18 **Signs and Auctions.** Lessee shall not place any sign upon the Premises or connect any auction thereon without Lessor's prior written consent except that Lessee shall have the right, without the prior permission of Lessor to place ordinary and usual for rent of sublet signs thereon.

16.19 **Merger.** The voluntary or other surrender of this Lease by Lessee, or a mutual cancellation thereof, or a termination by Lessor, shall not work a merger, and shall, at the option of Lessor, terminate all or any existing subtenancies or may, at the option of Lessor, operate as an assignment to Lessor of any or all of such subtenancies.

16.20 **Corporate Authority.** If Lessee is a corporation, each individual executing this Lease on behalf of said corporation represents and warrants that he is duly authorized to execute and deliver this Lease on behalf of said corporation, in accordance with a duly adopted resolution of the Board of Directors of said corporation or in accordance with the Bylaws of said corporation, and that this Lease is binding upon said corporation in accordance with its terms. If Lessee is a corporation Lessee shall, within thirty (30) days after execution of this Lease, deliver to Lessor a certified copy of a resolution of the Board of Directors of said corporation authorizing or ratifying the execution of this Lease.

16.21 **Consents.** Wherever in this Lease the consent of one party is required to an act of the other party such consent shall not be unreasonably withheld.

16.22 **Guarantor.** In the event that there is a guarantor of this Lease, said guarantor shall have the same obligations as Lessee under Paragraphs 16.1 and 16.20 of this Lease.

16.23 **Quiet Possession.** Upon Lessee paying the fixed rent reserved hereunder and observing and performing all of the covenants, conditions and provisions on Lessee's part to be observed and performed hereunder, Lessee shall have quiet possession of the Premises for the entire term hereof subject to all of the provisions of this Lease.

16.24 **Options.** In the event that the Lessee, under the terms of this Lease, has any option to extend the term of this Lease, or any option to purchase the Premises or any right of first refusal to purchase the Premises or other property of Lessor, then each of such options and rights are personal to Lessee and may not be exercised or be as igned, voluntarily or involuntarily, by or to any one other than Lessee except that it may be exercised by or assigned to any of the entities described in paragraph 12.2 hereof for whom Lessee does not need the consent of Lessor to assign this Lease. In the event that Lessee hereunder has any multiple options to extend this Lease a later option to extend the Lease cannot be exercised unless the prior option has been so exercised.

16.25 **Multiple Tenant Building Rules and Regulations.** In the event that the Premises are part of a larger building or group of buildings then Lessee agrees that it will abide by, keep and observe all reasonable rules and regulations which Lessor may make from time to time for the management, safety, care, and cleanliness of the building and grounds, the parking of vehicles and the preservation of good order therein as well as for the convenience of other occupants and tenants of the building. Further, Lessee will promptly pay its prorata share, as reasonably determined by Lessor, of any maintenance or repair of such portion of the Premises or such portion of the property of which the Premises are a part, which are common areas or used by Lessee and other occupants thereof. The violations of any such rules and regulations, or the failure to pay such prorata share of costs, shall be deemed a material breach of this Lease by Lessee.

16.26 **Insuring Party.** The insuring partly under this lease shall be the Lessor.

16.27 **Additional Provisions.** If there are no additional provisions draw a line from this point to the next printed word after the space left here. If there are additional provisions place the same here.

SEE ADDENDUM ATTACHED HERETO AND MADE A PART HEREOF
ALSO INCLUDES EXHIBIT A (property diagram)

The parties hereto have executed this Lease at the place and on the dates specified immediately adjacent to their respective signatures.

If this Lessee has been filled in it has been prepared for submission to your attorney for approval. No representation or recommendation is made by the real estate broker or its agents or employees as to the legal sufficiency, legal effect, or tax consequences of this Lease or the transaction relating thereto.

Executed at Palm Desert, Calif. COUNTY ROAD PROPERTIES

on March 8, 2003 By/s/ Roland /s/ Audrey Lampert Lampert

Address 660 Woodside Drive, Woodside, CA 94062 ROLAND AUDREY LAMPERTLAMPERT

P.O. Box 7624, Menlo Park, CA 94026-7824

By/s/ Boris Wolper

BORIS MALKAH WOLPER WOLPER CAROTHERS

"LESSOR" (Corporate seal)

Executed at

GENOMIC SOLUTIONS INC., a Delaware corporation

on

By/s/ Jeffrey S. Williams

ByJeffrey S. Williams, President

Address 935 Washington St., San Carlos, CA 94070

"LESEE" (Corporate Seal)

Exhibit “A”

This is a diagram of the city block (the “Block”) on which the leased property is located. The Block is bordered to the north by Washington St., to the east by Industrial Road and to the west by Bayport Ave. Industrial Road extends one block to the north and one block to the south of the Block. Washington St. extends one block to the west of the Block. Bayport Ave extends one block to the north of the Block. Bayside Blvd. intersects with Washington St. between Industrial Road and Bayport Ave. and terminates at the Block. Varian St. originates at the bottom right portion of the Block and runs west. No border or street appears to the direct south of the Block. The Block is divided into eleven subparts, labeled (clockwise, from top left) Block 7, Parking, 1650 Industrial, 929 Washington, 933 Washington, 933 Washington, 935 Washington, Parking, 990 Varian, Block 7 and Block 7. Descriptions of the subparts appear below.

Block 7 (top left subpart of Block). A rectangular subpart with a large X drawn through it and the words “Block 7” running from the west side to the east side of the subpart. This subpart measures 0.9 inches by 1.75 inches.

Parking (top middle subpart of Block). A subpart shaped like a backward letter ‘L’ with diagonal lines drawn through it. The larger leg of the ‘L’ shape measures 1 inch by 5.25 inches and the smaller leg measures 0.9 inches by 0.9 inches. The word “Parking”, running from the north side to the south side, appears four times in this subpart.

1650 Industrial (top right subpart of Block). A rectangular subpart measuring 1 inch by 3 inches with the words “1650 Industrial” running from the north side to the south side of the subpart. An interior line bisects this subpart creating a letter ‘L’ shaped section on its eastern side. The larger leg (running north to south) of the ‘L’ shape measures 0.9 inches by 0.8 inches and the smaller leg (running east to west) measures 0.1 inch by 0.8 inches. The number ‘82’ is handwritten into this subpart in three places with the letters running from east to west. The number ‘100’ is handwritten into this subpart running north to south.

929 Washington (upper middle right subpart of Block). A rectangular subpart measuring 1 inch by 0.8 inches with the words “929 Washington” running from the north side to the south side of the subpart. An interior line bisects this subpart creating a letter ‘L’ shaped section on its northern side. The larger leg (running north to south) of the ‘L’ shape measures 0.4 inches by 0.1 inches and the smaller leg (running east to west) measures 0.1 inches by 0.1 inches. The number ‘100’ is handwritten into this subpart with the letters running from east to west. The number ‘116’ is handwritten into this subpart running north to south.

933 Washington (middle right subpart of Block). A rectangular subpart measuring 0.9 inches by 1.6 inches with the words “933 Washington” running from the north side to the south side of the subpart. The number ‘120’ is handwritten into this subpart with the letters running from east to west. The number ‘84’ is handwritten into this subpart running north to south.

935 Washington (lower middle right subpart of Block). A rectangular subpart measuring 2.2 inches by 1 inch with the words “935 Washington” running from the north side to the south side of the subpart. The subpart is shaded with crisscrossing diagonal lines.

Parking (bottom right subpart of Block). A square subpart measuring 1.3 inches by 1.3 inches with the word “Parking” running from the north side to the south side of the subpart. The subpart is shaded with diagonal lines.

990 Varian (bottom middle subpart of Block). A rectangular subpart measuring 1 inch by 1.3 inches with the words “990 Varian” running from the north side to the south side of the subpart.

Block 7 (bottom left subpart of Block). A rectangular subpart with a large X drawn through it and the words “Block 7” running from the west side to the east side of the subpart. This subpart measures 0.8 inches by 2 inches.

Block 7 (middle left subpart of Block). This subpart is separated from the Block 7 subpart described above by the smaller leg of the ‘L’ shaped space labeled as Parking. It is a rectangular subpart with a large X drawn through it and the words “Block 7” running from the west side to the east side of the subpart. This subpart measures 0.8 inches by 1.8 inches. The number ‘200’ is handwritten into this subpart with the letters running from east to west. The number ‘100’ is handwritten into this subpart running north to south and appears at the east and west ends of the subpart.

Between Varian St. and Washington St. the following words are printed:

WOLPER AND COMPANY
660 Woodside Drive
Woodside, CA 94062

ADDENDUM TO LEASE
Dated March, 2003
By and between
COUNTY ROAD PROPERTIES as Lessor and
GENOMIC SOLUTIONS INC. as Lessee

16.28 Parking.
Lessee shall have the exclusive right to use all spaces currently marked "GeneMachines" on the east side of the premises.

16.29 Term.
Paragraph 3.1 of the Lease is modified by the addition of the following: provided however, that this Lease shall only become effective upon the closing of the transaction contemplated in that Asset Purchase Agreement (the "Purchase Agreement"), dated February 28, 2003, between Lessee and Genomic Instrumentation Services, Inc., d/b/a GeneMachines.

16.30 Delay in Commencement.
Paragraph 3.2 of the Lease is modified and shall read in its entirety as follows: In the event that the closing of the transactions contemplated by the Purchase Agreement does not take place prior to April 30, 2003, Lessee shall have no obligations under this Lease, including any obligation for any security deposit and Lessor shall be under no obligation to Lessee.

16.31 Condition of Premises.
With respect to Paragraph 6.3, Lessor warrants that all building systems and sub-systems are in good working condition, and that the premises will be free from any code violations and will comply with ADA requirements at the commencement of the lease. Compliance with these warranties shall be at Lessor's sole cost and expense.

16.32 Options.

A. *Grant of Option to Extend:* Lessee shall have the right to extend the term of this Lease ("Option") for two (2) consecutive extension terms of three (3) years each, commencing upon the completion of the initial term, on all the terms and conditions set forth herein except that rent shall be adjusted at the commencement of each such extension term pursuant to the provisions set forth below.

B. *Exercise of Option.* Lessee may exercise its Option(s) to extend by giving notice in writing not later than March 1, 2004 for the first extension term, and not later than March 1, 2007, for the second extension term. Notice of the exercise of the Option shall be given by certified mail, to the Lessor at 660 Woodside Drive, Woodside, CA 94062-2357, and simultaneously to 1875 Oak Knoll Lane, Menlo Park, CA 94025. Failure to exercise an Option in a timely manner shall render it null and void and of no further force and effect.

C. *Effect of Default on Options.* Lessee shall have no right to exercise an Option (i) if, at the time of exercise of the Option, Lessee is in default under the terms of this Lease; or (ii) If Lessee has failed, on two or more occasions in the preceding twelve (12) months of the lease term, to remit any installment of rent or any other sum due within ten (10) days after written notice from Lessor to Lessee that such payment is due. All

rights of Lessee under the provisions of an Option shall terminate and be of no further force or effect, notwithstanding Lessee's timely exercise of an Option, if Lessee is in default under the terms of this Lease at the time of the commencement of the extended term. Lessor's failure to serve Notice of Default prior to the date of commencement of the extended term, after notice of exercise of Option by Lessee, shall constitute conclusive evidence that Lessee is not then in default, has timely exercised its Option, and that the extended term has properly commenced.

D. *Rent for Extended Term(s).* The rental rate shall be adjusted at the commencement of each extended term, to the Fair Market Rental Rate for industrial premises with comparable improvements existing at the time the Option(s) are exercised (but in no event more than one (1) year before the expiration of each extension term) in the San Carlos-Redwood City area. Upon receipt of notice of Lessee's exercise of its Option, Lessor shall notify Lessee within thirty (30) days of the rental rate which Lessor believes, in the exercise of good faith, to reflect the Fair Market Rental Rate applicable for the extension term ("Lessor's Rent Notice"). Lessee shall have a period of thirty (30) days after receipt of Lessor's Rent Notice to object to the same, by written notice to Lessor setting forth the rate which Lessee believes, in the exercise of good faith, to reflect the Fair Market Rental Rate applicable for the extension term ("Lessee's Rent Objection"). In the event of such objection, each party shall select an arbitrator within ten (10) days after delivery of Lessee's Rent Objection, and within fifteen (15) days thereafter the two arbitrators shall select a third arbitrator. The arbitrators so selected shall meet and confer and determine the appropriate Fair Market Rental Rate for the duration of the extension term, and their decision shall be final and binding on the parties. The arbitrators so selected shall be commercial real estate agents or brokers with at least five (5) years' experience in the leasing of like properties in San Mateo County. In the event that the decision of the arbitrators has not, for any reason, been rendered before the commencement of the extended term, that fact shall not operate to effect or invalidate the exercise of the Option, but Lessee shall continue to pay rent in the amount due under this Lease in the month preceding the commencement of the extended term, subject to retroactive adjustment when the new rental rate is determined.

16.33 Pro-ration of Taxes and Insurance.
Lessee's pro rata share of insurance premiums and taxes shall reflect the ratio of the approximate square footage of Lessee's premises (22,000) to the approximate square footage of all buildings located on the 3.87 acre parcel of which the leased premises are a part (consisting of approximately 80,000 square feet). The parties agree that Lessee's pro rata share at commencement of the lease term is 27.5%. Should the total approximate square footage of the buildings increase or decrease during the lease term, or any extensions thereof, Lessee's pro rata share shall be adjusted accordingly.

16.34 Environmental and Hazardous Conditions Disclosure.
Lessor represents and warrants that it has no knowledge of any adverse environmental conditions, or the presence of toxic or hazardous materials present in, on, under, or about the premises or the building of which the premises are a part. In making such representations and warranties, Lessor relies upon the "Preliminary Environmental Site Assessment Report for Buildings 1, 2, and 3, dated August 18, 1995 prepared for its former tenant, Harris Corporation; and upon the Closure Report dated May 20, 1996 prepared for the Harris Corporation. (Lessee's premises consist of Buildings 2 and 3 therein.) Lessee acknowledges receipt of a copy of such reports.

Lessee shall not use or store hazardous or toxic materials on the premises without the prior written consent of the Lessor, which consent shall not be unreasonably withheld. Any such use or storage shall be in strict compliance with any and all applicable governmental regulations and requirements. Lessee shall provide a list to Lessor of such hazardous materials it intends to use in its business prior to the commencement of this Lease, which shall become an Addendum to this Lease.

16.35 Specialized Lessee Improvements.
Lessee reserves the right to remove, at the termination of the Lease (including any extensions thereof), any "Specialized Lessee Improvements" installed by and paid for by the Lessee or its predecessor in interest, provided that Lessee shall repair any damage resulting from said removal.

16.37 Sublease Profits.
In the case of any subleasing (except for a sublease under the terms of Paragraph 12.2) one half of any sums or other economic consideration received by Lessee as a result of such sublease shall be paid to Lessor, after first deducting the unamortized cost of leasehold improvements paid for by Lessee and the costs of any real estate commissions or other costs of subletting.

16.38 Authority.
Each individual executing this Lease on behalf of Lessor represents and warrants that he or she is authorized to do so and that this Lease is binding upon Lessor.

16.39 Compliance with law.
Paragraph 6.2 of the Lease is modified by the addition of the following: Notwithstanding any other term of the Lease, if at any time during the term of this Lease, or any extension thereof, Lessor or Lessee receives any notice of non-compliance, or requirement for alterations, modifications, or compliance required in the building or any improvements thereon as imposed on property in general (as opposed to such requirements that may arise or result from Lessee's particular use, alteration, or occupancy of the premises), the cost of remediation and/or Compliance therewith shall be the obligation of Lessor, at Lessor's sole cost and expense.

16.40 Alterations and Additions.
Paragraph 7.5(d) of the Lease is modified by the addition of the following: Notwithstanding anything to the contrary in this Lease, Lessee shall have the right to remove any and all assets purchased by Lessee under the Purchase Agreement.

16.41 Indemnity.
Paragraph 8.6 of the lease is modified by the addition of the following: Notwithstanding any other term of this Lease, Lessor shall indemnify and hold harmless Lessee from and against any and all claims arising from the condition of the premises (except to the extent that the condition complained of was the result of Lessee's negligent or willful act or omission), or from any activity, work or things done, permitted or suffered by Lessor in or about the Premises or elsewhere, and shall further indemnify and hold harmless Lessee from and against any and all claims arising from any breach or default in the performance of any obligation on Lessor's part to be performed under the terms of this Lease or from the negligent or willful act or omission of Lessor, Lessor's agents, contractors or employees, and from and against all Costs, attorney's fees, expenses and liabilities incurred in the defense of any such claim or any action or proceeding brought thereon; and in case any action or proceeding be brought against Lessee by reason of any such claim, Lessor upon notice from Lessee shall defend the same at Lessor's expense by counsel satisfactory to Lessee.

16.42 Damage and Destruction; Right of Termination by Lessee.
Paragraph 9.5(b) is modified by the addition of the following: Notwithstanding any other provision of the Lease, in the event of partial damage to the premises as to which Lessor is obligated to repair or restore the Premises under the provisions of the Lease, lessee shall have the right to terminate this Lease by giving written notice to Lessor if such repairs has not been completed within 180 days after such obligation to repair the accrued. In such event, the Lease shall terminate on the date of such notice.

LESSEE:

GENOMIC SOLUTIONS INC.

By /s/Jeffrey S. Williams

Its President

LESSOR:

COUNTY ROAD PROPERTIES, a partnership

By	/s/ Roland Lampert	By	/s/ Audrey Lampert
Its		Its	
By	/s/ Boris Wolper	By	
Its		Its	

Exhibit 21.1

SUBSIDIARIES OF THE REGISTRANT

HBIO Securities Corp. (United States)
Harvard Apparatus FSC, Inc.
Warner Instruments, Inc. (United States)
Union Biometrica, Inc. (United States)
Harvard Apparatus, Ltd. (United Kingdom)
Harvard Apparatus, SARL (France)
Biochrom Ltd. (United Kingdom)
Scie-Plas Ltd. (United Kingdom)
Asys Hitech GmbH (Austria)
Hugo Sachs Elektronik Harvard Apparatus GmbH (Germany)
Union Biometrica GmbH (Germany)
Union Biometrica NV (Belgium)
Ealing Scientific Ltd. Canada (doing business as Harvard Apparatus, Canada) (Canada)
Genomic Solutions, Inc. (United States)
Cartesian Technology, Inc. (United States)
Genomic Solutions, Ltd. (United Kingdom)
Genomic Solutions KK (Japan)
Genomic Solutions Canada Inc. (United States)
Genomic Solutions (CDN), Inc. (Canada)
Cartesian Techonology Europe Ltd. (United Kingdom)
PBA Technology, Ltd. (United Kingdom)

Exhibit 23.1

Independent Auditors' Consent

The Board of Directors
Harvard Bioscience Inc.:

We consent to the incorporation by reference in the registration statement (No. 333-53848) on Form S-8 of Harvard Bioscience Inc., and subsidiaries of our report dated March 3, 2003, except as to Note 22, which is as of March 12, 2003, with respect to the consolidated balance sheets of Harvard Bioscience Inc., and subsidiaries as of December 31, 2002 and 2001, and the related consolidated statements of operations, stockholders' equity (deficit) and comprehensive income (loss) and cash flows for each of the years in the three-year period ended December 31, 2002, which report appears in the December 31, 2002, annual report on Form 10-K of Harvard Bioscience Inc., and subsidiaries.

Our report refers to the adoption of Statement of Financial Accounting Standards ("SFAS") 142, "Goodwill and Other Intangible Assets" as required for goodwill and intangible assets resulting from business combinations consummated prior to June 30, 2001.

/s/ KPMG LLP

Boston, Massachusetts
March 31, 2003

Exhibit 99.1

The undersigned officer of Harvard Bioscience, Inc. (the "Company") hereby certifies that the Company's Annual report on Form 10-K for the year ended December 31, 2002 (the "Report"), as filed with the Securities and Exchange Commission on the date hereof, fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended, and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company. This certification is provided solely pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed to be a part of the Report or "filed" for any purpose whatsoever.

Date:March 31, 2003

Name: /s/ Chane Graziano
Chane Graziano

Title: Chief Executive Officer

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 99.2

The undersigned officer of Harvard Bioscience, Inc. (the "Company") hereby certifies that the Company's Annual report on Form 10-K for the year ended December 31, 2002 (the "Report"), as filed with the Securities and Exchange Commission on the date hereof, fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended, and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company. This certification is provided solely pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed to be a part of the Report or "filed" for any purpose whatsoever.

Date:March 31, 2003

Name: Susan Luscinski
Susan Luscinski

Title: Chief Financial Officer

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.